COMMISSIONI CONGIUNTE V CAMERA E 5ª SENATO

Audizione di Confedilizia
in relazione al
Documento di Economia e Finanza 2017

Roma, 18 aprile 2017

Gli obiettivi generali dichiarati dal Governo nel Documento di Economia e Finanza 2017 sono in gran parte condivisibili: "innalzare stabilmente la crescita e l'occupazione"; "liberare le risorse del Paese dal peso eccessivo dell'imposizione fiscale"; "aprire maggiormente al mercato diversi settori, con l'obiettivo di apportare benefici apprezzabili dai cittadini in termini di maggiore offerta, investimenti, produttività e crescita"; disinnescare le clausole di salvaguardia, sia pure con l'incognita della loro sostituzione "con misure sul lato della spesa e delle entrate".

Tuttavia, il quadro complessivo degli interventi specifici ipotizzati non appare coerente con tali propositi e, soprattutto, non lascia intravvedere coraggiosi cambi di rotta in termini di diminuzione della spesa pubblica, di privatizzazioni e di riduzione del carico fiscale.

Con particolare riferimento al settore immobiliare, deve registrarsi con preoccupazione, anche nell'ambito della copiosa documentazione costitutiva del Def, una perdurante acquiescenza – più o meno marcata – ad una teoria economica la cui grande popolarità negli ambienti della Commissione europea e di altre organizzazioni internazionali è inversamente proporzionale alla sua fondatezza dal punto di vista scientifico oltre che della verifica empirica.

Intorno a temi di tassazione e finanza pubblica il dibattito internazionale e nazionale è stato, infatti, largamente influenzato dalla cosiddetta "visione Ocse" su tassazione e crescita (in particolare: Arnold *et al.* 2011). Sulla base di risultati econometrici piuttosto deboli, tale visione suggerisce come lo spostamento del prelievo fiscale dalla tassazione diretta a quella indiretta, e dalla tassazione del reddito a quella della proprietà, abbia effetti positivi sulla crescita economica nel lungo termine.

È interessante notare come – all'interno di questa visione Ocse – il tema del "mix delle imposte" (*tax mix*) venga enfatizzato in maniera decisa, a scapito di quello della pressione fiscale totale che risulta correlata negativamente con il PIL *pro capite*.
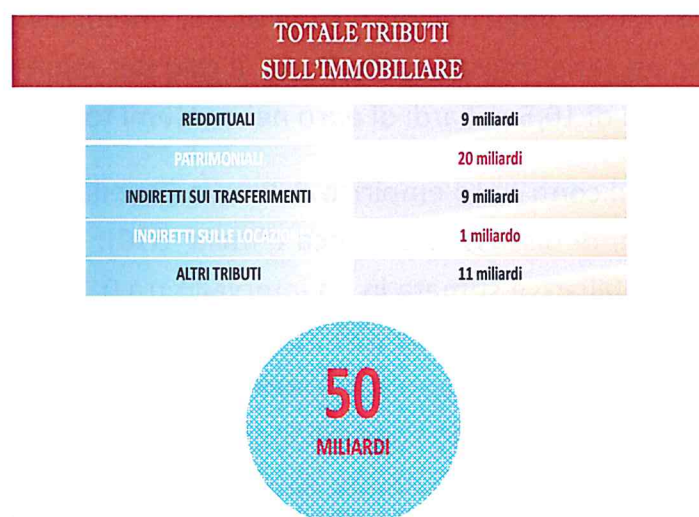
In un recente lavoro empirico si mostra invece come l'evidenza empirica che sta alla base di questa "visione Ocse" sia molto fragile, eccezion fatta per il legame negativo tra pressione fiscale e crescita nel lungo termine (Baiardi, D., Profeta, P., Puglisi, R. e Scabrosetti, S. [2017]. *"Tax Policy and Economic Growth: Does It Really Matter?"* SIEP Working Paper 718, allegato). Nella fattispecie, utilizzando tecniche econometriche maggiormente prudenti sulla precisione delle stime ed allargando il campione a un numero maggiore di Paesi Ocse e di anni (dal 1971 al 2014), si verifica come l'effetto positivo nel lungo termine di uno spostamento del prelievo dalle imposte dirette alle indirette, e dalle imposte sul reddito a

quelle sulla proprietà, non risulti più significativo dal punto di vista statistico. Anzi: nel breve termine un aumento della tassazione sulla proprietà si correla <u>negativamente</u> con il PIL *pro capite*.

In questo quadro, l'azione indicata a pagina 40 del Programma Nazionale di Riforma – "Spostare la tassazione dalle persone alle cose" – si configurerebbe come una scelta sbagliata sia se la si leggesse, come sembrano fare il Servizio Studi del Senato e il Servizio del Bilancio della Camera (Doc. LVII, n. 5, pag. 126), come limitata al trasferimento del carico fiscale sui consumi, sia se la si leggesse in piena coerenza con le raccomandazioni della Commissione europea, che ha più volte chiesto all'Italia di "trasferire il carico fiscale dai fattori di produzione al consumo e al patrimonio".

Si tratta di un'impostazione errata che – oltre ad essere non condivisibile concettualmente (l'obiettivo deve essere quello della riduzione delle imposte, non del loro "spostamento") – sta tardando la messa in opera delle necessarie azioni di correzione delle politiche fiscali iniziate nel 2011, che hanno generato un carico di tassazione, in gran parte di natura patrimoniale, che ammonta ormai a 50 miliardi di euro.

Il gettito dei tributi gravanti sul comparto immobiliare è stimabile in circa in 50 miliardi di euro, così suddivisi: 9 di tributi reddituali (Irpef, addizionali regionale e comunale, Ires, cedolare secca); 20 di tributi patrimoniali (Imu, Tasi); 9 di tributi indiretti sui trasferimenti (Iva, imposta di registro, imposta di bollo, imposte ipotecarie e catastali, imposta sulle successioni e donazioni); 1 di tributi indiretti sulle locazioni (imposta di registro, imposta di bollo); 11 di altri tributi (Tari, tributo provinciale per l'ambiente, contributi ai Consorzi di bonifica).

TOTALE TRIBUTI SULL'IMMOBILIARE

REDDITUALI	9 miliardi
PATRIMONIALI	20 miliardi
INDIRETTI SUI TRASFERIMENTI	9 miliardi
INDIRETTI SULLE LOCAZIONI	1 miliardo
ALTRI TRIBUTI	11 miliardi

50 MILIARDI

VALORI ESPRESSI IN EURO

Gli effetti negativi che queste politiche hanno causato sono di varia natura e non sempre risultano evidenti ad occhi non attenti.

Quelli più manifesti riguardano il mercato immobiliare. Nel 2016, il numero delle compra-vendite è stato inferiore di circa il 25% rispetto al 2008, ultimo anno prima della crisi finan-ziaria mondiale, e di circa il 14% rispetto al 2011 (con una punta del − 31% per il terziario), ultimo anno prima dell'inizio della ipertassazione patrimoniale Imu-Tasi. Quanto ai prezzi, secondo l'Istat quelli delle abitazioni esistenti sono scesi del 20% rispetto al periodo pre Imu-Tasi e sono diminuiti anche nel corso del 2016, in controtendenza con gli altri Paesi europei. Senza contare tutte le abitazioni che hanno perso qualsiasi valore perché assolu-tamente prive di mercato, ma che sono comunque soggette a tassazione patrimoniale e che incidono negativamente anche sull'Isee.

