COMMENT TO
"PUBLIC DEBT DYNAMICS:
THE EFFECTS OF AUSTERITY, INFLATION, AND GROWTH SHOCKS"
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Cherif and Hasanov developed an empirical framework in which the relative performance of public debt was related to diverse macroeconomic variables and enabling in turn the analysis of debt dynamics (that is, the path of the debt-to-GDP ratio); in this connection, they focused on austerity, inflation and growth shocks' capability to reducing the burden of public debt.

For this, an econometric VAR model using US data was resorted to, including lagged values of the debt-to-GDP ratio and of GDP (as exogenous variables) and a set of macro aggregates (entering the debt equation as endogenous variables), all of what permitted the authors to assess the reaction of agents to changes in public debt.

The used VAR is depicted by the equations 1 and 2 below:

$$Y_t = \sum_{i=1}^{k} A_i Y_{t-i} + \sum_{i=1}^{\ell} \gamma_i d_{t-i} + \varepsilon_t \tag{1}$$

$$d_t = \left[\frac{(1 + i_t)}{(1 + \pi_t)(1 + g_t)} \right] d_{t-1} + pb_t \tag{2}$$

in which variables stood for:
d: the ratio of debt to gross domestic product
i: average nominal interest rates
π: the inflation rate
g: the growth rate
pb: the primary surplus

In relation to equation 2 above, it is evident that the inclusion of a separate deterministic debt equation in the VAR is an outstanding feature of the approach used by Cherif and Hasanov, as debt feedback and "debt dynamics" were thus better reflected and also depicted the debt-to-GDP ratio convergence to its stationary level. Apart from using the resulting "debt dynamics" to draw the Impulse response functions, the authors also averted a common undesired effect of linear VAR model, in which debt feedback is excluded, as they might – in that case – render explosive paths for the debt-to-GDP ratio.

It is necessary to recall, in order to better acknowledge Cherif and Hasanov's contributions, that crises of the so called developed countries produced impacts that severely hit and modified economic environments sprung from economic conditions prevailing in the period 1980-2007 and did economic policies' assumptions useless at least on the following two accounts: the idea that debt ratios would converge to their long term average values of around 40 per cent of GDP and that linearity in estimation models would not matter much as deviations due to macroeconomic shocks would expected to be only temporary. Needless to say, one main reason for this not happening was

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the evidence that in the new scenario- traditional monetary and fiscal policies did not suffice as measures put forward by conservative monetary authorities in their reaction to inflationary shocks (and accompanied from the fiscal side) rather induced the emergence of a not virtuous path characterized by Δ interest rates followed by temporary $-\Delta$ debt ratio, $-\Delta$ growth conducive to Δ primary deficits and finally to a new Δ debt ratio.

In the context of a weak economic environment brought about by the 2008-2009 crises in main developed economies, and characterized by nominal interest rates' lower bound close to zero, low inflation and contraction of economic activity, large deficits and rising public debt, Cherif and Hasanov wondered whether austerity shocks (fiscal consolidation) were sound or, contrariwise, self defeating practices. It is in this connection worth pointing out that the new economic environment could in fact matter, even if median economic responses remained unaltered by changes in initial economic conditions, if uncertainty and risk levels around the median path could yet be affected.

The preceding important considerations leads one to quote other arguments and contributions that would be somehow backing Cherif and Hasanov's assertion that fiscal consolidation (austerity shocks) could be not significant in the economic scenarios brought about by the 2008-09 international crises. In this respect Hall (2009) showed, in a very interesting contribution that while 'fiscal multipliers' from increases in government purchases were in the US about 0.5 for output, and slightly negative for consumption during the post war period, they grew up to 0.7-1.0 (or perhaps above these values) after the 2008-09 international crisis.

Hall sought to explain that by the decline of the mark up ratio as output rose: owing to the fact that prices (price stickiness) stayed constant during an expansion that raised input costs, wages were allowed to increase (or not fall) for what households would supply more labour in response to governments buying more output.

A second key argument explaining why fiscal multipliers would be greater than expected, according to Hall, rested on the higher wage elasticity of labour supply in response to labour demand. Hall's findings were confirmed later by Auerbach and Gorodnichenko (2012) whose findings proved that fiscal shocks had a larger impact when affected countries were experiencing recessions.

On the other side, the authors included valuable numerical evidence for the US economy in the paper submitted, showing that austerity shocks might be not significant when applied to weak economic environments already subject to the severe dampening induced by the international crises. As mentioned above, the key question seems to be whether fiscal consolidation could perform its role without thwarting the economy's growth chances; otherwise, one would be faced to initial primary surplus shocks that could in fact lead – for a limited number of years – to a reduction of the debt-to-GDP ratio but, if fiscal consolidation threatened growth perspectives, the temporal reduction would be reverted and the ratio would go back to its long term stationary level, as suggested above.

Let it be stressed that the review of authors' developed arguments and the analysis of econometric results achieved, as said, from the estimation of a VAR model that included debt feedback, leave one with a number of important lessons, regarding fiscal consolidation practices, in the case of weak economies undergoing changing economic environments and these can be summarized as follows:

- Austerity shocks could – under certain circumstances – fail to reduce the debt-to-GDP domestic product ratio.
- In general, even if inflation shocks reduced the debt-to-GDP ratio on impact, the latter would tend to increase again after a few quarters.

- Contrarywise, positive growth shocks would immediately and noticeably reduce the debt-to-GDP ratio (as tax revenue increases and the resulting primary surplus will contribute to ease the pressure on debt issuing)

- When debt dynamics is explicitly incorporated in the analysis, likelihood of self defeating austerity shocks cannot be ruled out and this requires policymakers to consider also the impact of emerging trade-offs.

Finally, and far from seeking to overshadow the merits of Cherif and Hasanov's contribution, a methodological matter is however worth mentioning concerning the estimation of VAR models:

- VAR models require variables used to be integrated in order that the estimation of coefficients and of impulse response functions do not result affected by the spurious correlation phenomenon.

- As the point has not been mentioned in the paper, one may assume that series are stationary. Should this not be the case, and given that the explicit consideration of debt dynamics (separate deterministic debt equation) makes the debt-to-GDP ratio to converge to long term stationary values, one wonders whether cointegration may be used.

- As known, cointegration asserts that long run equilibrium relations may exist if linear combinations of non stationary series yield stationary ones, in which case the error correction model based on the Johansen approach can be applicable.

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