Tax elasticities over the business cycle in Italy

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Abstract

The change of national income brings about tax revenue change. This relationship is embodied in the tax elasticity and usefully estimated both for the long-run as well as the short-run. In this paper we show that the short-run tax elasticity - the percent change in the tax revenue in response to a one percent change in national income - changes itself according to the business cycle phases for most of Italy's tax categories: direct taxes (both for households and firms), indirect taxes (VAT, energy, IRAP and others), social contributions (for employees and employers), and capital taxes.

We use a Markov-switching regression model to obtain a close association of the model's economy states to the business cycle phases. We also construct a unique and novel dataset of tax policy reforms to take their influence on tax policy changes out of the estimation results by removing the ex ante estimates of tax policy changes from the tax revenue to obtain a time series that only represent the effect of income changes. The difference between boom and recession elasticities turns out to be relevant.

Keywords: Tax elasticities, Tax policy changes, Business cycle, Italy's tax system, Italy's economy, Markov-switching regimes

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Extended abstract

Estimating the tax elasticity, that is the tax revenue change brought about by a given change in the overall national income, is an essential step of fiscal policy implementation. The government uses the tax elasticity to forecast revenues when preparing the budget, or to estimate the cyclical component of the budget balance as a pre-requisite to assess the fiscal stance. Large forecasting errors lead to budget surprises and inaccurate assessments of the fiscal stance, possibly associated to undue fiscal policy responses. Such an outcome might be especially undesired for European Union member States - in the current surveillance framework a significant deviation from the medium term budgetary objective may trigger a specific correction mechanism.

The tax elasticity is estimated using mainly two distinct approaches: The first relies on micro-data and detailed information on the national tax code, while the second is based on econometric techniques. Current practice at international institutions such as the Organization for Economic Cooperation and Development (OECD) or the European Commission (EC) relies heavily on the first approach (see Girouard and Andre’, 2005 for a detailed illustration). The academic literature, on the other hand, has mainly followed the second approach, using econometric techniques to disentangle the long-run tax elasticity, that is how a tax revenue will tend to grow over time as income grows, capturing the growth potential of tax revenue, from the short-run tax elasticity, that is the percent change of the tax revenue in response to a one percent change in income, capturing how the tax revenue will fluctuate over the business cycle as income fluctuates. Wolswijk (2009) provides an example of this research. Within the second approach, this paper questions the assumption that the short-run tax elasticity remains stable over the business cycle. Specifically, as a first contribution, we propose a regression-based model where short-run tax elasticities are allowed to shift as the economy shifts between the recession and the boom state of the business cycle. We provide an estimate of the elasticities in each state, and we find that their difference across states is statistically significant.

We may call for various theoretical rationales of a time-varying tax elasticity. One motivation concerns composition effects, that is the changing tax content of growth as tax bases (consumption, wages, asset prices) shares of GDP change over the business cycle. For example, Larch and Turrini (2009) report that the increase of the elasticity of current taxes with respect to GDP at the end of the 1990s and early 2000s was mainly due to the increased share of consumption in total income in Germany and to a combination of higher wage share,
rising imports, and high asset prices in France. Behavioral aspects of taxation also impinge on the variability of tax elasticities. Tax compliance, in fact, is expected to change over the business cycle as taxpayers facing economic downturns are prone to perceive a smaller risk of penalties due to tax evasion as compared to larger potential gains from avoiding bankruptcy (see Brondolo, 2009). Cyclical economic downturns can further push the economic activity from the formal to the informal sector. This is consistent with evidence reported by Sancak et al. (2010) that the efficiency of tax collection appears to be lower over economic contractions and vice versa. Income inequality matters as well. As the economy slows down in recessions, the lower end in the income distribution bears the largest part of lay-offs, while the most of income tax revenues come from the highest end of the distribution for which earning and spending patterns remain relatively stable over the business cycle.

We take these concerns seriously and test the stability of the short-run elasticity of a large selection of Italy's tax categories: direct taxes (both for households and firms), indirect taxes (VAT, energy, IRAP and others), social contributions (for employees and employers), capital taxes with respect to their bases (tax-to-base elasticity) along with the elasticity of the same bases with respect to GDP as a proxy for the overall level of income (base-to-GDP elasticity), across the business cycle phases, that is recessions and booms. Following the warnings of Sobel and Holcombe (1996), we also estimate the long-run elasticity and assume it is immune from regime shifts since it reflects the long-run, potential, relationship between taxes and bases as well as between bases and GDP. We finally combine, either for the long- and the short-run estimates, the tax-to-base and base-to-GDP elasticity in an overall estimate of tax-to-GDP elasticity.

The data sample is quarterly over the period 1995-2014.

A relevant innovation of our study is that it bases the analysis on a unique dataset of Italy's discretionary tax changes for each tax category. This dataset is constructed by estimating the ex ante impact of each tax measure on the relevant revenues. This provides a method to deal with the omitted variables bias arising from the effect of discretionary tax policy changes on the relationship between tax revenue and income. We tackle this bias by removing the ex ante estimates of tax policy changes from the tax revenue to obtain a time series that only represent the effect of income changes.

We also illustrate how our econometric methodology allows an explicit association of the estimated regimes to the business cycle phases, thus overcoming most of the methodological drawbacks affecting the existing attempts to estimate time-varying tax elasticities.
Preliminary results show that tax elasticities shift across the business cycle phases at a significant degree for all tax categories.
References


