

Challenges of Monitoring Tax Compliance by Multinational Firms: Evidence from Chile[†]

By SEBASTIÁN BUSTOS, DINA POMERANZ, JOSÉ VILA-BELDA, AND GABRIEL ZUCMAN*

International tax avoidance by multinational firms has been at the forefront of policy debates and news coverage in recent years. This paper provides a brief overview of the challenges and policy debates regarding taxation of multinational corporations and provides novel descriptive evidence on the case of Chile.

With growing globalization of ownership structures and financial flows, multinational enterprises account for an increasingly large share of the global economy (e.g., Narula and Dunning 2010, Clausing 2018). A growing body of evidence, building on Hines and Rice (1994), suggests that multinationals artificially shift a large fraction of their profits to low-tax locales (see Dharmapala 2014 for a review of the empirical literature). More than half of the foreign profits of US firms, for example, are booked in Bermuda, Luxembourg, Switzerland, the Netherlands, Singapore, Ireland, and Caribbean islands (e.g., Clausing 2016a). By one estimate (Wright and Zucman 2018), this shifting is on the rise and has reduced the effective corporate tax rate paid by US multinationals on their foreign profits by more than 6 percentage points in 2015. Multinationals from other regions have

similar incentives, suggesting that global revenue losses due to multinational corporate tax avoidance may be sizable.

Profit shifting is particularly concerning for developing countries and emerging economies, where building tax capacity is a key policy goal, both to finance public infrastructure and services and to reduce distortions in the economy (see Pomeranz and Vila-Belda, forthcoming, for an overview of recent economics research with tax authorities). As economies grow, their number of multinationals tends to increase, and the question of how to monitor profit shifting becomes important (Johannessen, Tørsløv, and Wier 2018). Developing countries face a fundamental trade-off in dealing with multinationals. On the one hand, multinational firms are often believed to be an important vehicle to bring managerial best practices, innovation, investment, and increased productivity, and there are important debates about whether governments should therefore subsidize such firms' investments (e.g., Spencer 2008, Harrison and Rodríguez-Clare 2010, Kose et al. 2010, Alfara and Chen 2018). On the other hand, multinationals often have more avenues and resources to avoid or evade taxation, compared to domestic firms that cannot rely on international networks. International tax arbitrage and tax havens can also affect the location of real economic activities (De Mooij and Liu 2018, Suárez Serrato 2018). Against this backdrop, how can governments improve their ability to attract investment by multinational firms without compromising their capacity to collect taxes?

There is a lively debate on how to curb multinational tax avoidance. The OECD encourages governments to spend more resources enforcing the rules that currently govern the taxation of multinationals. However, as discussed later in this paper, critics argue that the OECD framework is not ideally suited to today's globalized world (e.g., Independent Commission for the

* Bustos: Center for International Development, Harvard University 79 JFK Street, Cambridge, MA 02138 (email: sebastian_bustos@hks.harvard.edu); Pomeranz: University of Zurich, Schönberggasse 1, 8001 Zurich, Switzerland and CEPR (email: dina.pomeranz@econ.uzh.ch); Vila-Belda: University of Zurich, Schönberggasse 1, 8001 Zurich, Switzerland, and University of Fribourg (email: jose.vilabelda@econ.uzh.ch); Zucman: UC Berkeley, 530 Evans Hall #3880, Berkeley, CA 94720, and NBER (email: zucman@berkeley.edu). This paper has benefited from funding from the International Growth Centre (grant 89328), the Swiss National Science Foundation (grant 100018_172683) and the European Research Council (grant 758984) and from excellent research collaboration of the Chilean Tax Authority (SII). The views expressed are not necessarily those of IGC, SNSF, ERC or SII.

[†] Go to <https://doi.org/10.1257/pandp.20191045> to visit the article page for additional materials and author disclosure statement(s).

Reform of International Corporate Taxation 2015) and question its effectiveness to prevent profit shifting. In order to shed light on this debate, in ongoing work, we study the recent experience of Chile in tackling profit shifting through transfer-pricing legislation based on OECD recommendations.