Il settore immobiliare, insomma, è ancora in piena sofferenza e il motivo risiede nel fatto che è stato colpito da due crisi: quella internazionale del 2008/2009 e quella, tutta italiana, causata dalla triplicazione della tassazione iniziata nel 2012.

Ma vi sono ulteriori implicazioni da considerare. Gli immobili diversi dalle "prime case" si trovano sullo stesso mercato delle abitazioni principali: se c'è un eccesso di offerta di case diverse dalla prima, oltre che di altri immobili, a motivo di rendimenti schiacciati verso lo zero dall'Imu e dalla Tasi, il calo conseguente nei prezzi degli immobili ha effetto su tutti gli immobili, comprese le "prime case".

Ci troviamo di fronte a un effetto ricchezza negativo, che – secondo i risultati empirici nella letteratura – è generalmente considerato di ampiezza minore rispetto a quello connesso alla ricchezza finanziaria. Tuttavia, esiste in Italia un "effetto leva", dovuto al fatto che più del 70% del patrimonio totale degli italiani è di carattere immobiliare. Stime basate sulla letteratura più recente suggeriscono ad esempio che il calo dei valori immobiliari avvenuto nel 2013 si associ a un calo di 10,5 miliardi di euro nei consumi totali.

Questo computo si basa sul contributo empirico di Paiella (Paiella, M. [2004]. "*Does wealth affect consumption?*" Temi di discussione, Banca d'Italia, 510): l'elasticità dei consumi ri-spetto alla ricchezza immobiliare è stimata in un intervallo tra 0,18 e 0,22. Prendendo il va-lore medio di 0,2, ciò implica che – per una diminuzione del 10% nel valore degli immobili – i consumi diminuiscano del 2%. La Banca d'Italia stima che nel 2013 gli immobili siano cala-ti di valore del 4,4%: dal momento che i consumi individuali nel 2013 sono all'incirca 1.200 miliardi, e utilizzando l'elasticità di 0,2 stimata da Paiella, si può concludere come questo calo del 4,4% si associ a un calo dei consumi pari allo 0,88%: in termini assoluti si tratta di

un calo di 10,5 miliardi di euro, cioè un importo vicino a quello necessario per finanziare il *bonus* fiscale degli 80 euro. Si tenga peraltro presente che il *bonus* degli 80 euro costituisce un aumento del reddito disponibile, che non necessariamente si traduce in un pari aumento di consumo.

In questo quadro, è essenziale avviare un'opera di correzione delle politiche tributarie iniziate nel 2011, riducendo progressivamente un carico impositivo che comprime la crescita, l'occupazione e i consumi.

Una priorità: la riduzione della tassazione sugli immobili non abitativi locati

In via prioritaria, Confedilizia ha da tempo segnalato al Parlamento e al Governo un'urgenza, quella della tassazione sui locali commerciali, che potrebbero essere salvati dall'abbandono e dal degrado attraverso l'estensione della cedolare secca sugli affitti, che tanti benefici ha portato nel settore abitativo.

L'onere di questa misura – puramente teorico, visto che sarebbe compensato dal gettito fiscale determinato dalle nuove iniziative commerciali – è inferiore al 2 per cento del totale del gettito dell'imposizione sugli immobili.

La situazione di questo comparto è molto grave, e per giunta acuita dalla presenza di una legislazione vincolistica fuori dal tempo, che impedisce a proprietari e inquilini di concordare liberamente gli elementi essenziali del contratto e che quindi non consente l'incontro di domanda ed offerta, in particolare in caso di apertura di nuove attività da parte di giovani.

Le imposte, statali e locali (ben 7), raggiungono un livello tale da erodere fino all'80% del canone di locazione, anche per via della irrisoria deduzione Irpef per le spese, pari al 5%. Percentuale di imposizione che arriva a sfiorare il 100% se alle tasse si aggiungono, appunto, le spese (di manutenzione, assicurative ecc.) alle quali il proprietario-locatore deve comunque far fronte e l'eventuale indennità di avviamento (senza considerare il rischio morosità).

Vi è già da tempo l'esigenza di procedere ad una significativa detassazione degli immobili locati ad uso non abitativo, in assenza della quale il commercio è destinato a morire e le strade delle nostre città sono condannate ad una desertificazione foriera di degrado e di criminalità. Si tratta di una richiesta fatta propria anche dalle più importanti organizzazioni dei commercianti, che hanno compreso che l'unico modo per creare disponibilità, a costi il più possibile contenuti, di locali per negozi e botteghe, è restituire un minimo di redditività all'investimento in immobili commerciali. Hanno, dunque, correttamente individuato nel

Fisco – vero azionista di maggioranza dei contratti di locazione non abitativa – l'elemento disturbatore di una virtuosa dinamica economica di cui sono protagonisti i piccoli risparmiatori in veste di proprietari/locatori e i piccoli operatori economici in qualità di inquilini.

Altri interventi necessari

La normativa tributaria riguardante gli immobili necessiterebbe, naturalmente, di numerosi altri interventi, finalizzati sia a ridurre il peso fiscale sul settore sia a correggere distorsioni esistenti nell'ordinamento. Di seguito si indicano solo sommariamente alcune criticità bisognose di un intervento normativo.

Stabilizzazione cedolare secca al 10%

Il 31 dicembre 2017 scadrà il periodo di applicazione della misura del 10% della cedolare secca sugli affitti, applicabile per i contratti di locazione a canone calmierato nei Comuni ad alta tensione abitativa nonché in quelli nei quali sia stato deliberato, negli ultimi 5 anni a far data dal 28.5.'14, lo stato di emergenza per eventi calamitosi.

Considerata l'importanza – anche sociale – che riveste l'agevolazione in questione, si ritiene necessario stabilizzare l'aliquota del 10%, estendendo la sua applicabilità all'intero territorio nazionale.

Tassazione canoni non riscossi

Si rende necessario – al minimo – uniformare la disciplina relativa alle locazioni non abitative a quella riguardante le locazioni abitative in materia di imposizione sui canoni non percepiti. Solo per le prime, infatti, il principio generale della tassazione dei redditi fondiari indipendentemente dalla loro percezione (art. 26 Tuir), è stato parzialmente derogato dalla norma (art. 8, legge n. 431/'98) che dispone che i redditi derivanti da contratti di locazione di immobili ad uso abitativo, se non percepiti, non concorrono a formare il reddito dal momento della conclusione del procedimento giurisdizionale di convalida di sfratto per morosità del conduttore; e che, per le imposte versate sui canoni venuti a scadenza e non percepiti come da accertamento avvenuto nell'ambito del procedimento giurisdizionale di convalida di sfratto per morosità, sia riconosciuto un credito di imposta di pari ammontare.

