# Accounting Transparency, Tax Pressure and Access to Finance

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# Research Motivation

- For most firms, the degree of accounting **transparency is largely a matter of choice** (Leuz and Wysocki, 2008)
- Firms that choose **greater transparency tend to attract more funding** and face a lower cost of capital (Bradshaw, Bushee and Miller, 2004, amongst others)
- But transparency also has **costs in terms of greater visibility to the tax authorities**, and therefore of reduced ability to elude taxation $\Longrightarrow$ **trade-off**!

# This Paper

- Firms will pick **different points along this trade-off**:
  - higher transparency if they are finance-constrained and/or face more sophisticated investors (i.e. more developed markets)
  - lower transparency if corporate tax rate is high
- Implications for financial access and investment: firms that choose lower transparency will be more severely rationed, hence invest less
- **Novel point**: taxes may not only discourage investment **directly**, but also **indirectly** – by inducing firms to choose lower transparency

# The Model

- Firm has assets in place with future cash flow $A$
- Entrepreneur must borrow $I$ to invest in project yielding $R(I)$, with $R'(I) > 0$ and $R'' < 0$
- Corporate taxes on $R(I)$ are distortionary because only fraction $\gamma$ of investment cost is deductible
- Agency problem limits access to finance: entrepreneur can hide fraction $\phi$ of cash flow $A + R(I)$ and take it as private benefits (with no deadweight loss) $\Longrightarrow$ transparency $= 1 - \phi$
- "Tax-book conformity": what firm discloses to financiers it cannot hide from tax authority

# Time Line

- $t = 0$:
  - entrepreneur commits to transparency level $1 - \overline{\phi} > 0$
- $t = 1$:
  - entrepreneur borrows and invests $I$
  - pledges to repay debt $D$
- $t = 2$:
  - cash flow $A + R(I)$ is realized
  - entrepreneur diverts fraction $\phi \leq \overline{\phi}$ of cash flow
  - he pays taxes $\tau [A + R(I) - \gamma I]$
  - he repays debt $D$ to investors

# Solution by Backward Induction

- at $t = 2$, private benefits are set at highest level consistent with transparency $1 - \overline{\phi}$ chosen at $t = 0$: $\phi = \overline{\phi}$
- at $t = 1$, debt and investment are determined by transparency $1 - \overline{\phi}$ chosen at $t = 0$
- at $t = 0$, transparency $1 - \overline{\phi}$ is chosen as function of taxes, cash flow from assets in place, financial development

# Predictions on Investment and Transparency

Relationship between investments, transparency and taxes:

$$\begin{aligned} I_{ics} &= \delta_c + \delta_s + \alpha_1 \tau_{ics} + \alpha_2 T_{ics} + \alpha_3 T_{ics} \times DEP_s \\ &\quad + \alpha_4 T_{ics} \times FD_c + \gamma X_{ics} + \varepsilon_{ics} \end{aligned}$$

- Investments should be negatively correlated with the firm's tax burden $(\alpha_1 < 0)$ and positively correlated with transparency $(\alpha_2 > 0)$
- Investments in financially-constrained firms should be more strongly correlated with transparency $(\alpha_3 > 0)$
- Effect of transparency on investment is larger where financial development is higher $(\alpha_4 > 0)$

# Predictions on Transparency and Corporate Tax

Relationship between transparency and taxes:

$$T_{ics} = \delta_c + \delta_s + \beta_1 \tau_{ics} + \beta_2 \tau_{ics} \times DEP_s + \beta_3 FD_c \times DEP_s + \theta X_{ics} + \eta_{ics}$$

- The effect of taxes on transparency is ambiguous but $\beta_1$ should be negative if (i) $R(I)$ is a power function or (ii) the negative effect of taxes is strong enough
- The negative effect of taxes on transparency should be dampened for financially-constrained firms $(\beta_2 > 0)$
- Financial development should induce higher transparency, especially by financially-constrained firms $(\beta_3 > 0)$