I. Common Ways for Multinational Firms to Shift Profits

The key challenge of taxing multinational firms stems from the fact that profits are produced jointly by subsidiaries located in different countries but taxation is applied by each jurisdiction at the national level. The question then emerges, which parts of the global corporation's profit should be taxed by which country. Profits can be shifted from one country to another by manipulating prices of intra-firm transactions (so called "transfer-prices"). When a subsidiary in a high-tax country sells goods or services at artificially low prices to a subsidiary in a low-tax jurisdiction, this leads to a decrease in profits and a reduction in the taxes paid in the high-tax location, as well as in the total amount of taxes paid. Multinational firms can exploit discrepancies in tax rates and tax rules of different jurisdictions by strategically choosing the location of their affiliates and the transactions between them. The economics literature provides substantial evidence for the presence of tax-motivated transfer pricing (Bartelsman and Beetsma 2003; Clausing 2003, 2006; Bernard, Jensen, and Schott 2006; Hebus and Johannesen 2016; Davies et al. 2018).

To counteract this tendency, many countries have agreed to use the so-called arm's length principle to regulate intra-firm transactions (see Zucman 2014 for a description of the history and implications of these rules). This principle, established in the 1920s, stipulates that subsidiaries of a multinational firm in different countries have to set prices on transactions between each other as if they belonged to separate firms, i.e., as if they were market prices.

In practice, however, the arm's length principle can be hard to implement. Many goods and especially services involved in intra-firm trade can be firm specific and may not be traded outside a given multinational group, therefore lacking a clear market price. It is often hard to determine, for example, what the market price

would be for the right to use intellectual property, if the patent is only used by other subsidiaries of the same multinational firm, or how much should be charged for marketing services provided internally between subsidiaries of a multinational corporation. Empirical evidence shows that the location of intangible assets is systematically distorted toward low-tax locations (Dischinger and Riedel 2011; Karkinsky and Riedel 2012; Griffith, Miller, and O'Connell 2014; Alstadsæter et al. 2015).

Another method used by multinational firms to shift profits involves intragroup loans (also known as "debt shifting"). Debt and equity are treated differently for tax purposes, as interest payments are deductible. This creates an incentive for financing with debt rather than equity. Multinationals can exploit this for profit-shifting purposes without affecting the group's overall debt exposure by routing equity into low-tax affiliates, which then lend to high-tax affiliates, which in turn deduct their interest payments, thus reducing the group's overall tax liability. Several empirical studies provide evidence of debt shifting, e.g., Desai, Foley, and Hines (2007) or Mintz and Weichenrieder (2010). A meta-analysis by Heckemeyer and Overesch (2017) estimates that around 30 percent of overall income shifting can be attributed to debt shifting.

As companies have developed increasingly intricate ways to shift profits, the corresponding regulations have also grown more complex. In that context, devoting extra resources to enforcing the arm's length principle could potentially lead to a bad equilibrium: growing monitoring costs for tax authorities and compliance costs for corporations, with little increase in tax collection, resulting in possibly lower welfare. So far there exists relatively limited causal evidence on the impact of reforms to enforce arm's length pricing rules on compliance and tax collection. Measuring their impact is key to evaluate whether alternative approaches to international taxation should be favored.

Indeed, some fundamentally different approaches for international corporate taxation have been proposed (Devereux and Vella 2014). One prominent such approach would treat multinationals as a single entity for tax purposes. Avi-Yonah and Clausing (2008); Avi-Yonah, Clausing, and Durst (2009); Zucman (2015); and the Independent Commission for the Reform

of International Corporate Taxation (2015), among others, propose starting from the consolidated profits of multinationals and apportioning them across countries using an apportionment formula. This formula intends to reflect the real economic activity of multinational groups, for example, based on how much of the corporations' sales are made to different countries, or how much of its payroll or assets are located in different jurisdictions.

A similar approach is currently already in place within the United States for the taxation of corporations by different states. Proponents argue this unitary approach could better reflect how multinationals operate today and would prevent them from shifting profits to tax havens where no real economic activity takes place (e.g., Janský and Prats 2015). Whether and to what extent firms would respond to factors in the apportionment formula is still debated (Altshuler and Grubert 2010, Clausing 2016b).