Deduzione redditi da locazione

Fino a qualche anno fa la deduzione Irpef per i redditi da locazione (a titolo di imposte e tasse, manutenzione ordinaria e straordinaria ecc.) era fissata al 25%. Successivamente è stata ridotta al 15%. Infine, la legge n. 92 del 2012 di riforma del mercato del lavoro l'ha

portata, a decorrere dal 2013, al 5%. Ciò che, in sostanza, ha condotto alla conseguenza della tassazione delle spese del proprietario-locatore.

Si rende necessario ripristinare la misura del 15%, peraltro essa stessa insufficiente a coprire gli oneri a carico dei contribuenti interessati.

Irpef immobili non locati

E' necessario eliminare la previsione normativa, di particolare iniquità, introdotta dalla legge di stabilità per l'anno 2014 (art. 1, commi 717 e 718, legge n. 147/'13), che prevede che il reddito degli immobili ad uso abitativo non locati situati nello stesso Comune nel quale si trova l'immobile adibito ad abitazione principale, assoggettati all'Imu, concorra alla formazione della base imponibile Irpef e delle relative addizionali in misura del 50%.

Gli immobili in questione, infatti, sono generalmente quelli che i proprietari (nella stragrande maggioranza dei casi piccoli proprietari) intendono concedere in locazione, senza peraltro trovare – soprattutto in questo periodo di crisi – inquilini disponibili ovvero che vorrebbero vendere, senza peraltro trovare acquirenti disponibili. E su tali immobili improduttivi di reddito i locatori sono costretti, oltre a pagare l'Imu e la Tasi (solitamente l'aliquota massima), a sostenere tutti gli altri oneri propri di un bene come questo: contributi condominiali, spese di manutenzione ecc.

Estensione dell'esenzione Imu per gli immobili invenduti

E' necessario estendere il campo di applicazione dell'esenzione Imu prevista per gli immobili delle imprese di costruzione che le imprese stesse non riescano né a vendere né a locare. L'esenzione – per ragioni di uniformità e, di conseguenza, di equità – dovrebbe essere prevista anche nei confronti delle società che effettuano attività di compravendita e locazione di immobili, per le quali pure si pone il problema del costo rappresentato dal pagamento di un'imposta su beni che i soggetti in questione non riescono né a vendere né a locare.

TAX POLICY AND ECONOMIC GROWTH: DOES IT REALLY MATTER?

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Tax Policy and Economic Growth: Does It Really Matter?*

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Abstract

We challenge the "OECD view" (Arnold *et al.* 2011) according to which a shift from direct to indirect taxation is associated with higher long-run economic growth. We study the relationships between per capita GDP, overall tax revenue and tax composition (in particular direct vs. indirect taxation). We can replicate the findings in Arnold *et al.* when focusing on the same sample of countries and time period, but not when adopting more cautious estimates of the standard errors. The results are not robust to adding countries and/or extending the time period under consideration. They also differ in the short- and long-run.

Keywords: Economic growth, taxation, tax mix, OECD countries.

JEL classification: E62, H20, P50

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1 Introduction

In a time of tight public finance conditions, frequently because of the high level of sovereign debts, there is a large and expanding debate on the effects of taxation on the level and growth of GDP. Scholars and policy makers alike –for a given level of fiscal pressure– are interested in whether the tax mix, i.e., the distribution of overall tax revenue across different tax sources, has a separate influence on the growth performance of a country. The most influential contribution, on which the OECD has based its policy prescriptions in the last years, is a paper by Arnold, Brys, Heady, Johansson, Schwellnus and Vartia published on the *Economic Journal* in 2011 (hereafter ABHJSV). For a sample of 21 OECD countries over the 1971-2004 period, they show that tax revenue is negatively and significantly associated with per capita GDP, while a shift from direct to indirect taxation is positively and significantly correlated with per capita GDP.

In this paper we replicate and test the robustness of these influential results. We first replicate the analysis in ABHJSV using the same sub-sample of OECD countries and the same time period. We estimate the relationships between tax burden, tax mix and per capita GDP, controlling for the standard growth determinants (fixed capital formation, human capital, population growth). Following ABHJSV, we adopt the panel version of an Error Correction Model (ECM) specification, i.e., the Pooled Mean Group Estimator (Pesaran *et al.*, 1999). Our replication exercise confirms the findings of ABHJSV regarding the long-run partial correlations between per capita GDP, tax pressure and the tax mix. However, while ABHJSV do not report the short-run correlations between those variables, we show that in the short run the shift from direct to indirect taxation is not significantly correlated with per capita GDP. The only exception in the short run is a *negative* and significant correlation between taxes on immovable property and per capita GDP.

Second, we check whether –focusing on the same set of countries (21) and the same time period (1971-2004)– the results of ABHJSV are robust to using more conservative estimates of the standard errors, i.e., by clustering them at the country level (Bertrand *et al.* 2004). In this case the only result we can confirm is the negative and significant correlation between per capita GDP and tax revenue in the long run. All the other long-run correlations between the tax mix and GDP are not statistically significant at the ordinary confidence levels.

Since the data in ABHJSV stop well before the economic and financial crisis that started in 2008, it is particularly important to check whether their findings still hold on a longer time period which includes the crisis and the post-crisis period. Also, because of reasons of data availability, the analysis of a longer –and more recent– time period allows us to include a larger set of OECD countries. So, a third step in our analysis is to check the robustness of their results by extending their sample: more precisely, (i) we prolong the ABHJSV sample of countries to the most recent available years, i.e., up to 2014; (ii) we consider the full –and balanced– sample of 34 OECD countries during the 1995-2014 period; (iii) we restrict ourselves to the sample of OECD countries belonging to the Eurozone, again during the 1995-2014 period.[1]

In case (i) –when not clustering the standard errors at the country level– we can confirm the existence of a significant long-run negative correlation between the shift from indirect to direct taxes and GDP growth, which is however of the opposite sign in the

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[1]See Xing (2012) for another robustness exercise which –on a sample restricted to only 17 OECD countries– similarly casts some doubts on the relationship between tax structure and growth.

short run. Interestingly, property taxation is positively correlated with per capita GDP in the long run, while the opposite holds in the short run. On the other hand, the long-run correlation between tax revenue and GDP growth is only significant in one specification over five. However, when we cluster the standard errors at the country level, none of these long-run correlations is significant.

Regarding cases (ii) and (iii), neither the correlation of per capita GDP with tax revenue nor the ones with the tax mix are found to be statistically significant. This holds for both the long run and the short run, with and without clustered standard errors. The only noticeable exceptions to this lack of significant results are that –when not clustering the standard errors– a shift from personal to corporate taxation of income is positively and significantly correlated with GDP per capita in the long run, and that a shift from income to property taxes is negatively associated to per capita GDP in the short run.[2]

The paper is organized as follows: Section 2 presents the data and the empirical strategy, while Section 3 displays our results. Section 4 concludes.

2   Data and Empirical Strategy

We collect economic and fiscal data on the 34 countries that are currently members of the OECD, for the period from 1970 to 2014.[3]

Economic variables include GDP at constant 2010 prices per head of population aged 15-64 years, the investment rate –proxied by the ratio of gross fixed capital formation to real GDP– the stock of human capital –proxied by the average number of years of schooling of the population aged between 15 and 64 years–, and the growth rate of the working age population. All variables come from OECD but the human capital variable which comes from the Barro-Lee (2013) dataset, recently updated up to 2016.

