

A brief critical note regarding recent “crowding out” claims

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The concept of “crowding out” has a long history in economic analysis. It presupposes some variety of competition for limited capital and resources that directly affects interest rates and also the efficiency of investment, and hence the long-term trajectory of economic growth. This in turn is positioned in terms of dispute regarding fiscal and monetary policy and the size and scope of the state. The underlying theme of much of the material that sets out crowding out effects is that “more” state is harmful to the economy. Not only is this often reductive in terms of its analysis of the state and of policy, it can also be problematic in terms of the construction of empirical evidence. A recent CEPR discussion paper illustrates this (see Huang et al, 2018). The paper sets out to regress private investment in a large number of countries on public debt levels (both items as GDP shares). The regression coefficients reported turn out to be negative and statistically significant. These findings, supported by the results of industry- and firm-level regressions, lead to the claim: “that the relationship between public debt and investment is likely to be causal and that public debt crowds out corporate investment” (ibid).

The CEPR paper suffers from two major deficiencies:

1. The GDP shares of private investment have followed a secular downward trend while the public debt shares have been increasing secularly for quite some time almost everywhere. As such the time series of both items are non-stationary in most cases. Regressing one non-stationary time series (the GDP investment share) on another nonstationary series (the GDP share of public debt) may well result in spurious estimates – with necessarily negative regression coefficients.

A spurious model can be indicative of problems of various kinds. This includes a problem of statistical analysis that arises because over time the real processes of one and many economies may be changing.

2. The regression estimates reported at best reflect simple correlations between the contemporaneous values of the two shares considered. These correlations cannot say anything about causation. Correlation is not causation, as every schoolboy knows.

Equally, one could have regressed public debt shares on the investment shares. Such reverse regressions would also yield negative and statistically highly significant regression coefficients which, by analogy, could have indicated that lower investment causes higher public debt. In actual fact, this makes more sense. According to the fundamental national accounting identity the private sector’s excess savings (private savings minus private investment) equal the public sector deficit plus the foreign balance. Falling private investment shares (observed secularly) means rising public sector deficit/GDP shares, *ceteris paribus*. There are good grounds to believe that falling investment shares may indeed cause higher public deficits (which give rise to accumulating public debts).

It is not my purpose here to dwell on the simultaneous co-determination of private investment and public debt. In any single year (or quarter) both items must mutually adjust so that the fundamental macro identities eventually hold. How that adjustment is achieved remains open to debate. My purpose here is simply to highlight that the empirical evidence for crowding out is suspect. This can be achieved using classical Granger causality tests involving the two items in question. As most economists are aware, Granger causality is a statistical measure and not a full or adequate concept of causation. It is fundamentally a test of a relation between past values of x and future values of y , which tells one no more than that there is an ordering in time rather than what it is about these that orders it, how they relate, and what else may be relevant in a complex sequence of pattern of relations. Whilst this may be problematic in many ways, a Granger test is arguably sufficient to bring into question the directional link claimed in the CEPR paper. In order to expedite the test, I make use of auxiliary unrestricted Vector Autoregression (VAR) models. Again these have their problems but can be used to capture the dynamic links between the two items in question. I apply this to 25 countries for which longer-term data (1995-2017) are available (from AMECO). The eventual endogeneity of the variables considered does not create identification problems here because in the models considered the variables are not contemporaneously related. In effect the ordinary least squares estimates for such VAR models are adequate and the resulting Granger causality tests are informative.

Table 1 shows the P values for pairwise Granger causality tests (based on chi-sq. stat.) for 25 countries, based on auxiliary VARs for years 1995-2017.

As can be seen (column 1), in only three countries the hypothesis that an increase in the public debt/GDP share does **not** Granger-cause an increase in the private investment share may be rejected (at 0.05 level). In these three countries (Belgium, Denmark and the UK) a change in public debt can be claimed to have been followed by a change in private investment. The latter change can be negative or positive. In the context of a crowding concept this represents either crowding out or crowding in. In the remaining 22 countries, a change in public debt has not had a statistically significant effect on the private investment share. Observe (column 2) that in six countries (including Germany, the US and Japan) the Granger causality runs in the opposite direction: from a change in the investment share to a change in the public debt share. Here too one does not know whether a fall in the investment share Granger-causes a rising, or falling, public sector debt share.

The key point, however, is that in the vast majority of cases there is no reliable evidence of Granger causality running in either direction. The same conclusion applies to the levels (columns 3-4). Again, in the vast majority of cases there is no evidence of Granger causality running in either direction. Granger causality running from the debt share to the investment share can be claimed in only one major country (the UK) and the opposite Granger causality also in only one major country (Japan). Accordingly, it is an open question whether causations involve 'crowding out' or 'crowding in'. The statistical basis of empirical evidence is highly questionable and this still leaves the broader issue of whether "crowding" is an adequate way to position the creation and uses of capital and debt.

Table 1 P values for pairwise Granger causality tests for the changes in the investment and debt shares (columns 1-2) and for the levels of the investment and debt shares (columns 3-4)

	$\Delta(\text{debt})$ does not Granger cause $\Delta(\text{investment})$	$\Delta(\text{investment})$ does not Granger cause $\Delta(\text{debt})$	Debt does not Granger cause investment	Investment does not Granger cause debt
Belgium	0.0003	0.3454	0.0032	0.4267
Czech R.	0.2271	0.4210	0.0177	0.9139
Denmark	0.0008	0.5626	0.0000	0.9632
Germany	0.0945	0.0417	0.7694	0.0850
Estonia	0.5838	0.1409	0.5952	0.8036
Greece	0.1290	0.0780	0.0000	0.6516
Spain	0.6711	0.0780	0.4316	0.8655
France	0.1820	0.1231	0.8332	0.2877
Italy	0.5585	0.7803	0.4414	0.6373
Latvia	0.3386	0.4215	0.1259	0.5376
Lithuania	0.1555	0.0605	0.7244	0.2514
Luxembourg	0.5409	0.5220	0.6066	0.1032
Hungary	0.6259	0.9145	0.0639	0.9631
Netherlands	0.1604	0.5185	0.0902	0.8465
Austria	0.3577	0.7641	0.3494	0.3252
Poland	0.6775	0.0069	0.3941	0.2806
Portugal	0.2323	0.6186	0.0065	0.4425
Romania	0.0999	0.0084	0.1614	0.0017
Slovenia	0.6439	0.2922	0.0959	0.3630
Slovakia	0.9453	0.4055	0.4413	0.0103
Finland	0.9940	0.0903	0.5639	0.1439
Sweden	0.0763	0.5271	0.6838	0.4938
UK	0.0374	0.9008	0.0142	0.7245
US	0.0833	0.0103	0.8163	0.7769
Japan	0.6113	0.0482	0.4019	0.0414

Source: Own calculations based on AMECO data for 1995-2017. The P values for Granger noncausality tests for the levels (columns 3-4) are derived from the auxiliary VARs using the Toda-Yamamoto procedure. The auxiliary VARs (for both the increments and the levels) are unstable for Ireland: no reliable P values can be inferred for that country.

References

Huang, Y., U. Panizza and R. Varghese: 'Does Public Debt Crowd Out Corporate Investment? International Evidence', CEPR DP 12931, May 2018.

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