# Two Data Samples

- **Worldscope sample**: 12,783 listed firms from 37 countries in 1990-2008
  - Accounting and financial data drawn from Worldscope
  - Corporate tax rate and financial development data drawn from Djankov et al. (2009) and Djankov et al. (2006) respectively
  - Financial dependence data from Rajan and Zingales (1998)
- **World Bank-IFC Enterprise Surveys (WBES) sample**: 42,916 (mostly unlisted) firms from 90 countries in 2005-2009
  - Qualitative survey data on external auditors, quality certification and access to finance
  - Very sparse accounting and financial data, apart from information on age, size and ownership

# Accounting Transparency: Worldscope Sample

- Accounting data used to calculate firm-level transparency measures:
  - earnings smoothing (Dechow, Sloan and Sweeney, 1995, Skinner and Myers, 1999, etc.)
  - earnings discretion (Jones, 1991, Francis et al., 1995, Dechow and Dichev, 2002, etc.)
- Informativeness of reported earnings influenced by environmental uncertainty, industry affiliation and **intentional estimation mistakes made by insiders to reduce transparency** (Francis et al. 2005) $\Longrightarrow$ we separate each measure into a "normal" and **"abnormal"** component and define the latter as firm-level transparency

# Corporate Tax and Accounting Transparency: Worldscope Sample

| | Number of Firms | Statutory Corporate Tax Rate | Effective 1st Year Corporate Tax Rate | Earnings Smoothing Measure ES1 | Earnings Discretion Measure ED1 | Earnings Discretion Measure ED2 |
|---|---|---|---|---|---|---|
| Australia | 586 | 30.00 | 21.96 | -0.0285 | -0.0328 | -0.0371 |
| Canada | 426 | 36.12 | 21.78 | -0.0361 | -0.0425 | -0.0474 |
| Finland | 209 | 29.00 | 16.30 | -0.0555 | -0.0492 | -0.0416 |
| France | 843 | 35.43 | 14.06 | -0.0549 | -0.0465 | -0.0628 |
| Germany | 962 | 37.07 | 23.50 | -0.0392 | -0.0435 | -0.0459 |
| Hong Kong | 304 | 17.50 | 0.00 | -0.0376 | -0.0410 | -0.0276 |
| India | 291 | 36.59 | 20.28 | -0.0587 | -0.0443 | -0.0465 |
| Italy | 272 | 37.25 | 23.82 | -0.0622 | -0.0598 | -0.0527 |
| Japan | 1,538 | 42.05 | 28.66 | -0.0550 | -0.0505 | -0.0659 |
| Mexico | 121 | 28.00 | 10.50 | -0.0541 | -0.0543 | -0.0685 |
| Norway | 209 | 28.00 | 18.50 | -0.0397 | -0.0488 | -0.0551 |
| Singapore | 320 | 20.00 | 10.25 | -0.0355 | -0.0328 | -0.0426 |
| South Korea | 482 | 26.73 | 14.94 | -0.0611 | -0.0588 | -0.0791 |
| Spain | 272 | 35.00 | 18.52 | -0.0571 | -0.0445 | -0.0455 |
| Sweden | 285 | 28.00 | 10.47 | -0.0429 | -0.0446 | -0.0533 |
| Switzerland | 237 | 24.10 | 13.74 | -0.0344 | -0.0407 | -0.0467 |
| UK | 1,560 | 30.00 | 18.61 | -0.0406 | -0.0303 | -0.0420 |
| United States | 1,620 | 45.20 | 18.19 | -0.0345 | -0.0359 | -0.0404 |