II. The Chilean Setting

In 2010, Chile became the first South American country to join the OECD. As part of this process, it committed to OECD transfer-pricing rules. Starting in 2011, Chile made a number of changes to its tax-enforcement policy regarding multinational firms. The reform was designed to address all forms of profit shifting, whether through financial or real transactions. Prior to the reform, the tax authority had only limited information on the activities of multinational companies. The reform strongly increased the reporting requirements on intragroup transactions, changed the burden of proof for the correct valuation of these transactions from the tax authority to the firms and boosted the monitoring of international transactions by increasing the number of specialized tax auditors devoted to these tasks. Chile is an ideal laboratory to study the impact of such changes, as it illustrates the challenges of taxation of multinational corporations for an emerging economy, and because the Chilean tax authority is known for having high implementation capacities and low corruption rates (Adimark-GfK 2006). While Chile has a long track record of using effective and innovative enforcement methods for domestic taxes such as the VAT (Pomeranz 2015), international profit shifting by multinational firms presents important and growing challenges for tax collection.

In order to study the extent of profit shifting and evaluate the impact of the new rules, we partnered with the Chilean tax authority to combine several administrative datasets, including corporate tax filings, filings on international transactions, and customs data. These data allow us to provide novel descriptions of multinational firms operating in Chile, discussed below. In ongoing work, we also analyze the reform's impact on tax collection and firm behavior.

Out of approximately 300,000 incorporated firms in Chile in 2010¹, only around 5,300 had foreign affiliates, and around 630 had affiliates in countries that the tax authority classifies as tax havens. However, these firms account for a large share of total sales by Chilean firms. The firms with foreign affiliates account for around 40 percent of total sales by incorporated firms in the country, and firms with affiliates in tax havens make up around 13 percent.

Many of the firms with foreign affiliates have a network of affiliates in multiple countries. The mean number of countries in which they have affiliates is 4.1, with a median of 2 and a maximum of 96. Among firms with affiliates in tax havens, these numbers are even larger, with a mean of 8.6 countries with affiliates and a median of 4. Such a large and complex web of relationships may lead to both high monitoring costs for the tax authority and high compliance costs for the multinational firms.

In addition, the ownership structures of many of these relationships are complex and hard to track for the tax authority. Firms indicate in their tax forms whether the relationship with a given foreign affiliate is one in which (i) the Chilean firm owns the foreign affiliate, (ii) the foreign firm owns the Chilean affiliate, or (iii) both are owned by the same third party. Fifty percent of multinational firms list affiliates with relationships of type (i), 59 percent of type (ii), and 45 percent of type (iii). Thirteen percent have foreign affiliates of all three types.

Our descriptive analysis provides suggestive evidence consistent with profit shifting by multinational firms in Chile (see Figure 1). Their tax filings indicate that multinational firms have

¹ In addition, there were about 600,000 sole proprietorships, which together made up around 5 percent of total sales.

