Data for research in European business taxation

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Content of the paper

- Interesting tax research issues for EU economies, not systematically addressed by the literature
- Data likely to deliver more reliable, precise answers on un-addressed issues
- SCOPE: derive reliable evidence to better target **tax policy across the EU**
- Use example: literature on firm's capital structure
  - Interesting issues
  - Data

Remaining issues in the literature on taxation and firm's behaviour

1. Heterogeneity of responses to taxation
   - Tax system affects business behaviour (investment, capital structure, avoidance)
   - Different firm can react differently
2. Precise measurement of the effective tax rate
   - Literature has used proxies of the effective marginal tax rate
3. How financial sector is affected by taxes
   - Still very recent, few contributions

Heterogeneity of responses

- Literature derives results for listed, large business
  - ✓ Mainly in US
- European economies characterised by small and medium sized firms (SMEs), privately owned, family owned
  - ✓ UK (2003 - 2010): **5%** of cos paid main statutory rate
  - ✓ Financial intermediation in Euro area **bank-based** for at least ¾ of firms' financing; in US, cos rely more on financial markets (Draghi, 2013)
- Study of heterogeneity of responses to the tax system is important for EU tax policy

Precise measurement of tax rate

- In different research streams (investment, capital structure, avoidance), large variation in magnitude of effects of tax
  - ✓ Investment: Hassett and Hubbard (2002) and Bond and Jing (2012)
  - ✓ FDI: de Mooij and Ederveen (2003), de Mooij and Ederveen (2008), Devereux (2007), Feld *et al.* (2011)
  - ✓ Profit-shifting: de Mooij and Ederveen (2008); Heckemeyer and Overesch (2012).
- Depending on data, identification strategy, control variables employed
- Literature has approximated real, effective tax burden of firm with accounting data or corporate statutory tax rates
  - ✓ Because tax data not available

Financial sector taxation

- Crucial sector for economy, even more for EU
  - ✓ EU productive sector strongly dependent on banks for financing
  - ✓ Financing → Investment → Growth → Employment
- Very little research on effects of tax system on banking industry
  - Incidence: Albertazzi and Gambacorta (2010) , Chiorazzo and Milani (2011), Capelle-Blancard and Havrylchyk (2013a), Capelle-Blancard and Havrylchyk (2013b), Demirgüc-Kunt and Huizinga (1999, 2001), Huizinga *et al.* (2011).
  - Capital structure: Keen and de Mooij (2012)
  - Riskiness: Devereux *et al.* (2013)

An example: literature on firm's capital structure

- Why this choice? So many reasons after financial crisis!
  - Financial crisis taught us
    1. Importance of well-capitalised firms: should better stand a sharp and sudden collapse in credit supply
    2. High leverage correlated with greater output losses in bad times:
       - Davis and Stone (2004): higher debt-equity ratios associated with greater post-crisis output declines
       - IMF (2008): cumulative output loss following periods of financial distress tends to be larger the greater the run-up in nonfinancial corporate debt before the onset of a financial crisis
- Recent surveys within EU indicate that credit is main concern for firms, especially for SMEs
- Impact of regulation on banks' capital structure (Basel III)

Literature on capital structure

- Theory: the value of the firm increases with debt because passive interest is deductible from corporate tax (Modigliani and Miller, 1963)
- Early empirical literature: no evidence of an effect of tax on firm's capital structure (Myers, 1984; Parrino and Weisbach, 1999)
- More recently, agreement on direction of effect: the higher the effective marginal tax rate, the higher leverage (or probability to issue debt vs equity)
- but not on magnitude of effect:
  - De Mooij (2011a) and Feld *et al.* (2013) both find high relative standard deviation of estimated effects

Why different magnitudes?

- Most studies surveyed (1984-2012) employ **publicly available accounting data**
  - Exceptions with tax returns: Gordon and Lee (2001); Dwenger and Steiner (2012)
- Accounting data do not contain info on marginal effective tax rate
  - Net present value of current and expected future taxes on an additional unit of income earned today (Scholes *et al.*, 2008)
- Four solutions in literature:
  1. Statutory corporate tax rates
  2. Average, firm-level effective tax rates
  3. Measure of non-debt tax shields (NDTS) such as loss carry forwards
  4. Simulated marginal tax rates (SMTRs)
- Effective tax rate will be measured with error

Why different magnitudes?

1. Statutory corporate tax rates
   - Cannot account for heterogeneity across firms
     - Same for all companies, unless corporate tax progressive
   - Do not vary much within same country
     - Little statistical power
   - Cross-country comparisons problematic: cannot control for all possible country-differences affecting both tax system and leverage
     - Biases estimates

Why different magnitudes?

2. Average, firm-level effective tax rates

- Accounting tax charge/accounting profits (Lasfer, 1995, Booth *et al.*, 2001)
    - If accounting and tax rules differ, average tax rates may not represent effective tax burden
        - Tax deductions not reported in the accounts (off-balance sheet) such as those for tax shelters could substantially alter the marginal benefit of debt (Graham and Leary, 2011)
- Endogenous: jointly determined with financing decisions. The higher the debt level, the lower the effective tax rate.

Why different magnitudes?

2. Average, firm-level effective tax rates:

- Do not account for fact that marginal tax advantage of debt also depends on firm's future profitability (Graham, 2003; Feld *et al.*, 2013).
- Reflect burden on average dollar of income (Feld *et al.*, 2013) and not on marginal dollar of income

Why different magnitude?