# Correlations: Worldscope Sample

| | Earnings Smoothing Measure ES1 | Earnings Smoothing Measure ES2 | Earnings Discretion Measure ED1 | Earnings Discretion Measure ED2 | Earnings Discretion Measure ED3 | Statutory Corporate Tax Rate | Effective 1st Year Corporate Tax Rate | Stock Market Capitalization as Percent of GDP |
|---|---|---|---|---|---|---|---|---|
| **Earnings Smoothing Measure ES1** | 1 | | | | | | | |
| **Earnings Smoothing Measure ES2** | 0.7829 (0.00) | 1 | | | | | | |
| **Earnings Discretion Measure ED1** | 0.7219 (0.00) | 0.7089 (0.00) | 1 | | | | | |
| **Earnings Discretion Measure ED2** | 0.5092 (0.01) | 0.4696 (0.02) | 0.6542 (0.04) | 1 | | | | |
| **Earnings Discretion Measure ED3** | 0.5518 (0.01) | 0.5328 (0.03) | 0.7148 (0.04) | 0.8762 (0.02) | 1 | | | |
| **Statutory Corporate Tax Rate** | -0.1508 (0.40) | -0.1324 (0.49) | -0.0925 (0.62) | -0.1207 (0.57) | -0.1895 (0.28) | 1 | | |
| **Effective 1st Year Corporate Tax Rate** | -0.2763 (0.21) | -0.2781 (0.25) | -0.2151 (0.30) | -0.2069 (0.34) | -0.2305 (0.29) | 0.7099 (0.00) | 1 | |
| **Stock Market Capitalization as % of GDP** | 0.6209 (0.00) | 0.4204 (0.00) | 0.4529 (0.00) | 0.4907 (0.08) | 0.49084 (0.04) | -0.4355 (0.01) | -0.5709 (0.00) | 1 |

# Accounting Transparency: WBES Sample

- Here we construct an indicator of firms' transparency based on:
  - presence of an external auditor
  - listing on a stock market
  - external quality certification
  - foreigners own at least 50 percent of firm
  - government owns at least 50 percent of firm
- The transparency indicator is the sum of the above dummy variables

# Access to Finance: WBES Sample

- Two indicators of financial access
- **First indicator** captures extent to which access to formal credit constrains firms' growth
  - firms are asked how problematic access to finance is for the operation and growth of their business
  - responses coded on a scale from 1 (difficult) to 5 (easy)
- **Second indicator** captures the firm's opinion on whether the terms at which credit is offered was affordable or prohibitive
  - responses coded as 0 (prohibitive) or 1 (affordable)

# Investment Regressions: Worldscope Sample

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Accounting Transparency | 0.1291** | 0.1228** | 0.1381** | 0.1025* | 0.0988* |
| | (2.38) | (2.33) | (2.47) | (1.82) | (1.79) |
| Accounting Transparency × Financial Dependence | 0.3512** | 0.3452** | 0.3625** | 0.2875* | 0.2728* |
| | (2.05) | (2.19) | (2.26) | (1.85) | (1.82) |
| Accounting Transparency × Financial Development | 0.0006** | 0.0006** | 0.0005* | 0.0005* | 0.0004 |
| | (2.16) | (2.10) | (1.92) | (1.75) | (1.61) |
| Initial Assets | -0.0081** | 0.0075** | -0.0081** | -0.0079** | -0.0074** |
| | (-2.09) | (2.03) | (-2.11) | (-2.07) | (-1.99) |
| Initial Book-to-Market | 0.0092** | 0.0095** | 0.0098** | 0.0102** | 0.0106** |
| | (2.29) | (2.35) | (2.39) | (2.48) | (2.50) |
| Initial Leverage | -0.0038 | -0.0042 | -0.0043 | -0.0032 | -0.0041 |
| | (-1.42) | (-1.49) | (-1.45) | (-1.31) | (-1.48) |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Country Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Number of Observations | 12,783 | 12,783 | 12,783 | 10,351 | 10,351 |
| $R^2$ | 0.29 | 0.27 | 0.25 | 0.22 | 0.24 |

If a firm in the industry with average financial dependence and in a country with average financial development increases transparency (ES1) by 1-s.d., investment increases by about 20%

