Endogeneity: A Reply to Two Different Perspectives

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Introduction

In this paper, we provide a short reply to Larcker and Rusticus (this issue) and van Lent (this issue), both of whom comment on the Chenhall and Moers (this issue) paper (hereafter ‘CM’) on endogeneity issues in (management) accounting research published in this issue of European Accounting Review. The primary aim of CM is to stimulate debate in the area of endogeneity. We therefore appreciate that the Editor (Kari Lukka) has invited the authors of both papers to comment on CM and that the authors have accepted this invitation.

It is clear from reading the papers by Larcker and Rusticus (this issue) and van Lent (this issue) that each paper provides interesting and thought-provoking insights into the issue of endogeneity. Each paper has a different perspective on endogeneity and therefore, at least implicitly, offers different advice on how to move the literature forward. Our goal is not to evaluate the relevance and validity of each individual argument made, as readers should do this for themselves. Rather our goal is to evaluate, from our perspective, the main messages that stem from these papers as to how to move forward.

To reiterate, the main message of CM is that endogeneity is an issue we cannot ignore and that the crucial starting point in addressing this issue is theory development. We argue that without articulating the structural model of interest, which lies at the heart of theory-based research, it is difficult to make much progress in understanding the research issues being studied. We elaborate on the importance of theory throughout this reply.

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The Main Messages of Larcker and Rusticus (this issue) and van Lent (this issue)

Larcker and Rusticus (this issue) expand on our discussion of equilibrium conditions and examining performance effects of firms’ endogenous choices. They illustrate the issue in detail by focusing on the relationship between managerial equity ownership and firm value. The illustration focuses on an analysis of the validity and consequences of assuming that ownership is exogenous/endogenous. Based on theory and logic, Larcker and Rusticus (this issue) argue that treating ownership as exogenous is seriously flawed. The next question then is whether we assume that ownership is fully endogenous or partly endogenous, where there seem to be some valid arguments for the latter (see also note 12 of CM). In any event, the key message of the Larcker and Rusticus (this issue) paper is that, to successfully address the issue of endogeneity, it is necessary to concentrate effort on better theory development. This emphasis on theory development should guide the development of the empirical model and the choice of exogenous variables.

The paper by van Lent (this issue) takes a different perspective. The perspective argues that caution should be exercised when considering theory in accounting, and management accounting in particular, as a way to tackle issues of endogeneity. This follows as theory is non-existent or underdeveloped in management accounting and as a consequence one can always find a theory that states that endogeneity is present and another that states that it is absent. Theory can therefore never definitely establish the presence of endogeneity, let alone address it. Taking this ‘poor theory argument’ as given, concern with endogeneity should be approached from different perspectives. Specifically, van Lent (this issue) recommends the use of sensitivity analysis to explore different plausible models. This position stresses that researchers should focus on finding multiple empirical models that do, or do not produce, significantly different results.

In the concluding section of van Lent (this issue), it is stressed that researchers need to be careful about how they construe their results and should discuss alternative interpretations. This should indicate how endogeneity is expected to affect parameter estimates as well as acknowledging that in the absence of ‘true’ theory the researcher’s model is likely to be misspecified. Researchers have a duty to defend how they choose between alternative misspecified models. This is sound advice. However, we are not convinced that in all or most management accounting research, theory and logic are not able to address endogeneity problems.

Our Position vis-à-vis the Two Commentaries

Given that the Larcker and Rusticus (this issue) paper reinforces the main message of CM, it should not come as a surprise that we agree with their main message. Alternatively, it should not come as a surprise that while we sympathize
with some of the arguments presented by van Lent (this issue), it is difficult for us
to agree that the main message applies to all research in management accounting,
and to accept that this is a move in the right direction.

