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# [letter to the editor]

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ficients are claimed to be "superior" to these other coefficients since a comparison of effects permits a "more accurate evaluation of the relative importance of $X_1$ and $Y_2$ for $Y_3$ than does comparison of coefficients from the other statistical techniques considered."[3]

I found it interesting to observe, therefore, that for the particular causal model under consideration the effects coefficients, $E_{31}$ and $E_{32}$, (where $E_{31} = p_{31} + p_{32}p_{21}$ and $E_{32} = p_{32}$), are respectively no more than a simple correlation coefficient ($r_{13}$) and a standardized multiple regression coefficient ($B_{32.1}$). Following procedures used by Duncan,[4] and Blalock,[5] it can be shown that $E_{31}$ does, in fact, equal $r_{13}$. Using the simultaneous linear equations[6]

$$Y_2 = p_{21}X_1 + u_2 \tag{1}$$

$$\text{and } Y_3 = p_{31}X_1 + p_{32}Y_2 + u_3 \tag{2}$$

with the variables in standard form, the relationship between $X_1$ and $Y_3$ can be symbolized by:

$$r_{13} = \Sigma X_1 Y_3/N \tag{3}$$

$$= \frac{1}{N} \Sigma X_1 (p_{31}X_1 + p_{32}Y_2 + u_3) \tag{4}$$

$$= p_{31} + r_{12}p_{32} \tag{5}$$

Equation (5) is obtained by substituting equation (2) for $Y_3$ in equation (3), noticing that $\Sigma X_1 X_1/N = 1$ and assuming that the disturbance term $u_3$ is uncorrelated with its source variable. Following this same procedure for $r_{12}$ yields:

$$r_{12} = \frac{\Sigma X_1 Y_2}{N} \tag{6}$$

$$= \frac{1}{N} \Sigma X_1 (p_{21}X_1 + u_2) \tag{7}$$

$$= p_{21} \tag{8}$$

Substituting $p_{21}$ for $r_{12}$ in equation (5) results in the effects coefficient $E_{31}$, where $E_{31} = p_{31} + p_{32}p_{21} = r_{13}$. Since $r_{13} = b_{31}(S_3/S_1) = B_{31}$.

[3]Lewis-Beck, p. 565.

[4]Otis D. Duncan, "Path Analysis: Sociological Examples," in *Causal Models in the Social Sciences*, H. M. Blalock, ed. (Chicago: Aldine, 1971), p. 121.

[5]N. Krishnan Namboodiri, Lewis F. Carter, and Hubert M. Blalock Jr., *Applied Multivariate Analysis and Experimental Designs* (New York: McGraw Hill, 1975), pp. 462–68.

[6]Lewis-Beck, p. 564.

and $E_{32} = B_{32.1}$, the comparison of $E_{31}$ and $E_{32}$ reduces to a comparison of a simple regression coefficient and a multiple regression coefficient, both being standardized coefficients.

Consequently, the effects coefficients are superior in this example only if one is uncomfortable in comparing a simple regression coefficient with a multiple regression coefficient. Rather than mathematically introducing any new information, the effects coefficients here serve only a nominal purpose, incorporating both simple and multiple regression coefficients into a single concept. These effects coefficients should accordingly be viewed as a classificatory device, not a statistical innovation.

JACK WRIGHT

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TO THE EDITOR:

Public policy researchers frequently evaluate the relative influence of independent variables on a dependent variable by comparing, respectively, simple correlations, partial correlations, or multiple regression coefficients. Such comparisons are generally inaccurate, implying models of the policy world that the analyst would immediately reject. To illustrate this point, I adopted a simple, but popular, three-variable recursive model of welfare policy.[1] I demonstrated that assessing the effects of $X_1$ and $Y_2$ on $Y_3$ through comparison of $r_{13}$ to $r_{23}$ (or $r_{31.2}$ to $r_{32.1}$, or $\beta_{31.2}$ to $\beta_{32.1}$) seriously downgraded the total impact of $X_1$. However, the effects coefficients ($E_{31}$ and $E_{32}$), by incorporating the indirect effects operating in the model, allowed the greater influence of $X_1$ to be taken into account.