# Transparency Regressions: Worldscope Sample

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Corporate Taxes × Financial Dependence | 0.0021** | 0.0024** | 0.0020** | 0.0018* | 0.0020* |
| | (2.32) | (2.58) | (2.01) | (1.89) | (1.87) |
| Financial Development × Financial Dependence (× 1000) | 0.3591** | 0.3924** | 0.4237** | 0.2981* | 0.3186* |
| | (1.99) | (2.18) | (2.29) | (1.80) | (1.87) |
| Initial Assets | 0.0084* | 0.0091** | 0.0081* | 0.0072* | 0.0078* |
| | (1.85) | (2.02) | (1.84) | (1.75) | (1.79) |
| Initial Book-to-Market | 0.0050* | 0.0047* | 0.0047* | 0.0042 | 0.0041 |
| | (1.83) | (1.76) | (1.74) | (1.62) | (1.60) |
| Initial Leverage | 0.0028 | 0.0030 | 0.0031 | 0.0027 | 0.0028 |
| | (1.02) | (1.11) | (1.14) | (1.04) | (1.05) |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Country Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Number of Observations | 12,783 | 12,783 | 12,783 | 10,351 | 10,351 |
| $R^2$ | 0.29 | 0.32 | 0.38 | 0.25 | 0.27 |

Fixing corporate taxes at their average and focusing on the industry with average financial dependence, a 1-s.d. increase in financial dependence leads to a 16% increase in transparency (ES1)

# Investment Regressions: No Tax-Book Conformity

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Accounting Transparency | 0.1167** | 0.1214* | 0.1329* | 0.1011* | 0.1154* |
| | (1.98) | (1.91) | (1.85) | (1.79) | (1.81) |
| Accounting Transparency × Financial Dependence | 0.3035* | 0.3278* | 0.3420* | 0.2680* | 0.2768* |
| | (1.68) | (1.85) | (1.95) | (1.71) | (1.74) |
| Accounting Transparency × Financial Development | 0.0005 | 0.0005 | 0.0004 | 0.0004 | 0.0003 |
| | (1.55) | (1.58) | (1.44) | (1.47) | (1.40) |
| Initial Assets | -0.0083* | -0.0077* | -0.0087** | -0.0081* | -0.0079* |
| | (-1.94) | (-1.92) | (-2.07) | (-1.90) | (-1.87) |
| Initial Book-to-Market | 0.0087** | 0.0092** | 0.0091** | 0.0097** | 0.0110** |
| | (2.03) | (2.11) | (2.09) | (2.21) | (2.31) |
| Initial Leverage | -0.0035 | -0.0036 | -0.0039 | -0.0030 | -0.0038 |
| | (-1.44) | (-1.49) | (-1.48) | (-1.37) | (-1.37) |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Country Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Number of Observations | 5,468 | 5,468 | 5,468 | 5,025 | 5,025 |
| $R^2$ | 0.29 | 0.28 | 0.24 | 0.20 | 0.21 |

Effect of transparency on investment is smaller in countries with no tax-book conformity

# Investment Regressions: Tax-Book Conformity

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Accounting Transparency | 0.1715** | 0.1682** | 0.1833** | 0.1427** | 0.1517** |
| | (2.58) | (2.46) | (2.23) | (2.09) | (2.05) |
| Accounting Transparency × Financial Dependence | 0.3783** | 0.4208** | 0.4387** | 0.3428** | 0.3419** |
| | (2.20) | (2.49) | (2.51) | (1.98) | (2.04) |
| Accounting Transparency × Financial Development | 0.0007** | 0.0008** | 0.0008* | 0.0007* | 0.0006* |
| | (1.99) | (2.11) | (1.90) | (1.80) | (1.72) |
| Initial Assets | -0.0077** | -0.0079** | -0.0077** | -0.0078* | -0.0081** |
| | (-2.07) | (-2.10) | (-2.06) | (-2.11) | (-2.16) |
| Initial Book-to-Market | 0.0100** | 0.0088** | 0.0103** | 0.0117** | 0.0101** |
| | (2.09) | (2.04) | (2.19) | (2.26) | (2.08) |
| Initial Leverage | -0.0034 | -0.0032 | -0.0038 | -0.0029 | -0.0031 |
| | (-1.51) | (-1.50) | (-1.53) | (-1.42) | (-1.41) |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Country Fixed Effects | Yes | Yes | Yes | Yes | Yes |
| Number of Observations | 5,196 | 5,196 | 5,196 | 4,618 | 4,618 |
| $R^2$ | 0.32 | 0.30 | 0.26 | 0.24 | 0.26 |

Effect of transparency on investment is larger in countries with tax-book conformity

# Investment Regressions: WBES Sample

| | (1) | (2) | (3) |
|---|---|---|---|
| **Transparency** | 0.117*** | 0.087*** | 0.059*** |
| | (0.005) | (0.005) | (0.006) |
| **Tax rate minor obstacle** | -0.257*** | -0.221*** | -0.192*** |
| | (0.015) | (0.015) | (0.015) |
| **Tax rate moderate obstacle** | -0.438*** | -0.385*** | -0.350*** |
| | (0.014) | (0.014) | (0.014) |
| **Tax rate major obstacle** | -0.646*** | -0.567*** | -0.503*** |
| | (0.014) | (0.014) | (0.015) |
| **Tax rate very severe obstacle** | -0.877*** | -0.765*** | -0.686*** |
| | (0.016) | (0.017) | (0.017) |
| **Informal competition minor obstacle** | | -0.116*** | -0.097*** |
| | | (0.014) | (0.014) |
| **Informal competition moderate obstacle** | | -0.227*** | -0.202*** |
| | | (0.014) | (0.014) |
| **Informal competition major obstacle** | | -0.316*** | -0.288*** |
| | | (0.014) | (0.014) |
| **Informal competition very severe obstacle** | | -0.430*** | -0.402*** |
| | | (0.015) | (0.015) |
| **Control variables** | Yes | Yes | Yes |
| **Observations** | 40100 | 38370 | 38370 |
| **R-squared** | 0.14 | 0.16 | 0.22 |
| **Sector dummies** | YES | YES | YES |
| **Country dummies** | NO | NO | YES |

Firms that perceive tax rates as a minor obstacle for growth have lower access to finance than those stating that taxes are not an obstacle

# Transparency Regressions: WBES Sample

| | (1) | (2) | (3) |
|---|---|---|---|
| **Tax rate minor obstacle** | 0.015 | 0.000 | -0.030** |
| | (0.016) | (0.015) | (0.013) |
| **Tax rate moderate obstacle** | 0.030** | 0.000 | -0.013 |
| | (0.015) | (0.013) | (0.012) |
| **Tax rate major obstacle** | -0.009 | -0.028** | -0.033** |
| | (0.015) | (0.013) | (0.013) |
| **Tax rate very severe obstacle** | -0.053*** | -0.068*** | -0.011 |
| | (0.017) | (0.016) | (0.015) |
| **Informal competition minor obstacle** | -0.076*** | -0.061*** | -0.051*** |
| | (0.015) | (0.014) | (0.012) |
| **Informal competition moderate obstacle** | -0.124*** | -0.083*** | -0.045*** |
| | (0.015) | (0.013) | (0.012) |
| **Informal competition major obstacle** | -0.161*** | -0.100*** | -0.070*** |
| | (0.015) | (0.014) | (0.012) |
| **Informal competition very severe obstacle** | -0.165*** | -0.099*** | -0.064*** |
| | (0.016) | (0.014) | (0.013) |
| **Control variables** | Yes | Yes | Yes |
| **Observations** | 40122 | 39613 | 39613 |
| **R-squared** | 0.03 | 0.21 | 0.36 |
| **Sector dummies** | YES | YES | YES |
| **Country dummies** | NO | NO | YES |

# Concluding Remarks

- So far, literature overlooked an important channel through which taxes may influence investment: they may induce firm to choose lower transparency, and thus reduce their access to finance and cut on investment

- We show that:
  - firm-level investment and access to finance are greater in firms that feature greater transparency and lower in firms that face a heavier tax burden
  - firms that face a higher tax rate opt for lower accounting transparency
  - financial development amplifies the positive effect of transparency on investment