3. Non-debt tax shields (NDTS)

- Firms with sufficient net-operating loss carry-forwards (NOLs) to compensate current taxable income face lower expected tax rate
  - Marginal benefit of debt smaller than suggested by statutory rate
- DeAngelo and Masulis (1980): with realistic tax code provisions (e.g., depreciation allowances, investment tax credits), unique interior optimum leverage decision for each firm
- Could be endogeneous

Why different magnitude?

4. Simulated effective marginal tax rates (SMTRs)

- Shevlin, 1990; Graham, 1996a simulate future income streams using **past, accounting data**
- Apply tax code provisions (incl. NOLs, investment tax credits) to calculate SMTR for year *t*

Why different magnitude?

- Probably closer measures to effective marginal tax rates considered by management of the firm when assessing investment and financing decisions
  - Feld *et al.* (2013): studies employing SMTRs deliver much higher effects of tax on firm's capital structure
    - Alworth and Arachi (2001) for Italian firms (1982-1994)
    - Hartmann-Wendels *et al.* (2012) for German firms (1973-2008)
- Still based on accounting income
  - Blouin *et al.* (2010): many NDTS not recorded on financial statements. Graham's SMTRs could lead to the overestimation of the marginal benefit of debt and hence to the well-known result that firms are under-levered

Solution?

- Employ a DIFF-IN-DIFF approach
  - Treatment group affected by reform; control group not affected
  - Compare difference in behaviour (outcome variable) before and after tax reform
    - Panier *et al.* (2012), Princen (2012)
- Finding right control group daunting task for tax economists:
  - For years tax experts have strongly advised to apply tax reform uniformly to entire economy
    - Reduce tax arbitrage opportunities
    - Reduce complexity
- More realistic solution: tax return data and try to derive reliable measure of effective marginal tax rate
  - Still need to solve endogeneity issues

Heterogeneity

- Literature on firm's capital structure mainly employed COMPUSTAT (or similar)
  - Dataset gathering accounting data for large, listed companies with access to capital markets
  - Until 2010 (Overesch and Voeller, 2010)
- EU economy different
  - Financial markets: EU firms rely on banking system for ¾ of their financing needs (Draghi, 2013)
  - Difficulties in getting credit (more acute for SMEs)
  - Important role for SMEs, employing 75% of workforce (Draghi, 2013)

Heterogeneity – why important?

- Asymmetric information problems could be more severe for SMEs
  - fortunes of the firm closely related to the entrepreneur's
  - good management skills may be scarcer than in a larger company
- Banks would charge higher interest rates or ask for more collateral
- If interest rate is too high or collateral is not available, tax advantage of debt could become irrelevant
- In current economic climate, evidence that SMEs are encountering much more difficulties in securing credit from the banking system

Heterogeneity

- Overesch and Voeller (2010) first to employ AMADEUS, a large dataset gathering accounting information for EU firms
  - Includes listed and non-listed firms
  - Includes SMEs (depending on licence)
  - Includes information on ownership structure
- AMADEUS allowed Overesch and Voeller (2010) and Panier *et al.* (2012) to investigate differential responses of firm's capital structure to tax
  - But opposite results
- Generally, also in AMADEUS, smaller firms under-reported (or more likely to have missing data)

Heterogeneity

- Administrative data
  - Cover entire population
  - Reliable information. In case of tax returns data
    - Effective tax burden of the firm
    - Variation of effective tax burden across different types of firms and across their life-cycle
- Only two studies employing tax return data
  - Gordon and Lee (2001): US tax returns
  - Dwenger and Steiner (2012)
    - Sole study for EU country (Germany)
    - Directly addresses differential responses to tax system: **leverage of SMEs less responsive to tax rate**

Heterogeneity

- Allowance for Corporate Equity (ACE) initially suggested by IFS (1991)
- Recently re-proposed by the IMF and EC (de Mooij, 2011b, Fatica *et al.* 2012, EC, 2012)
- Little discussion on how the ACE is likely to benefit different types of firms.
- In Belgium, the Notional Interest Deduction provides an additional 0.5% interest deduction for small firms
- Santoro (2005) investigates the characteristics of firms claiming the Italian ACE (as opposed to non-ACE-users).
  - Great diversity of responses: probability of claiming ACE positively associated to profitability, size, and location in northern regions, with some smaller companies not claiming the ACE at all.

Taxation of the financial sector

- Another dimension of heterogeneity
- Only Keen and de Mooij (2012)
  - Using Bankscope (accounting data for financial services) for 82 countries (2001-2009)
  - Generally, leverage ratio of financial services firms sensitive to tax
  - Capital-tight banks more insensitive to tax
  - Largest 5% of institutions more insensitive to tax

BANKSCOPE
(Thank you Neils!)

- Bankscope has bad coverage of items which are directly regulated:
  - Tier 1 capital (Basel III)
  - Risk-weighted assets
  - Especially for smaller banks
- Since taxation and regulation often interact, interesting to control for such variables
  - Such data would be available in administrative data collected by central banks

Conclusion

- There exists data allowing for a better
  - understanding of the effects of tax policy (along different dimensions)
  - measurement of effects of tax policy
- Administrative data
  - Tax returns data
  - Data collected by regulatory authorities (such as central banks for financial sector) or national statistical offices
- Some interesting variables could be missing
  - Merge with other data sources: accounting data, data from national firms' surveys
  - Example: UK HMRC Datalab

Conclusion

- Every major EU country has a group of tax economists with very good knowledge of the national and international tax system and excellent analytical skills
- Right data potentially available with national authorities
- Opportunity to derive policy prescriptions which are really evidence based
  - In a moment when challenging economic environment does not leave much room for tax policy that is not based on hard evidence

THANK YOU!