One general device for calculating the effects coefficient, $E_{ki}$, is the basic theorem of path analysis, which would show $E_{32} = \beta_{32.1}$, and $E_{31} = r_{13}$ (which Jack Wright derives for us here). In this particular model, then, $E_{31}$ equals a simple correlation, and $E_{32}$ equals a multiple regression coefficient. However, an effects coefficient will *not* necessarily equal some correlation or regression coefficient among the variables. In the case at hand, $E_{31} = r_{13}$ *only* because $X_1$ is an exogenous variable in a

[1]Michael S. Lewis-Beck, "The Relative Importance of Socioeconomic and Political Variables for Public Policy," *American Political Science Review*, 71 (June 1977), 563–66.

just-identified recursive model. If the model were respecified to render $X_1$ endogenous, or to make the system overidentified, then $E_{31} \neq r_{13}$. (As I noted, these and other issues concerning the effects coefficient are thoroughly discussed in an earlier article by Lawrence B. Mohr and myself, which Wright fails to cite.)[2]

Wright concludes that effects coefficients are superfluous, and that we arrive at the same place by comparison of a simple regression coefficient, $r_{13}$, with a multiple regression coefficient, $\beta_{32.1}$. But this is a highly arbitrary procedure. What is to stop us from comparing $r_{23}$ with $\beta_{31.2}$, thus reaching an opposite conclusion about the relative impact of $X_1$ and $Y_2$? In contrast, comparison of $E_{31}$ and $E_{32}$ is not arbitrary. Rather, effects coefficients must be systematically derived from a properly specified and estimated causal model. Such a model is the essential beginning for any sensible investigation of the relative importance of independent variables.

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### Political Money

TO THE EDITOR:

For almost two decades, Herbert Alexander has been the most prolific writer on political finance in the United States. He has also been the stoutest advocate of full disclosure of campaign funds and of tax credits for small political contributions. Until it recently became inevitable, Alexander was a persistent doubter about government financing of campaigns. Now he favors—albeit with some reservations—government matching of private campaign gifts.

In reviewing Political Money, by George Agree and me (David Adamany), Alexander quarrels, not surprisingly, with our preference for a voucher system of public financing, our rejection of tax credits, and our belief that financial disclosure, while useful, has been vastly oversold.

Alexander's argument that the voucher system is administratively awkward and expensive is plausible. Agree and I concede that point in our book. But we believe those disadvantages are offset because vouchers permit every citizen

equal weight in financing campaigns and because they assure that all candidates will be eligible for consideration. These advantages of equality and fairness escape Alexander's review.

Agree and I discover that tax credits and deductions proffered by Oregon, California, and the federal government are used by so slight a number of persons that they do not significantly enhance participation, if they enhance it at all. Moreover, use of these tax advantages is grossly disproportionate among the highest income groups. A specially commissioned national opinion poll strongly suggests that full public knowledge of tax incentives would not significantly increase participation or decrease the income class bias of users. Alexander finds our conclusions "excessively harsh" because we have too little data. As far as I know, neither Alexander nor other proponents of tax incentives have offered any evidence whatsoever of the effects of such legislation. Apparently there is a very high standard of proof for doubters and no requirement of evidence for proponents.

Agree and I contend in Political Money that disclosure is useful as an interelection check on elected officials and that it contributes important data for policy making about political finance. But we find less convincing the argument of its sponsors that it will cleanse politics by allowing voters to punish at the polls those who receive large or special interest or otherwise tainted gifts. It is difficult to sift the mass of disclosure data for such information in the short period between filing dates and election day. Financially weak challengers will not have the funds to exploit the "money issue" even if the data are available. The media are likely—as they did in 1972—to carry or bury the campaign finance issue according to their own candidate preferences. And, as our national opinion survey shows, selective perception and party identification are likely greatly to weaken the impact of disclosed information on those voters who do possess information. Alexander finds these judgments "unfair" and "too quick." Yet, despite numerous state and federal experiments with disclosure, its proponents have brought forward no evidence to show how and whether it will have the specific effects they promise for it. Again, the standard of evidence used by Alexander seems colored by his own well-known preferences.

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[2]Lewis-Beck, "Relative Importance," pp. 560, 564; and, Michael S. Lewis-Beck and Lawrence B. Mohr, "Evaluating Effects of Independent Variables," Political Methodology, 3 (February 1976), 27–47.