As indicated in CM, our main point is that endogeneity is a serious matter as if
it ‘exists’, we can no longer be confident that the results from the regression
support the causality implied in the structural equation. We argue that researchers
should explicitly address endogeneity issues and use theory and logic to argue
why endogeneity is, or is not, a problem in their particular study. To this, we cer-
tainly agree with van Lent (this issue) that researchers need to apply common
sense to their endeavors. We note that the paradox in all this is that econometrics
is crucial in understanding the issue, but econometrics cannot solve it. Notwith-
standing this observation, we believe that it is important to raise the importance
of endogeneity in management accounting research and to call on researchers to
make an effort to be familiar with issues related to endogeneity. This will ensure
that researchers are alert to the potential problems of endogeneity and its conse-
quences. They will then be in a position to assess if it is possible to identify
whether endogeneity is a problem and if so, then how best to tackle the issue.
Also, it is important to consider endogeneity as an important research issue as
it is then possible to assess research in accounting and other disciplines that
involve efforts to address potential endogeneity issues.

Certainly, theory in the social sciences, including management accounting, is
not strong or unified enough to solve endogeneity problems. Endogeneity can
never be entirely solved. Its potential impact, however, should at least be assessed
as best as can be, given the research problem being studied. We believe that it is
through the process of theory development that researchers can uncover what is
known and what might be important in identifying the extent to which endogene-
ity exists. Undoubtedly, in some areas the uncertainty associated with the
research problem will mean that it is impossible to define or identify issues
that may cause endogeneity. By definition, such uncertainty is going to thwart
any approach to uncover endogenous variables, or attempts to develop plausible
richer structural models that might offer significantly different results. In the situ-
ation of extreme uncertainty, additional variables that may cause endogeneity
may never be included in the alternative models.

We stress that we are concerned about efforts to develop theory and as a conse-
quence of careful reflection to make explicit assumptions about endogeneity issues.
As the theoretical model is developed, researchers will derive causal relationships
between explained variables of interest and explanatory variables, carefully con-
struct definitions of variables and derive measures for these variables. We believe
that trying to specify how changes to structural models may help address endogene-
ity is best served by carefully thinking about how these relationships may be built
into the structural models. This would seem to us to be best served by using theory,
logic and common sense. To many researchers scientific progress is based on the
concept of falsification of theory. In theory-based empirical research, this comes
down to falsifying alternative plausible explanations for a finding related to a
research problem in favor of the researcher’s proposed most plausible explanation. Clearly this requires the researcher to be as careful as possible to develop theory from prior studies in the area together with logic and intuition.

Our concern in CM is with endogeneity issues. Undertaking sensitivity analysis on alternate plausible models can certainly provide results that indicate how outcomes from the original models do, or do not, change with the addition of extra variables. However, presumably, this approach requires the researcher to have considered reasons for the addition of variables, including whether they simply add explanatory power, or whether they may be a source of endogeneity. Assuming researchers are taking a ‘scientific approach’ to research, we believe that some form of theory would help make more sense of the different results. Of course, an argument can be made that reporting the results of alternative plausible models can encourage researchers to think inductively about theory development. Clearly, our preference is, where possible, to attempt to develop models deductively, at the conceptual level, and then test these models empirically.

Conclusion

In summary, we feel that progress in research can be made by developing richer models that reflect the issues of concern related to the research problem. Moving forward by relying on theory-driven model development will never fully solve issues of endogeneity because of the difficulty in social science, including management accounting, of not having – nor probably ever achieving – a unified all encompassing theory. However, where an examination of theory and logic enable theory to be developed, including the treatment of endogeneity, we believe that this is the way forward. Where it would be disingenuous to claim that the conceptual model reflects sound theory because of extreme uncertainty about the research problem being studied, then there is little that can be done to address endogeneity. We simply do not have a basis to understand how the variables of interest interact. In this instance undertaking sensitivity analysis on alternate models could be useful to show which variables help improve predications. However, without theory to help understanding the potential for endogeneity, it is possible that the approach runs into the same endogeneity problems that present concerns to more conventional ‘theory-driven’ approaches.

More generally, our concern is that the reasonableness of the endogeneity assumption can only be determined if researchers attempt to clearly articulate the structural model of interest. Theory-based empirical research includes a component of jointly testing predictions and assumptions, and better theory development allows us to judge the validity of this joint test. It is difficult to say when a theory-based approach is unhelpful as it is generating only ‘poor theory’. More often than not there will be alternate theories. Lively debate on theory development and empirical testing of alternate theories can help develop better theory and assist in understanding how variables interrelate and help address issues of potential endogeneity.
References