Fiscal data refer to total government and are taken from OECD revenue statistics. As in Arnold (2008), we organize these data as follows: income taxes include categories 1000 (taxes on income, profits and capital gains), 2000 (social security contributions) and 3000 (taxes on payroll and workforce); personal income taxes include categories 1100 (taxes on income, profits and capital gains of individuals), 2000 and 3000.[4] Consumption and property taxes include categories 4000 (taxes on property), 5000 (taxes on good and services) and 6000 (other taxes); consumption taxes in turn include categories 5000 and 6000. Recurrent taxes on immovable property include categories 4100 (recurrent taxes on immovable property) and 4600 (other recurrent taxes on property), while other property taxes include categories from 4200 to 4500 (recurrent taxes on net wealth; estate inheritance and gift taxes; taxes on financial and capital transactions; non recurrent taxes on property). The overall tax burden is computed as the ratio of total tax revenue to GDP, while all the other fiscal variables are expressed as shares over total tax revenue. This allows to estimate the relationship between revenue-neutral tax shifts and GDP per capita. All data are available at yearly frequency.

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[2]When clustering the standard errors the only mildly significant finding is the negative correlation between personal income taxation and per capita GDP in the Eurozone.

[3]The 34 OECD countries are: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Korea (Rep. of), Spain, Sweden, Switzerland, Turkey, United Kingdom and United States.

[4]Corporate income taxes include category 1200 (taxes taxes on income, profits and capital gains of corporates).

We follow the estimation methodology proposed by ABHJSV within a panel Error Correction framework:

$$\Delta log Y_{i,t} = a_{o,i} + \phi_i log Y_{i,t-1} + a_{1,i} log K_{i,t} + a_{2,i} log H_{i,t} + a_{3,i} n_{i,t} + \sum a_{j,i} FISCAL_{i,t} + F_i(t) +$$

$$b_{1,i} \Delta log K_{i,t} + b_{2,i} \Delta log H_{i,t} + b_{3,i} \Delta n_{i,t} + \sum b_{j,i} \Delta FISCAL_{i,t} + \epsilon_{i,t} \qquad (1)$$

where, for each country i and in each year t, Y is real GDP per head of population, K is the investment rate, H is the stock of human capital, and n is the growth rate of the working age population. $FISCAL$ is a vector which refers to a set of tax structure variables: the overall tax burden, income taxes, personal income taxes, corporate income taxes, consumption and property taxes (taken together), consumption taxes, property taxes, recurrent taxes on immovable property and other property taxes. The parameters a_0 are a set of country fixed effects and $F_i(t)$ is a set of five-year dummies, whose coefficients are country specific.[5] The terms with coefficients starting with "a" and "b" capture long-term and short-term dynamics respectively, while $\epsilon_{i,t}$ is the error term.[6]

Equation (1) is estimated by means of the Pooled Mean Group (PMG) estimator proposed by Pesaran *et al.* (1999), by allowing short-run coefficients, the speed of adjustment and error variances to differ across countries, but imposing homogeneity on long-run slope coefficients. Cross-sectional dependence is also taken into account, given that the countries analyzed are characterized by a high degree of economic integration.[7]

We perform four sets of estimates. First, we replicate the estimation proposed by ABHJSV (page F63) for the same sample of 21 OECD countries and the same time period 1971-2004.[8] Second, we prolong the time period up to 2014, using the same sample of countries. Third, we perform our estimations on an expanded dataset composed by all the 34 OECD countries, for the period 1995-2014.[9] Finally, our empirical analysis is performed on a reduced set of countries, i.e., OECD countries that are current members of the Eurozone.[10]

3 Empirical Results

Results are presented in Tables 1-8. Odd-numbered tables show results with conventional standard errors, while in even-numbered tables –in order not to inflate the precision of our estimates because of potential within-group correlation of the error term– we cluster

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[5]We include those country-specific five-year dummies to replicate the preferred specification by ABHJSV (page F77).

[6]Following ABHJSV, estimates of steady state coefficients as well as of the parameters of the production function are computed as the ratio between a and ϕ. The estimation results presented in the paper contain the steady state effects calculated in this way.

[7]Results are obtained by means of the very recent Stata routine `xtdcee2`, proposed by Ditzen (2016), which estimates a heterogeneous coefficient model in a dynamic panel with dependence between cross-sectional units. This routine is the evolution of the `xtpmg` Stata command (Blackburne and Frank, 2007) that was used by ABHJSV.

[8]These countries are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany (Western Germany, up to 1989 only), Greece, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States.

[9]Since for some countries OECD fiscal data are only available from 1995 we obtain a balanced panel by focusing on the 1995-2014 period.

[10]These countries are: Austria, Belgium, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Slovakia, Slovenia and Spain. The time period is 1995-2014.

the standard errors at the country level (Bertrand *et al.* 2004). Since the PMG estimator allows for country-specific short-run dynamics, there is a difference in the estimated conventional and clustered standard errors only for the *long-run* coefficients. Hence in odd-numbered tables we display both long-run and short-run results, while in even-numbered tables we only show the long-run ones.

[Tables 1 and 2 about here]

Table 1 replicates the estimation proposed by ABHJSV (page F63) for the same sample of 21 countries and the same time period 1971-2004.[11] In line with what they found, we identify a negative and significant long-run correlation between the tax burden and per capita GDP, and a positive and significant long-run correlation between a shift from income to consumption and property taxes and growth.[12] Differently from ABHJSV —who find a negative and significant correlation— a shift to corporate income taxation is not significantly correlated with per capita GDP.

Interestingly, in the short run (not reported by ABHJSV) the tax burden is negatively and significantly correlated with per capita GDP only in three specifications over five, while the only significant tax shift is the one towards taxes on immovable property, which in fact is *negatively* correlated with per capita GDP.

In Table 2 the only result robust to clustering is the negative relationship between overall tax revenue and per capita GDP in the long run.[13]

[Tables 3 and 4 about here]

Estimates in Tables 3 and 4 are based on the same sample of countries considered by ABHJSV, but the time period is prolonged up to 2014, with conventional and clustered standard errors respectively. In Table 3 only in one specification out of five the negative long-run correlation between the tax burden and per capita GDP is found to be (mildly) significant. We can confirm the positive long-run correlation of per capita GDP with a shift from income taxation to consumption and property taxation. However, when disentangling personal and corporate income taxes, a shift to the former is negatively associated with GDP, while the latter is positively correlated with GDP. Moving to the short run, the tax burden is negatively and significantly associated with GDP in all specifications, while correlations with the tax mix run contrary to what found in the long run: a shift from consumption and property taxation to income taxation (both personal and corporate) is *positively* and significantly correlated with GDP.[14] In Table 4 we find that none of these correlations is significant.

[Tables 5 and 6 about here]

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[11]We realized that for this time period OECD fiscal data are available also for Luxembourg, Korea (Rep. of) and Turkey. We check that results in Table 1 are confirmed when we include these countries, both one at a time and all together.