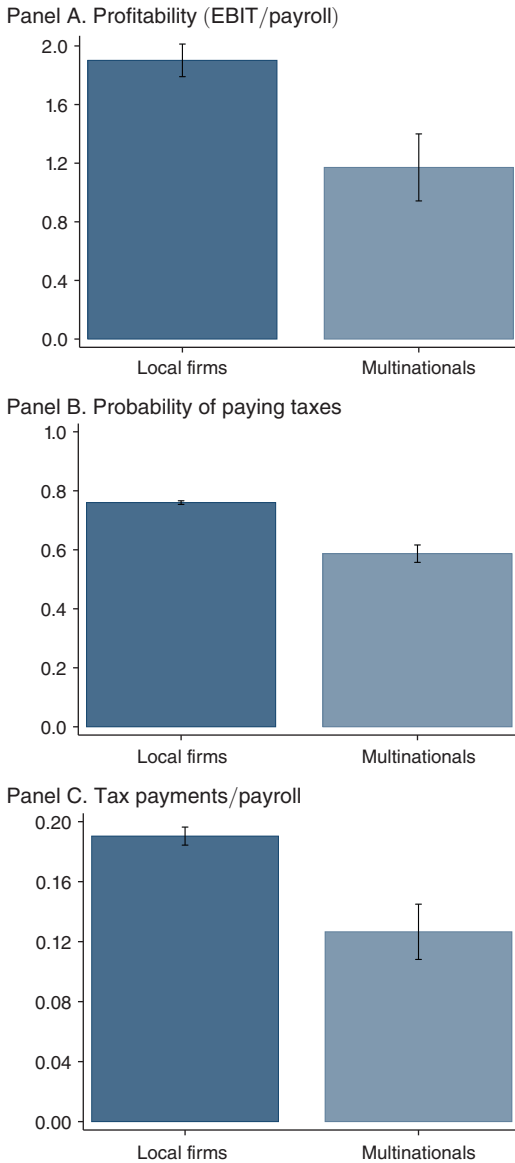


FIGURE 1. PROFIT RATES AND TAX PAYMENTS OF MULTINATIONALS VERSUS LOCAL FIRMS

Notes: OLS estimates are from the pre-reform period (2007–2010) on a dummy for whether a firm has foreign affiliates. To compare firms with similar characteristics, observations are weighted by the inverse of the propensity score for being a multinational using firms' size category, region, and industry. Outcomes in panels A and C winsorized at the ninety-ninth percentile. Vertical bars show 95 percent confidence intervals. Sample restricted to firms with positive costs and wages, excluding firms in the first and last percentiles of the propensity score.

lower profit rates (as a ratio of EBIT/wages)² compared to local firms similar in size, industry, and region. This is consistent with the notion that they shift part of their profits to lower tax countries and in line with the findings of Tørsløv, Wier, and Zucman (2018), who show that multinational firms in higher tax jurisdictions tend to have lower profit rates and those in low-tax countries tend to have higher profit rates compared to purely domestic firms. This lower profitability leads to a lower probability of paying corporate income tax in Chile and a lower rate of taxes/payroll.

In ongoing work, we investigate the channels used by multinationals to lower their tax payments in Chile and analyze whether the reform had an impact on profit shifting and tax collection. It is clear that the reform increased both monitoring costs for the Chilean tax authority and compliance costs of firms with foreign affiliates, boosting demand for tax advisory services. We conducted interviews with tax advisors of the four largest tax consulting firms in Chile, which revealed that their number of employees dedicated to supporting firms on “tax planning strategies” to comply with transfer-pricing regulation increased about 15-fold.

III. Conclusion: Open Questions for Research

In an increasingly globalized corporate world, the debate on how to effectively tax multinational corporation has become of first-order importance for many governments around the world. The magnitudes involved are large. In Chile, about 40 percent of sales come from the 2 percent of corporations that have affiliates in foreign countries. Many countries try to attract investment by multinational firms, as this is often thought to bring positive spillovers for economic development. However, multinationals often have more avenues to avoid taxes, which can undermine efforts to build domestic tax collection capacity. Guidance by the OECD on how to reduce international profit shifting has been subject to controversial debate, but empirical evidence on its effectiveness is limited.

²EBIT stands for Earnings Before Interest and Taxes, a measure of profits. We compute this variable using tax data by subtracting a firm's reported operational costs and financial depreciation from its total reported revenues.

In 2011, Chile implemented an OECD-inspired reform that strongly increased reporting requirements for multinational firms and created a specialized unit to monitor transfer pricing. This led to higher monitoring costs and higher compliance costs for firms and increased demand for tax consulting services. It is, however, unknown so far whether it led to more tax collection. The growing number of collaborations between researchers and tax authorities, leveraging administrative tax data, has the potential to shed empirical light on this type of pressing questions and to help improve international tax policy.

