

Box C: A Hybrid Measure of Fiscal Capacity

Nominal GDP is often used as a measure of a country's revenue/fiscal capacity. This is reflected, for example, in the use of the path of the debt to GDP ratio in judgements of debt sustainability. For Ireland, however, GNP has often been considered a more meaningful measure of fiscal capacity, given the large share of foreign multinational profits in GDP. Although subject to Irish corporate taxation, these profits are generally thought to provide a low tax yield per euro of income compared to other components of GDP. This has led many observers to recommend focusing on GNP as a superior indicator of fiscal capacity.

This box explores an intermediate position, where GDP is divided into two components: GNP and the excess of GDP over GNP (with the latter equal to the negative of net factor income). We then allow the two components to have different capacities in calculating an overall hybrid measure of fiscal capacity.

One way to identify the relative capacities is to examine the historic relationship between the two components using a simple regression analysis. Letting R represent total revenue, the relationship between revenue and the two components can be written as:

$$R = \gamma_1 GNP + \gamma_2 (GDP - GNP).$$

The coefficients on GNP and the GDP–GNP excess are the measures of fiscal capacity. The value of a euro of the excess relative to a euro of GNP is given by the ratio of the coefficients, $\frac{\gamma_2}{\gamma_1}$.

As all the aggregates have strong time trends, we run the regression in first differences. We also explore specifications which include a polynomial in time to control for changes in tax rates/new taxes and a crisis indicator for the years 2008 to 2011. The data for the regressions are for the period 1985 to 2011, with total revenue measured as General Government revenue.

The results are shown in Table C1. Estimated coefficients are reasonably stable across specifications. In general, the coefficient on the GDP–GNP excess is imprecisely estimated, with p values around 0.15. The value of the key relativity measure varies from a low of 0.33

to a high of 0.43, with a value of 0.40 in the base specification (regression 3). The coefficients on the time-trend variables (which crudely control for tax policies) are statistically insignificant, as is a crisis “dummy” for the period 2008-2011. We use the values from this base specification in constructing the hybrid measure as, $H = GNP + 0.4(GDP - GNP)$.

Table C1: Relationships Between Government Revenue, GDP and GNP 1985 to 2011

	1	2	3†	4	5	6	7
Δ GDP	0.37*** (0.03)						
Δ GNP		0.41*** (0.03)	0.40*** (0.03)	0.40*** (0.03)	0.40*** (0.03)	0.43*** (0.04)	0.39*** (0.07)
Δ (GDP - GNP)			0.16 (0.09)	0.17 (0.11)	0.14 (0.11)	0.15 (0.11)	0.13 (0.11)
Time					30.41 (31.98)	-192.47 (164.56)	-217.19 (170.17)
Time Squared						7.81 (5.66)	10.13 (6.60)
Crisis (2008 to 2011 = 1)							-1548.32 (2186.06)
Constant	None	None	None	-40.62 (285.93)	-469.14 (530.36)	550.03 (903.47)	717.98 (944.45)
Estimated γ_2/γ_1	NA	NA	0.40	0.43	0.35	0.35	0.33
Adjusted R Squared	0.89	0.88	0.90	0.87	0.87	0.88	0.88
Obs	26	26	26	26	26	26	26

Note: Standard errors in parentheses. Statistical significance: *** 1 per cent; **5 per cent; *10 per cent.
†Regression 3 is the base specification.

Overall, the result from the simple regression analysis suggests a hybrid measure, H , of the form: $H = GNP + 0.4(GDP - GNP)$. Care must be taken in using this measure given the sensitivity of the