[12]When separating out consumption and property taxes, only a shift from income to property taxation is positively significantly correlated with GDP.

[13]One must notice that —when clustering the standard errors— the coefficient on the accumulation of physical capital in the long run is no longer statistically significant.

[14]The human capital variable enters with a positive sign in the regressions but is not statistically significant at ordinary confidence levels. This result is similar to Mankiw *et al.* (1992) and Islam (1995).

Tables 5 and 6 show results for an expanded dataset composed by all the 34 OECD countries, for the period 1995-2014. We find that the tax burden is not significantly associated with economic growth in the long run, and that it is negatively associated with economic growth in the short run only in two out of five specifications. A shift from income to consumption and property taxes is not significantly related to per capita GDP in the long run, while the association between these two variables in the short run turns out to be negative –as already found in Table 3. Interestingly, a shift from consumption and property taxes to corporate taxation of income is positively and significantly correlated with GDP per capita in the long run. In Table 6 we cluster the standard errors at the country level. We do not find any significant relationship.

[Tables 7 and 8 about here]

Finally, Table 7 and Table 8 show results only for the OECD countries that are current members of the Eurozone, again for the period 1995-2014. In Table 7 we find a negative and significant correlation between the overall tax burden and per capita GDP only in one specification over five in the long run (column 2) and in two specifications in the short run (columns 1 and 5). Regarding the tax mix, the shift from consumption and property taxation to income is not statistically significant in the long run: in fact, it is a combination between a negative and significant correlation of per capita GDP with personal income taxation and a positive and significant correlation with corporate taxation. In the short run the only significant correlation we detect is the negative one between a shift from income to property taxes driven by immovable property and GDP, similarly to what found in Tables 1, 3 and 5. In Table 8, when we cluster the standard errors at the country level, the only significant result is that shifting away from personal taxes is related to higher economic growth.

4   Conclusions

This paper challenges the "OECD view", supported by the findings in ABHJSV, according to which in the long run the tax burden is negatively related with economic growth, while a shift from direct to indirect taxes is associated with higher economic growth. We show that these relationships hold true only in the long run and in the same sample of countries and the same time period considered by ABHJSV. However, these same findings are not robust to more cautious estimates of the standard errors, i.e., when clustering them at the country level. In this case, the only result which is confirmed is the negative relationship between tax revenue and economic growth, while the tax mix is no longer related to economic growth. Moreover, the results in ABHJSV are generally not robust to prolonging the time period under consideration, to enlarging the set of OECD countries, to focusing on the (possibly) more homogeneous Eurozone, and to adopting more cautious estimates of the standard errors.

In addition to replicating and checking the robustness of previous results, we also provide some interesting new findings about the differences in the long and short run correlations between fiscal policy and economic growth. Even in the same sample of countries and the same time period considered by ABHJSV, a tax shift from direct to indirect taxes has no relationship with economic growth in the short run. Though neglected by ABHJSV, short-run correlations might be very important when assessing the political feasibility of economic reforms, because voters are more likely to care about

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short – rather than long– run "effects" (Castanheira *et al.* 2012). This is particularly true in times of economic instability, as reflected by the growing consensus obtained by populist parties which base their platforms on short-term protection policies and on "pandering" to what people want (Canes-Wrone *et al.* 2001).

Interestingly, in the short run we find a negative and significant correlation between a shift from income taxes to recurrent taxes on immovable property and economic growth, which runs contrary to the standard "OECD view" and the recommendations by the European Commission itself (European Commission Services 2006).[15]

From a theoretical viewpoint, the differences we find in the short-run and long-run correlations of economic growth and taxation might be connected with the differential salience of taxes along different time horizons (Chetty *et al.* 2009). This is a promising avenue for future research.

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[15]In fact, to date those policy recommendations on efficient tax shifts have been only very partially implemented by developed countries. On EU countries see e.g. Bernardi (2013).

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Table 1: Taxation and GDP per capita: 21 OECD countries, 1971-2004.

	(1)	(2)	(3)	(4)	(5)
Long-run parameters					
Convergence parameter (ϕ)	-0.173*** (0.037)	-0.216*** (0.039)	-0.170*** (0.037)	-0.179*** (0.038)	-0.148*** (0.038)
Physical capital (a_{1i})	0.220*** (0.074)	0.174*** (0.064)	0.217*** (0.075)	0.244*** (0.072)	0.282*** (0.091)
Human capital (a_{2i})	1.483*** (0.204)	1.499*** (0.164)	1.024*** (0.177)	0.991*** (0.170)	0.911*** (0.218)
Population growth (a_{3i})	-13.253*** (3.789)	-8.335*** (2.496)	-13.450*** (3.889)	-12.184*** (3.583)	-14.070*** (4.776)
Overall tax burden (a_{4i})	-0.018*** (0.005)	-0.016*** (0.004)	-0.018*** (0.005)	-0.015*** (0.005)	-0.016** (0.006)
Income taxes (a_{5i})	-0.011** (0.004)	-	-	-	-
Personal income taxes (a_{6i})	-	-0.011*** (0.003)	-	-	-
Corporate income taxes (a_{7i})	-	0.005 (0.004)	-	-	-
Consumption and property taxes (a_{8i})	-	-	0.010** (0.004)	-	-
Consumption taxes (a_{9i})	-	-	-	0.006 (0.004)	0.007 (0.007)
Property taxes (a_{10i})	-	-	-	0.020*** (0.01)	-
Property taxes: immovable property (a_{11i})	-	-	-	-	0.034* (0.019)
Property taxes: others (a_{12i})	-	-	-	-	0.020** (0.009)
Short-run parameters					
Overall tax burden (b_{4i})	-0.002* (0.001)	-0.001 (0.001)	-0.001* (0.001)	-0.002 (0.001)	-0.003*** (0.001)
Income taxes (b_{5i})	0.001 (0.000)	-	-	-	-
Personal income taxes (b_{6i})	-	0.000 (0.000)	-	-	-
Corporate income taxes (b_{7i})	-	0.001 (0.000)	-	-	-
Consumption and property taxes (b_{8i})	-	-	-0.000 (0.000)	-	-
Consumption taxes (b_{9i})	-	-	-	0.000 (0.000)	0.000 (0.001)
Property taxes (b_{10i})	-	-	-	-0.002 (0.002)	-
Property taxes: immovable property (b_{11i})	-	-	-	-	-0.025* (0.014)
Property taxes: others (b_{12i})	-	-	-	-	0.003 (0.002)
Five-year dummy variables	Yes	Yes	Yes	Yes	Yes
Constant	0.110*** (0.005)	0.131*** (0.008)	0.109*** (0.004)	0.109*** (0.004)	0.094*** (0.004)
Observations	693	675	693	693	693
R-squared	0.81	0.82	0.81	0.82	0.84
Number of groups	21	21	21	21	21
Revenue-neutrality achieved by adjusting	*Consumption and Property taxes*	*Consumption and Property taxes*	*Income taxes*	*Income taxes*	*Income taxes*

Notes: Estimates are obtained by means of the Pooled Mean Group estimator proposed by Pesaran *et al.* (1999) within a panel error-correction framework. All columns include measures of the accumulation of physical and human capital and population growth as basic growth determinants as well as the overall tax burden as a control variable. They also report the effects of various revenue-neutral tax shifts. All economic variables are in logs. All the variables in the short run are in first difference. The short-run coefficients related to economic variables (b_{1i}, b_{2i} and b_{3i}) are not reported. Standard errors are shown in parentheses: * significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent.