REFERENCES

- Adimark-GfK. 2006. Estudio Imagen Servicio de Impuestos Internos. Santiago: Adimark-GfK.
- Alfaro, Laura, and Maggie X. Chen. 2018. "Selection and Market Reallocation: Productivity Gains from Multinational Production." *American Economic Journal: Economic Policy* 10 (2): 1–38.
- Alstadsæter, Annette, Salvador Barrios, Gaëtan J.A. Nicodème, Agnieszka Skonieczna, and Antonio Vezzani. 2015. "Patent Boxes Design, Patents Location and Local R&D." CESifo Working Paper 5416.
- Altshuler, Rosanne, and Harry Grubert. 2010. "Formula Apportionment: Is It Better Than the Current System and Are There Better Alternatives?" *National Tax Journal* 63 (4): 1145–84.
- Avi-Yonah, Reuven S., and Kimberly A. Clausing. 2008. "Reforming Corporate Taxation in a Global Economy: A Proposal to Adopt Formulary Apportionment." In *Path to Prosperity: Hamilton Project Ideas on Income Security, Education, and Taxes*, edited by Jason Furman and Jason E. Bordoff, 319–44. Washington, DC: Brookings Institution Press.
- Avi-Yonah, Reuven S., Kimberly A. Clausing, and Michael C. Durst. 2009. "Allocating Business Profits for Tax Purposes: A Proposal to Adopt a Formulary Profit Split." *Florida Tax Review* 9 (5): 497–553.
- Bartelsman, Eric J., and Roel M.W.J. Beetsma. 2003. "Why Pay More? Corporate Tax Avoidance through Transfer Pricing in OECD Countries." *Journal of Public Economics* 87 (9–10): 2225–52.
- Bernard, Andrew B., J. Bradford Jensen, and Peter K. Schott. 2006. "Transfer Pricing by U.S.-Based Multinational Firms." NBER Working Paper 12493.
- Clausing, Kimberly A. 2003. "Tax-Motivated Transfer Pricing and US Intrafirm Trade Prices." *Journal of Public Economics* 87 (9–10): 2207–23.
- Clausing, Kimberly A. 2006. "International Tax Avoidance U.S. International Trade." *National Tax Journal* 59 (2): 269–87.
- Clausing, Kimberly A. 2016a. "The Effect of Profit Shifting on the Corporate Tax Base in the United States and Beyond." *National Tax Journal* 69 (4): 905–34.
- Clausing, Kimberly A. 2016b. "The U.S. State Experience under Formulary Apportionment: Are There Lessons for International Reform?" *National Tax Journal* 69 (2): 353–86.
- Clausing, Kimberly A. 2018. "Does Tax Drive the Headquarters Locations of the World's Biggest Companies?" *Transnational Corporations* 25 (2): 37–65.
- Davies, Ronald B., Julien Martin, Mathieu Parenti, and Farid Toubal. 2018. "Knocking on Tax Haven's Door: Multinational Firms and Transfer Pricing." *Review of Economics and Statistics* 100 (1): 120–34.
- De Mooij, Ruud A., and Li Liu. 2018. "At a Cost: The Real Effects of Transfer Pricing Regulations." IMF Working Paper 18/69.
- Desai, Mihir A., C. Fritz Foley, and James R. Hines Jr. 2007. "Dividend Policy inside the Multinational Firm." *Financial Management* 36 (1): 5–26.
- Devereux, Michael P., and John Vella. 2014. "Are We Heading towards a Corporate Tax System Fit for the 21st Century?" *Fiscal Studies* 35 (4): 449–475.
- Dharmapala, Dhammika. 2014. "What Do We Know about Base Erosion and Profit Shifting? A Review of the Empirical Literature." *Fiscal Studies* 35 (4): 421–48.
- Dischinger, Matthias, and Nadine Riedel. 2011. "Corporate Taxes and the Location of Intangible Assets within Multinational Firms." *Journal of Public Economics* 95 (7–8): 691–707.
- Griffith, Rachel, Helen Miller, and Martin O'Connell. 2014. "Ownership of Intellectual Property and Corporate Taxation." *Journal of Public Economics* 112: 12–23.
- Harrison, Ann, and Andrés Rodríguez-Clare. 2010. "Trade, Foreign Investment, and Industrial Policy for Developing Countries." In *Handbook of Development Economics*, Vol. 5,

