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## Handling Economic Freedom in Growth Regressions: A Reply to Cole and Lawson

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COLE AND LAWSON (2007) STATE THAT “EQUATION (1) IS Lawson’s preferred specification, while de Haan *et al.* favor Equation (4).” That is not an appropriate summary of our position, however. We do not have a preference for Equation (4). In our papers on the relationship between economic freedom and economic performance we have always estimated Equations (3) and (4), using the Extreme Bounds Analysis to test whether (the level or the change in) the Fraser index is robustly related to economic growth. Our results are that the level of economic freedom is not robustly related to growth, in contrast to the change of the economic freedom. In our reply (De Haan and Sturm 2006) to Lawson (2006), we explain that the main reason that we do not consider Equation (1) a proper specification is that Equation (1) is equivalent to Equation (2). All sides in the debate seem to agree that Equation (2) is definitely not a good model as there is a serious problem of endogeneity of one of the right-hand side variables (i.e.  $EF_1$ ).

However, Equation (4) potentially also suffers from reverse causality, as we acknowledged in all our previous work (see, for instance, De Haan and Sturm 2000). That is why in previous work we have used a test suggested by Maddala. This test involves running regressions for the change in economic freedom indicators using, as regressors, all the determinants of

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GDP growth plus other variables that are relevant in explaining our economic freedom indicators. Next, the predicted values for the change in economic freedom indicators are added to the regression. If its coefficient is insignificant, the endogeneity hypothesis is rejected. The results of this test suggest that the causality runs from the change in economic freedom to economic growth.

As we show in our survey with Susanne Lundstrom (De Haan et al. 2006), there is, however, some evidence suggesting a two-way causality. The evidence, however, is mainly based on Granger-causality tests. Those tests are, in our view, not suited to test for causality in the present case due to the (in)frequency of the data (one observation for every 5 years).

We agree with Cole and Lawson that an instrumental variable approach (IV) could be an alternative to deal with the potential endogeneity of  $\Delta EF$ . Elsewhere (De Haan and Sturm 2003) we have examined what variables may explain the change in economic freedom between 1975 and 1995. Here we follow up on this analysis to compare the outcomes of OLS and IV estimates, employing the data used in our previous work. In the first round the following variables are used as explanatory variables for the change in economic freedom:

- the level of economic freedom in 1975
- (the log of) per capita income in 1975
- gross investment as share of GDP over 1975-90
- percentage of the population with higher school attained in 1975
- percentage of the population with secondary school attained in 1975
- population growth over 1975-90
- average political rights and civil liberties over 1975-90
- fraction of time the country was involved in a war
- government consumption as share of GDP over 1975-90.

Table 1 shows the OLS (column 1) and IV (column 2) results. It is clear that the change in economic freedom is highly significant in both regressions. We therefore conclude that taking the endogeneity of the change in economic freedom into account does not alter our result found in all our previous work, i.e. the change in economic freedom is related to economic growth.

**Table 1. A simple cross-country growth model: OLS vs. IV  
(dependent variable: average GDP growth 1975-90)**

Explanatory variables:	(1) OLS	(2) IV
Constant	8.45 (2.75)	8.82 (3.08)
GDP in 1975	-1.46 (-3.19)	-1.53 (-3.59)
Investment	0.24 (4.90)	0.25 (5.25)
Secondary school enrollment	0.02 (1.04)	0.02 (0.89)
Change in economic freedom	0.69 (2.65)	0.98 (2.50)
Number of observations	80	78

T-statistics in parentheses.

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[GO TO ORIGINAL COMMENT BY LAWSON \(2006\)](#)

[GO TO FIRST REPLY BY DEHAAN AND STURM \(2006\)](#)

[GO TO COMMENT BY COLE AND LAWSON \(2007\)](#)