Table 2: Taxation and GDP per capita: 21 OECD countries, 1971-2004, clustered standard errors.

	(1)	(2)	(3)	(4)	(5)
Convergence parameter (ϕ)	-0.173**	-0.216**	-0.170**	-0.179**	-0.148*
	(0.078)	(0.099)	(0.079)	(0.082)	(0.078)
Physical capital (a_{1i})	0.220	0.174	0.217	0.244	0.282
	(0.169)	(0.143)	(0.172)	(0.167)	(0.217)
Human capital (a_{2i})	1.483***	1.499***	1.024***	0.991***	0.911***
	(0.391)	(0.352)	(0.282)	(0.276)	(0.348)
Population growth (a_{3i})	-13.253*	-8.335*	-13.450*	-12.184*	-14.070*
	(6.781)	(4.953)	(7.010)	(6.704)	(8.531)
Overall tax burden (a_{4i})	-0.018**	-0.016**	-0.018**	-0.015**	-0.016
	(0.008)	(0.007)	(0.009)	(0.008)	(0.010)
Income taxes (a_{5i})	-0.011	-	-	-	-
	(0.009)				
Personal income taxes (a_{6i})	-	-0.011	-	-	-
		(0.009)			
Corporate income taxes (a_{7i})	-	0.005	-	-	-
		(0.006)			
Consumption and property taxes (a_{8i})	-	-	0.010	-	-
			(0.009)		
Consumption taxes (a_{9i})	-	-	-	0.006	0.007
				(0.009)	(0.009)
Property taxes (a_{10i})	-	-	-	0.020	-
				(0.021)	
Property taxes: immovable property (a_{11i})	-	-	-	-	0.034
					(0.030)
Property taxes: others (a_{12i})	-	-	-	-	0.020
					(0.027)
Observations	693	675	693	693	693
R-squared	0.806	0.821	0.806	0.820	0.839
Number of groups	21	21	21	21	21
Revenue-neutrality achieved by adjusting	*Consumption and Property taxes*	*Consumption and Property taxes*	*Income taxes*	*Income taxes*	*Income taxes*

Notes: Estimates are obtained by means of the Pooled Mean Group estimator proposed by Pesaran *et al.* (1999) within a panel error-correction framework. All columns include measures of the accumulation of physical and human capital and population growth as basic growth determinants as well as the overall tax burden as a control variable. They also report the effects of various revenue-neutral tax shifts. All economic variables are in logs. Clustered standard errors are shown in parentheses: * significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent.

Table 3: Taxation and GDP per capita: 21 OECD countries, 1971-2014.

	(1)	(2)	(3)	(4)	(5)
Long-run parameters					
Convergence parameter (ϕ)	-0.122***	-0.122***	-0.122***	-0.130***	-0.106***
	(0.022)	(0.021)	(0.022)	(0.022)	(0.022)
Physical capital (a_{1i})	0.199**	0.161	0.197**	0.227**	0.213*
	(0.100)	(0.103)	(0.100)	(0.096)	(0.125)
Human capital (a_{2i})	-0.437	-0.385	-0.443	-0.345	-0.413
	(0.544)	(0.518)	(0.546)	(0.516)	(0.638)
Population growth (a_{3i})	-13.635***	-10.351***	-13.704***	-11.722***	-12.913***
	(3.716)	(3.363)	(3.733)	(3.386)	(4.251)
Overall tax burden (a_{4i})	-0.005	-0.011*	-0.006	-0.005	-0.008
	(0.006)	(0.006)	(0.006)	(0.006)	(0.008)
Income taxes (a_{5i})	-0.013**	-	-	-	-
	(0.006)				
Personal income taxes (a_{6i})	-	-0.018***	-	-	-
		(0.006)			
Corporate income taxes (a_{7i})	-	0.015**	-	-	-
		(0.007)			
Consumption and property taxes (a_{8i})	-	-	0.011**	-	-
			(0.006)		
Consumption taxes (a_{9i})	-	-	-	0.007	0.005
				(0.006)	(0.007)
Property taxes (a_{10i})	-	-	-	0.020**	-
				(0.010)	
Property taxes: immovable property (a_{11i})	-	-	-	-	-0.003
					(0.021)
Property taxes: others (a_{12i})	-	-	-	-	0.034**
					(0.015)
Short-run parameters					
Overall tax burden (b_{4i})	-0.004***	-0.004***	-0.004***	-0.004***	-0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Income taxes (b_{5i})	0.003***	-	-	-	-
	(0.001)				
Personal income taxes (b_{6i})	-	0.001**	-	-	-
		(0.001)			
Corporate income taxes (b_{7i})	-	0.003***	-	-	-
		(0.001)			
Consumption and property taxes (b_{8i})	-	-	-0.003***	-	-
			(0.001)		
Consumption taxes (b_{9i})	-	-	-	-0.002**	-0.001**
				(0.001)	(0.001)
Property taxes (b_{10i})	-	-	-	-0.004*	-
				(0.002)	
Property taxes: immovable property (b_{11i})	-	-	-	-	-0.017**
					(0.008)
Property taxes: others (b_{12i})	-	-	-	-	0.002
					(0.003)
Five-year dummy variables	Yes	Yes	Yes	Yes	Yes
Constant	0.604***	0.635***	0.462***	0.456***	0.416***
	(0.010)	(0.011)	(0.010)	(0.009)	(0.008)
Observations	900	881	900	900	899
R-squared	0.828	0.855	0.828	0.837	0.853
Number of groups	21	21	21	21	21
Revenue-neutrality achieved by adjusting	Consumption and Property taxes	Consumption and Property taxes	Income taxes	Income taxes	Income taxes

Notes: Estimates are obtained by means of the Pooled Mean Group estimator proposed by Pesaran *et al.* (1999) within a panel error-correction framework. All columns include measures of the accumulation of physical and human capital and population growth as basic growth determinants as well as the overall tax burden as a control variable. They also report the effects of various revenue-neutral tax shifts. All economic variables are in logs. All the variables in the short run are in first difference. The short-run coefficients related to economic variables (b_{1i}, b_{2i} and b_{3i}) are not reported. Standard errors are shown in parentheses: * significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent.

Table 4: Taxation and GDP per capita: 21 OECD countries, 1971-2014, clustered standard errors.