- edited by Dani Rodrik and Mark Rosenzweig, 4039–4214. Amsterdam: Elsevier.
- Hebous, Shafik, and Niels Johannesen.** 2016. “At Your Service! The Role of Tax Havens in International Trade with Services.” http://nielsjohannesen.net/wp-content/uploads/AtYourService_March2016_FullPaper.pdf (accessed March 8, 2019).
- Heckemeyer, Jost H., and Michael Overesch.** 2017. “Multinationals’ Profit Response to Tax Differentials: Effect Size and Shifting Channels.” *Canadian Journal of Economics/Revue Canadienne d’économique* 50 (4): 965–94.
- Hines, James R., Jr. and Eric M. Rice.** 1994. “Fiscal Paradise: Foreign Tax Havens and American Business.” *Quarterly Journal of Economics* 109 (1): 149–82.
- Independent Commission for the Reform of International Corporate Taxation.** 2015. *Declaration of the Independent Commission for the Reform of International Corporate Taxation*. Trento: Independent Commission for the Reform of International Corporate Taxation.
- Janský, Petr, and Alex Prats.** 2015. “International Profit-Shifting out of Developing Countries and the Role of Tax Havens.” *Development Policy Review* 33 (3): 271–92.
- Johannesen, Niels, Thomas Tørsløv, and Ludvig Wier.** 2018. “Are Less Developed Countries More Exposed to Multinational Tax Avoidance? Method and Evidence from Micro-Data.” <http://www.nielsjohannesen.net/wp-content/uploads/WBER-RESUBMISSION-FullPaper.pdf> (accessed March 8 2019).
- Karkinsky, Tom, and Nadine Riedel.** 2012. “Corporate Taxation and the Choice of Patent Location within Multinational Firms.” *Journal of International Economics* 88 (1): 176–85.
- Kose, M. Ayhan, Eswar Prasad, Kenneth Rogoff, and Shang-Jin Wei.** 2010. “Financial Globalization and Economic Policies.” In *Handbook of Development Economics*, Vol. 5, edited by Dani Rodrik and Mark Rosenzweig, 4283–4362. Amsterdam: Elsevier.
- Mintz, Jack M., and Alfons J. Weichenrieder.** 2010. *The Indirect Side of Direct Investment: Multinational Company Finance and Taxation*. Cambridge, MA: MIT Press.
- Narula, Rajneesh, and John H. Dunning.** 2010. “Multinational Enterprises, Development and Globalization: Some Clarifications and a Research Agenda.” *Oxford Development Studies* 38 (3): 263–87.
- Pomeranz, Dina.** 2015. “No Taxation without Information: Deterrence and Self-Enforcement in the Value Added Tax.” *American Economic Review* 105 (8): 2539–69.
- Pomeranz, Dina, and José Vila-Belda.** Forthcoming. “Taking State-Capacity Research to the Field: Insights from Collaborations with Tax Authorities.” *Annual Review of Economics*.
- Spencer, Jennifer W.** 2008. “The Impact of Multinational Enterprise Strategy on Indigenous Enterprises: Horizontal Spillovers and Crowding Out in Developing Countries.” *Academy of Management Review* 33 (2): 341–61.
- Suárez Serrato, Juan Carlos.** 2018. “Unintended Consequences of Eliminating Tax Havens.” NBER Working Paper 24850.
- Tørsløv, Thomas R., Ludvig S. Wier, and Gabriel Zucman.** 2018. “The Missing Profits of Nations.” NBER Working Paper 24701.
- Wright, Thomas, and Gabriel Zucman.** 2018. “The Exorbitant Tax Privilege.” NBER Working Paper 24983.
- Zucman, Gabriel.** 2014. “Taxing across Borders: Tracking Personal Wealth and Corporate Profits.” *Journal of Economic Perspectives* 28 (4): 121–48.
- Zucman, Gabriel.** 2015. *The Hidden Wealth of Nations: The Scourge of Tax Havens*. Translated by Teresa Lavender Fagan. Chicago: University of Chicago Press.