	(1)	(2)	(3)	(4)	(5)
Convergence parameter (ϕ)	-0.122***	-0.122***	-0.122***	-0.130***	-0.106***
	(0.038)	(0.035)	(0.039)	(0.039)	(0.036)
Physical capital (a_{1i})	0.199	0.161	0.197	0.227	0.213
	(0.214)	(0.215)	(0.214)	(0.210)	(0.275)
Human capital (a_{2i})	-0.437	-0.385	-0.443	-0.345	-0.413
	(0.724)	(0.811)	(0.732)	(0.690)	(0.857)
Population growth (a_{3i})	-13.635**	-10.351***	-13.704**	-11.722**	-12.913**
	(5.943)	(3.715)	(5.899)	(4.720)	(5.775)
Overall tax burden (a_{4i})	-0.005	-0.011	-0.006	-0.005	-0.008
	(0.008)	(0.009)	(0.008)	(0.008)	(0.009)
Income taxes (a_{5i})	-0.013	-	-	-	-
	(0.010)				
Personal income taxes (a_{6i}	-	-0.018	-	-	-
		(0.013)			
Corporate income taxes (a_{7i})	-	0.015	-	-	-
		(0.012)			
Consumption and property taxes (a_{8i})	-	-	0.011	-	-
			(0.010)		
Consumption taxes (a_{9i})	-	-	-	0.007	0.005
				(0.009)	(0.011)
Property taxes (a_{10i})	-	-	-	0.020	-
				(0.025)	
Property taxes: immovable property (a_{11i})	-	-	-	-	-0.003
					(0.027)
Property taxes: others (a_{12i})	-	-	-	-	0.034
					(0.044)
Observations	900	881	900	900	899
R-squared	0.828	0.855	0.828	0.837	0.853
Number of groups	21	21	21	21	21
Revenue-neutrality achieved by adjusting	*Consumption and Property taxes*	*Consumption and Property taxes*	*Income taxes*	*Income taxes*	*Income taxes*

Notes: Estimates are obtained by means of the Pooled Mean Group estimator proposed by Pesaran *et al.* (1999) within a panel error-correction framework. All columns include measures of the accumulation of physical and human capital and population growth as basic growth determinants as well as the overall tax burden as a control variable. They also report the effects of various revenue-neutral tax shifts. All economic variables are in logs. Clustered standard errors are shown in parentheses: * significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent.

Table 5: Taxation and GDP per capita: all 34 OECD countries, 1995-2014.

	(1)	(2)	(3)	(4)	(5)
Long-run parameters					
Convergence parameter (ϕ)	-0.181***	-0.159***	-0.144***	-0.117**	-0.104**
	(0.045)	(0.047)	(0.040)	(0.048)	(0.049)
Physical capital (a_{1i})	0.645***	0.711***	0.735***	0.752***	0.593**
	(0.163)	(0.202)	(0.202)	(0.278)	(0.288)
Human capital (a_{2i})	0.643***	0.988***	0.589*	0.923**	1.020**
	(0.224)	(0.269)	(0.343)	(0.396)	(0.480)
Population growth (a_{3i})	-6.521*	-8.254*	-8.334*	-10.283	-9.820
	(3.668)	(4.294)	(4.603)	(6.597)	(7.474)
Overall tax burden (a_{4i})	-0.000	-0.003	0.002	-0.004	-0.005
	(0.007)	(0.008)	(0.009)	(0.012)	(0.014)
Income taxes (a_{5i})	0.002	-	-	-	-
	(0.005)				
Personal income taxes (a_{6i})	-	-0.014	-	-	-
		(0.009)			
Corporate income taxes (a_{7i})	-	0.022**	-	-	-
		(0.010)			
Consumption and Property taxes (a_{8i})	-	-	-0.000	-	-
			(0.006)		
Consumption taxes (a_{9i})	-	-	-	-0.010	-0.003
				(0.009)	(0.011)
Property taxes (a_{10i})	-	-	-	0.019	-
				(0.017)	
Property taxes: immovable property (a_{11i})	-	-	-	-	-0.049
					(0.046)
Property taxes: others (a_{12i})	-	-	-	-	0.018
					(0.019)
Short-run parameters					
Overall tax burden (b_{4i})	-0.003	-0.005***	-0.003	-0.002	-0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Income taxes (b_{5i})	0.003	-	-	-	-
	(0.002)				
Personal income taxes (b_{6i})	-	-0.000	-	-	-
		(0.002)			
Corporate income taxes (b_{7i})	-	0.003	-	-	-
		(0.002)			
Consumption and Property taxes (b_{8i})	-	-	-0.003*	-	-
			(0.002)		
Consumption taxes (b_{9i})	-	-	-	-0.002*	-0.002
				(0.001)	(0.001)
Property taxes (b_{10i})	-	-	-	-0.016**	-
				(0.008)	
Property taxes: immovable property (b_{11i})	-	-	-	-	-0.100***
					(0.037)
Property taxes: others (b_{12i})	-	-	-	-	0.007
					(0.008)
Five-year dummy variables	Yes	Yes	Yes	Yes	Yes
Constant	0.085***	0.050***	0.051***	-0.004	0.019
	(0.016)	(0.016)	(0.017)	(0.013)	(0.012)
Observations	671	631	671	671	670
R-squared	0.883	0.915	0.880	0.903	0.924
Number of groups	34	32	34	34	34
Revenue-neutrality achieved by adjusting	*Consumption and Property taxes*	*Consumption and Property taxes*	*Income taxes*	*Income taxes*	*Income taxes*

Notes: Estimates are obtained by means of the Pooled Mean Group estimator proposed by Pesaran *et al.* (1999) within a panel error-correction framework. All columns include measures of the accumulation of physical and human capital and population growth as basic growth determinants as well as the overall tax burden as a control variable. They also report the effects of various revenue-neutral tax shifts. All economic variables are in logs. All the variables in the short run are in first difference. The short-run coefficients related to economic variables (b_{1i}, b_{2i} and b_{3i}) are not reported. Standard errors are shown in parentheses: * significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent.

Table 6: Taxation and GDP per capita: 34 OECD countries, 1995-2014, clustered standard errors.

	(1)	(2)	(3)	(4)	(5)
Convergence parameter (ϕ)	-0.181**	-0.159**	-0.181**	-0.117	-0.104
	(0.092)	(0.074)	(0.086)	(0.085)	(0.094)
Physical capital (a_{1i})	0.645*	0.711*	0.639*	0.752	0.593
	(0.380)	(0.384)	(0.157)	(0.613)	(0.712)
Human capital (a_{2i})	0.643*	0.988**	0.711	0.923	1.020
	(0.368)	(0.419)	(0.496)	(0.775)	(1.100)
Population growth (a_{3i})	-6.521	-8.254	-6.546	-10.283	-9.820
	(5.333)	(6.135)	(4.827)	(9.642)	(13.726)
Overall tax burden (a_{4i})	-0.000	-0.003	0.000	-0.004	-0.005
	(0.011)	(0.017)	(0.011)	(0.019)	(0.026)
Income taxes (a_{5i})	0.002	-	-	-	-
	(0.010)				
Personal income taxes (a_{6i}	-	-0.014	-	-	-
		(0.015)			
Corporate income taxes (a_{7i})	-	0.022	-	-	-
		(0.022)			
Consumption and property taxes (a_{8i})	-	-	-0.001	-	-
			(0.009)		
Consumption taxes (a_{9i})	-	-	-	-0.010	-0.003
				(0.019)	(0.024)
Property taxes (a_{10i})	-	-	-	0.019	-
				(0.031)	
Property taxes: immovable property (a_{11i})	-	-	-	-	-0.049
					(0.074)
Property taxes: others (a_{12i})	-	-	-	-	0.018
					(0.044)
Observations	671	631	671	671	670
R-squared	0.880	0.920	0.880	0.900	0.920
Number of groups	34	34	34	34	34
Revenue-neutrality achieved by adjusting	*Consumption and Property taxes*	*Consumption and Property taxes*	*Income taxes*	*Income taxes*	*Income taxes*

Notes: Estimates are obtained by means of the Pooled Mean Group estimator proposed by Pesaran *et al.* (1999) within a panel error-correction framework. All columns include measures of the accumulation of physical and human capital and population growth as basic growth determinants as well as the overall tax burden as a control variable. They also report the effects of various revenue-neutral tax shifts. All economic variables are in logs. Clustered standard errors are shown in parentheses: * significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent.

Table 7: Taxation and GDP per capita: Eurozone countries, 1995-2014.

	(1)	(2)	(3)	(4)	(5)
Long-run parameters					
Convergence parameter (ϕ)	-0.182***	-0.185***	-0.180***	-0.164***	-0.091*
	(0.044)	(0.045)	(0.045)	(0.048)	(0.051)
Physical capital (a_{1i})	0.827***	0.479**	0.827***	0.807***	1.137*
	(0.220)	(0.204)	(0.227)	(0.256)	(0.645)
Human capital (a_{2i})	1.214	0.475	1.225	1.161	0.542
	(0.913)	(0.853)	(0.926)	(1.048)	(2.022)
Population growth (a_{3i})	-11.419**	-9.264*	-11.713**	-13.111*	-20.723
	(5.602)	(4.997)	(5.725)	(6.925)	(16.179)
Overall tax burden (a_{4i})	-0.013	-0.023*	-0.014	-0.017	-0.004
	(0.014)	(0.013)	(0.014)	(0.016)	(0.032)
Income taxes (a_{5i})	-0.012	-	-	-	-
	(0.009)				
Personal income taxes (a_{6i})	-	-0.033***	-	-	-
		(0.012)			
Corporate income taxes (a_{7i})	-	0.029**	-	-	-
		(0.012)			
Consumption and property taxes (a_{8i})	-	-	0.010	-	-
			(0.010)		
Consumption taxes (a_{9i})	-	-	-	0.001	0.022
				(0.014)	(0.033)
Property taxes (a_{10i})	-	-	-	0.022	-
				(0.016)	
Property taxes: immovable property (a_{11i})	-	-	-	-	0.053
					(0.111)
Property taxes: others (a_{12i})	-	-	-	-	0.025
					(0.029)
Short-run parameters					
Overall tax burden (b_{4i})	-0.004*	-0.003	-0.003	-0.004	-0.006**
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
Income taxes (b_{5i})	0.002	-	-	-	-
	(0.002)				
Personal income taxes (b_{6i})	-	0.002	-	-	-
		(0.002)			
Corporate income taxes (b_{7i})	-	-0.000	-	-	-
		(0.003)			
Consumption and property taxes (b_{8i})	-	-	-0.002	-	-
			(0.002)		
Consumption taxes (b_{9i})	-	-	-	-0.002	-0.000
				(0.003)	(0.002)
Property taxes (b_{10i})	-	-	-	-0.025*	-
				(0.013)	
Property taxes: immovable property (b_{11i})	-	-	-	-	-0.178**
					(0.068)
Property taxes: others (b_{12i})	-	-	-	-	0.006
					(0.009)
Five-year dummy variables	Yes	Yes	Yes	Yes	Yes
Constant	-0.016	0.726***	-0.215***	-0.100***	-0.119***
	(0.025)	(0.024)	(0.025)	(0.021)	(0.013)
Observations	296	295	296	296	295
R-squared	0.893	0.930	0.892	0.910	0.929
Number of groups	15	15	15	15	15
Revenue-neutrality achieved by adjusting	*Consumption and Property taxes*	*Consumption and Property taxes*	*Income taxes*	*Income taxes*	*Income taxes*

Notes: Estimates are obtained by means of the Pooled Mean Group estimator proposed by Pesaran *et al.* (1999) within a panel error-correction framework. All columns include measures of the accumulation of physical and human capital and population growth as basic growth determinants as well as the overall tax burden as a control variable. They also report the effects of various revenue-neutral tax shifts. All economic variables are in logs. All the variables in the short run are in first difference. The short-run coefficients related to economic variables (b_{1i}, b_{2i} and b_{3i}) are not reported. Standard errors are shown in parentheses: * significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent.

Table 8: Taxation and GDP per capita: Eurozone countries, 1995-2014, clustered standard errors.

	(1)	(2)	(3)	(4)	(5)
Convergence parameter (ϕ)	-0.185***	-0.185***	-0.180***	-0.164**	-0.091
	(0.064)	(0.063)	(0.065)	(0.074)	(0.089)
Physical capital (a_{1i})	0.827*	0.479	0.827*	0.807	1.137
	(0.453)	(0.493)	(0.480)	(0.551)	(1.314)
Human capital (a_{2i})	1.214	0.475	1.225	1.161	0.542
	(0.783)	(0.792)	(0.767)	(0.983)	(2.229)
Population growth (a_{3i})	-11.419	-9.264	-11.713	-13.111	-20.723
	(7.953)	(7.479)	(8.140)	(9.907)	(23.647)
Overall tax burden (a_{4i})	-0.013	-0.023	-0.014	-0.017	-0.004
	(0.015)	(0.020)	(0.014)	(0.019)	(0.059)
Income taxes (a_{5i})	-0.012	-	-	-	-
	(0.015)				
Personal income taxes (a_{6i}	-	-0.033*	-	-	-
		(0.019)			
Corporate income taxes (a_{7i})	-	0.029	-	-	-
		(0.030)			
Consumption and property taxes (a_{8i})	-	-	0.010	-	-
			(0.015)		
Consumption taxes (a_{9i})	-	-	-	0.001	0.022
				(0.026)	(0.073)
Property taxes (a_{10i})	-	-	-	0.022	-
				(0.029)	
Property taxes: immovable property (a_{11i})	-	-	-	-	0.053
					(0.137)
Property taxes: others (a_{12i})	-	-	-	-	0.025
					(0.049)
Observations	296	295	296	296	295
R-squared	0.890	0.930	0.890	0.910	0.930
Number of groups	15	15	15	15	15
Revenue-neutrality achieved by adjusting	*Consumption and Property taxes*	*Consumption and Property taxes*	*Income taxes*	*Income taxes*	*Income taxes*

Notes: Estimates are obtained by means of the Pooled Mean Group estimator proposed by Pesaran *et al.* (1999) within a panel error-correction framework. All columns include measures of the accumulation of physical and human capital and population growth as basic growth determinants as well as the overall tax burden as a control variable. They also report the effects of various revenue-neutral tax shifts. All economic variables are in logs. Clustered standard errors are shown in parentheses: * significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent.