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Working Paper

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WIDER Working Paper, No. 2022/21

Provided in Cooperation with:
United Nations University (UNU), World Institute for Development Economics Research (WIDER)

Suggested Citation: Das, Khanindra Ch. (2022) : Profit-shifting behaviour of emerging multinationals from India, WIDER Working Paper, No. 2022/21, ISBN 978-92-9267-152-5, The United Nations University World Institute for Development Economics Research (UNU-WIDER), Helsinki, https://doi.org/10.35188/UNU-WIDER/2022/152-5

This Version is available at:
https://hdl.handle.net/10419/259377

WIDER Working Paper 2022/21

Profit-shifting behaviour of emerging multinationals from India

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February 2022

United Nations University World Institute for Development Economics Research

wider.unu.edu

Abstract: This paper examines the profit-shifting behaviour of emerging multinational firms from India. It is found that the before-tax profitability of subsidiaries differs according to whether they were established directly or via an Offshore Financial Centre (OFC). The impact of the corporate tax rate on profitability is examined using a fixed-effects model for the period 2010–19. In the case of subsidiaries established via OFCs, a negative relationship between corporate tax rate and profitability is found, indicating profit-shifting behaviour. However, a disaggregated investigation by characteristics of parent firms reveals that the negative relationship holds primarily for via-OFC subsidiaries that belong to multinational firms with limited transactions of intangible assets, lower export intensity, and limited dependence on external commercial borrowing. The evidence of profit shifting is not all pervasive. However, in the presence of these transaction channels, multinational firms establish better control over intra-firm resources, which enables the transfer of resources within the multinational firm when the network of subsidiaries is connected through the OFC. The results are robust to the inclusion of economic and institutional factors pertaining to the host country.

Key words: corporate tax, multinational firms, offshore financial centre, profit shifting, panel data, tax haven

JEL classification: F23, H26

Acknowledgements: I thank Finn Tarp and Kasper Brandt, as well as participants at the WIDER Workshop on Illicit Financial Flows for their excellent comments and suggestions on an earlier version of this paper. All remaining errors and omissions are the sole responsibility of the author.

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This study has been prepared within the UNU-WIDER project Detecting and countering illicit financial flows that is implemented in collaboration with the University of Copenhagen. The project is part of the Domestic Revenue Mobilization programme, which is financed through specific contributions by the Norwegian Agency for Development Cooperation (Norad).

ISSN 1798-7237 ISBN 978-92-9267-152-5

https://doi.org/10.35188/UNU-WIDER/2022/152-5

Typescript prepared by Joseph Laredo.

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The Institute is funded through income from an endowment fund with additional contributions to its work programme from Finland, Sweden, and the United Kingdom as well as earmarked contributions for specific projects from a variety of donors.

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1 Introduction

Variation in corporate taxation across countries shapes joint allocation of risk and profit inside the multinational firm (Becker et al. 2020). However, profit shifting by emerging country multinationals is a neglected issue in international economic research, although some discussion revolves around profit-shifting strategies. Multinationals from developing countries are subject to controlled foreign corporation rules enforced by the home government that oblige them to pay local taxes even though they are registered and conduct business in a different jurisdiction (Clifford 2019). The issue of profit shifting assumes significance because action by multinational firms from developing countries can create additional strain on government resources. In this context, past research has explored the question whether tax avoidance by multinational corporations exposes countries to lower tax rates. The evidence suggests that many developing countries opt for low corporate tax rates despite revenue needs and a low tax base (Johannesen et al. 2020).

In this paper, I study whether any profit-shifting pattern can be observed in the case of emerging multinational firms from India. In particular, I examine whether subsidiaries established through Offshore Financial Centres (OFCs) in non-tax haven countries demonstrate profit-shifting behaviour compared with overseas subsidiaries in the same set of countries that are established directly, without involving an OFC channel. I estimate the effect of the corporate tax rate on reported changes in profitability by these subsidiaries over time. While estimating the effect of corporate tax rate, I control for time-varying economic and institutional factors that may contribute to or nullify the relationship between corporate tax rate and the profitability of subsidiaries that operate in non-OFC countries.

In order to detect any pattern of profit shifting, I trace the organization of subsidiaries of Indian multinational firms. The sample subsidiaries are categorized into two types: direct subsidiaries and subsidiaries established via an OFC. The paper compares the profitability response to corporate tax rate changes in non-OFC locations between the two types of subsidiaries. The profitability response can be linked with profit shifting by multinational firms. While the performance of international subsidiaries has been examined in previous research, this ignored the OFC linkages of the subsidiaries (Das and Mahalik 2020). In this research the focus is on the differences between direct subsidiaries and subsidiaries established via OFCs, as tax avoidance is unlikely to be significant in the former cases. Previous research on French multinationals also suggests that there is no evidence of tax avoidance if tax haven destinations are excluded from the analysis (Davies et al. 2018).

When it comes to the analysis of profit shifting, the nature of the subsidiary organization assumes importance, but the classification of subsidiaries based on linkages with an OFC has been neglected.[1] I believe that the organization of the subsidiary, either directly in the ultimate host country or through a holding company in the OFC, is an important factor that needs to be recognized in examining profit-shifting behaviour.

The reasons for suspecting profit-shifting behaviour among Indian multinational firms are manifold. First, estimates suggest that at least 30 per cent of global FDI stock is mediated by OFCs, indicating the pervasive nature of offshore FDI affecting advanced as well as developing countries (Haberly and Wojcik 2015). Second, a significant share of India's outward FDI is directed towards OFCs. Previous research has reported that OFCs account for a significant portion of India's

[1] Dyreng et al. (2015), which studied the global equity supply chain of the US multinationals, is an exception.

outward FDI flow. Das and Banik (2015), for example, showed that Mauritius accounted for over 24 per cent of outward FDI from India in 2011/12.[2] There is also the case of round tripping of FDI (which, according to some estimates, accounts for 10 per cent of India's inward FDI) (Nagaraj 2013). Third, instances of OFC-based funds channelling significant volumes of foreign portfolio investment into Indian companies can also be noticed. Further, India lacks controlled foreign corporation legislation. As a result, Indian multinational firms have an incentive to retain profit in foreign subsidiaries. However, profit-shifting behaviour is expected to be different by firm characteristics and along sectorial lines.[3] For example, firms that are involved in the transaction of intangibles could be in a better position to shift profit from high-tax to low-tax countries. Similarly, extractive industry firms face longer gestation periods. In that case, profit accrues with long delays. Therefore, profit shifting could be a means adopted by multinational enterprises (MNEs) to manage resource inflows and outflows.

I used a fixed-effects model to estimate the impact of corporate tax rate on profitability for the two different categories of subsidiaries. While a negative relationship between corporate tax rate and profitability was found in the case of via-OFC subsidiaries, indicating profit-shifting behaviour, the relationship was not significant in the case of direct subsidiaries. However, I found several interesting patterns when the via-OFC subsidiaries were examined. In particular, the negative relationship between corporate tax rate and profitability holds for via-OFC subsidiaries when the subsidiary belongs to a parent firm with (a) limited transactions of intangible asset, (b) lower export intensity, and (c) limited use of external commercial borrowing. Although the negative relationship between corporate tax rate and profitability is broken in the case of via-OFC subsidiaries when the parent is involved in the transaction of intangible assets, has high export intensity and uses external commercial borrowing, the negative relationship need not hold across OFCs. These profit-shifting mechanisms help via-OFC subsidiaries secure greater control over intra-firm resources. OFCs could also differ in their ability to shift profit. Profit may not be universally shifted from high-tax to low-tax jurisdictions. At best, the evidence of profit shifting is selective.

The reminder of the paper is organized as follows. A brief review of literature pertaining to overseas subsidiary location and the channels of profit shifting is presented in Section 2. In Section 3, the study design and method of analysis are outlined, including data sources and variables. Results are presented and discussed in Section 4. Conclusions and the paper's contribution to policy debate are provided in Section 5.

2 Subsidiary location by multinationals: a brief review

OFCs have been preferred by MNEs for establishing subsidiaries and holding companies due to near-zero corporate tax rates and lax regulatory environments. Indian MNEs are no exception to this. OFCs are used to channel investment by MNEs and to manage the flow of intra-company resources efficiently. Further, MNEs can perform these functions to shift profit from one jurisdiction to another, particularly from high-tax locations to jurisdictions with a lower corporate tax rate. Although the use of OFCs differs from country to country (Gumpert et al. 2016), it is found that Indian MNEs have more often than not channelled investment through OFCs. OFC-based subsidiaries serve multiple purposes. Previous research suggests that four mechanisms of

[2] In the case of India's inward FDI receipt, Mauritius tops the list of source countries.

[3] Firm characteristics may influence corporate tax planning (Cooper and Nguyen 2020).

profit shifting are practised in multinational tax planning (Cooper and Nguyen 2020)—namely, (a) transfer pricing, (b) capital structure and use of internal debt, (c) location choice, and (d) cash holding in foreign subsidiaries versus profit repatriation. A brief review of OFC preferences is presented below.

2.1 Intangible asset transaction

OFCs have been in the limelight for facilitating the transfer of intangibles by MNEs. Some of these multinational firms are global giants and have attracted the attention of tax authorities and civil society. Intangibles include patents, technology and know-how, and other intellectual property used to produce goods and services. Such assets usually flow from headquarters to affiliates. Recent evidence points to the role of intangible assets in intensifying profit-shifting opportunities for multinationals (Crotti 2021). However, emerging MNEs typically have a lesser quantity (or quality) of technological assets. These multinationals are seen to acquire such assets either from or through overseas subsidiaries. In particular, OFCs facilitate such transactions of intangible assets within the network of parent and affiliates. Firms from emerging countries with greater investment in intangible assets are found to have a greater likelihood of owning subsidiaries in tax havens (Fourati et al. 2019). Thus, the transaction of intangible assets could greatly help in profit shifting.

While the subsidiary location choice due to tax reasons is found to be driven by statutory and effective tax rates (Barrios et al. 2012) and by tax and non-tax country characteristics (Dyreng et al. 2015), it is important to look at the other channels that can lead to profit-shifting behaviour. Once a subsidiary is established in an overseas location, these channels could assume significance in carrying out profit-shifting activities.

2.2 Export and trade channel

A channel closely related to the above is the trade channel. There are trade flows between subsidiaries of MNEs and between parent and subsidiary. In many cases, due to the uniqueness of goods and services, comparable market prices are not available. Although MNEs are obliged to use the arm's length principle while transacting with related parties, in most jurisdictions they have some leeway in setting prices (Hebous et al. 2021), and it is generally difficult for tax authorities to determine whether a fair price has been used in the transaction of intangibles (Damgaard and Elkjaer 2017). Several subsidiaries are involved in merchanting activities (buying and selling of goods without processing them). Merchanting could lead to profit shifting when it is done by an OFC-based subsidiary and involves imports and exports between the parent firm and its affiliates.

2.3 Debt and external commercial borrowing channel

Internationalization enables MNEs to diversify their sources and types of debt, although this can impact firms' risk and agency cost of debt (Batten et al. 2021). Differing behaviour among affiliates with respect to capital structure in response to corporate tax rate was reported in a previous study of German multinationals (Fuest et al. 2011). In the absence of thin capitalization rules in the home and host countries, MNEs can benefit by adjusting their capital structure. Recent studies suggest that firms move away from transfer pricing towards intra-group debt in the profit-shifting decision (Delis et al. 2020). Profit shifting implies cross-border tax avoidance by MNEs, particularly through the uses of inter-affiliate debt and strategic transfer pricing (Dharmapala 2014).[4]

[4] Empirical literature up to 2014 estimating the magnitude of base erosion and profit shifting is surveyed in Dharmapala (2014).

2.4 Location choice

Higher profitability could be location-specific (Barrios et al. 2012). Therefore, some subsidiaries are likely to be established as direct subsidiaries, since the host location offers higher profit opportunities than OFCs. The decision to set up tax haven subsidiaries is influenced by the variety of capitalism of an MNE's home location and the level of technological intensity (Jones and Temouri 2016).

Previous research documents that cross-border acquisition by emerging economy firms in tax havens yields lower stockholder returns than similar acquisitions in non-tax havens (Chari and Dixit 2020). Despite lower returns, emerging economy firms are found to have a substantial presence in tax havens through the establishment (or acquisition) of subsidiaries. Such investments are found to be driven by lower taxes in the host country as well as institutional weakness in the home country (Chari and Acikgoz 2016).

The likelihood of owning a tax haven affiliate due to a higher foreign tax rate has been found to be greater in the case of German manufacturing multinationals than for those in services industries due to the difficulty of relocating taxable services income (Gumpert et al. 2016). On the other hand, the motivations to invest in tax havens are linked with the benefits of tax avoidance, the secrecy of these jurisdictions, and the strategic advantages and efficiency gains they offer in global markets (Mukundhan et al. 2019).

Further, economic and institutional factors vary across countries, which can impact corporate tax policies or post-tax profitability. Corporate income tax policies exhibit variation across countries in terms of the level of economic development, and research suggests an inverse relationship between country risk and corporate tax rate (Mardan and Stimmelmayr 2020). The quality of country-level institutions, along with corporate governance mechanisms, has also been found to have an influence in reducing profit shifting (Sugathan and George 2015). Better governance, lower taxes, and the safety of shifted profits are some of the defining characteristics of OFCs.

2.5 Intra-MNE resource allocation

Several motives behind the establishment of subsidiaries in non-OFC countries via the OFC could be present. First, secrecy and lax regulatory compliance contribute to the establishment of a subsidiary in the OFC. The establishment of a non-OFC subsidiary in the OFC seems to be driven by the advantages offered by the latter in terms of tax planning and control over intra-MNE resource allocation. Thus, the establishment of a via-OFC subsidiary could be associated with resource and wealth shifting rather than profit shifting on a recurring basis. Profit shifting could be selective and coordinated from a specific jurisdiction and not from all the OFCs. Evidence from previous studies also suggests that OFCs are a popular site for foreign equity holding companies. In particular, the Netherlands is considered a tax haven on the basis of observations from previous research that the country is a popular site for foreign equity holding companies as a location for international tax planning (Dyreng et al. 2015; Jansky 2020; Jansky and Kokes 2016) and for using selective resistance in controlled secrecy jurisdictions far more intensely that the rest of the OECD countries (Jansky et al. 2021). The inward FDI position excluding special purpose entities is 97 per cent of the GDP of the Netherlands, compared with 525 per cent when special purpose entities are included (Damgaard and Elkjaer 2017). These entities utilize the tax, regulatory, and confidentiality benefits, which are potentially large. The economic proceeds of outward FDI could leak out and remain offshore as its use increases over time (Driffield et al. 2021). Indian MNEs have also established a considerable number of subsidiaries through OFCs such as the Netherlands, Mauritius, Singapore, and the UAE.

Second, tax haven subsidiaries could help in avoiding stringent regulations in the home country. Several international investments require large sums of money to be taken out of the home country in multiple tranches, but there are caps and there could be regulatory delays (for instance, automatic approval is granted for up to 400 per cent of the net worth of an Indian firm for the purpose of outward FDI). However, raising more money domestically for foreign investment purposes could be difficult and may suffer regulatory delays. OFC subsidiaries can raise as well as move money faster for such purposes.

Third, the market potential and opportunities offered by a host country could affect the decision to establish a subsidiary directly or via an OFC. There is burgeoning literature on overseas subsidiary location in relation to tax and non-tax factors. However, the literature pertaining to the subsidiary ownership chains of MNEs remains nascent (with the exception of Dyreng et al. 2015, which studied the global equity supply chains of US MNEs). A neglected aspect of this research is that subsidiaries in tax havens are apt to establish (or acquire) subsidiaries in other non-tax haven countries. In this paper, profit shifting is examined in terms of subsidiary ownership chains. How is the performance of non-tax haven subsidiaries affected by the corporate tax rate? And is profitability different or similar when direct and via-OFC subsidiaries are compared? These are the central questions examined in this research. The design of the study is outlined in the next section.

3 Study design

3.1 Methodology

I employ data pertaining to overseas subsidiaries of Indian MNEs. My empirical approach to test profit shifting requires classification of overseas subsidiaries into (a) direct subsidiaries in non-tax haven countries; (b) indirect subsidiaries in non-tax haven countries established via an OFC (Table 1). This classification is made using information provided by the annual reports of Indian MNEs. In particular, information under the headings 'Related Party Relationships and Transactions' and 'Related Party Disclosures', which are in the notes to the financial statements, is used. The OFCs in the sample are Bahamas, Bermuda, British Virgin Island (BVI), Cayman Islands, Cyprus, Isle of Man, Mauritius, Singapore, Switzerland, United Arab Emirates (UAE), and the Netherlands. It may be noted that tax havens are not limited to tiny islands (Jensky and Kokes 2016).

Table 1: Classification of overseas subsidiaries

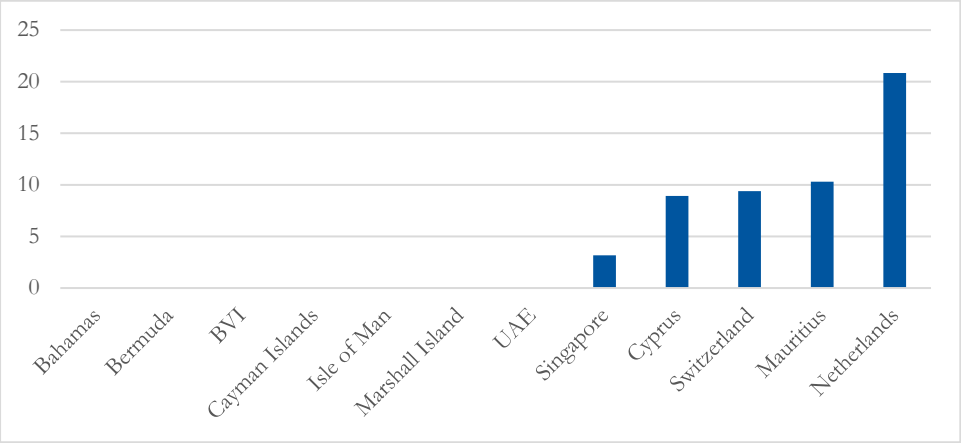
Type of overseas subsidiary	Description
Direct subsidiary located in non-OFC	Subsidiary established in a non-OFC country (e.g. USA) with step-down subsidiaries in the same country (e.g. direct subsidiary in USA and step-down subsidiaries in USA) Subsidiary established in non-OFC via a domestic subsidiary in India (since tax rates differ when country of incorporation changes)
Subsidiary via OFC but located in non-OFC jurisdiction	Subsidiary established solely via OFC or multiple OFCs (e.g. subsidiary in Botswana via BVI and Mauritius) Subsidiary established via OFC and non-OFC Subsidiary established entirely via OFCs (including Netherlands) Subsidiary established via OFCs including Netherlands and non-OFCs

Note: although the tax rate in the Netherlands is high, starting at 15%, it is considered an OFC due to the difference between withholding tax rates applicable to the country of origin and those applicable to the Netherlands, as well as capital gains protection under relevant tax treaties and other factors.

Source: author's construction.

The average profit tax in each of the sample OFCs is presented in Figure 1. Many of the sample OFCs have profit tax of 0 per cent. All the sample OFCs, except the Netherlands, have profit tax below 11 per cent.

Figure 1: Profit tax as a percentage of commercial profits



Note: figures cross-verified using documents published by e.g. Deloitte, KPMG, PIIE. The figures are averaged over 10 years (2010–19). However, the profit tax depicted is not used in the regression analysis, as it measures all taxes and contributions that are government mandated at any level (federal, state, or local). The tax rates used in the regression analysis refer to corporate income tax.

Source: author's construction using WDI.

My analysis is focused on subsidiaries that are ultimately located in non-OFC countries. I compare the profitability of these two sets of subsidiaries. Apart from testing statistical differences in the profitability of direct and via-OFC subsidiaries, I employ panel data models to test the role of the corporate tax rate. Economic and institutional variables are added, as these could also play a role in the profit-shifting behaviour of emerging MNEs. The econometric analysis is focused on non-OFC subsidiaries that are established directly as well as those established via OFCs. Research based on French multinationals found no evidence of tax avoidance when tax haven destinations were disregarded (Davies et al. 2018). It may be noted that foreign holding companies are usually located in OFCs. In the case of US multinationals, such holding companies tend to be located in countries with less corruption and investment risk than the countries where the operating subsidiaries they own are located (Dyreng et al. 2015). While the variation in corruption could impact location decision, the impact of corruption on profitability is not straightforward (Das and Mahalik 2020). Similarly, the impact of corruption on profit shifting is likely to be complex. In my sample, there is considerable variation in corruption in the countries where operating subsidiaries are located. The models are estimated both with and without the corruption variable.

I examine whether profit shifting is prevalent when the subsidiary in the non-OFC location is held via an OFC. The profitability of via-OFC subsidiaries is also expected to be higher than that of direct subsidiaries due to profit-shifting practices. However, this does not imply that direct subsidiaries earn less profit. In fact, profitability could be location-specific (Barrios et al. 2012). Nevertheless, the classification of subsidiaries helps us examine whether an inverse relationship between corporate tax and profitability can be observed, and under what conditions, which is expected in the presence of profit shifting.

Panel data analysis has been carried out to test the existence of such a relationship in the identified jurisdictions after controlling for economic and institutional factors. Such an analysis is necessary to control for relevant drivers of profitability and to check whether the differential persists. In the panel model, subsidiary profitability has been regressed on corporate tax rate and the economic

and institutional variables. The regression is done by category of subsidiaries, i.e. whether directly established in non-OFC or established via an OFC. The main explanatory variable of interest is corporate tax rate. The economic variables are profit before tax divided by total assets of the subsidiary, per capita income, and unemployment rate. Institutional quality is represented by a control of corruption indicator. Institutional quality is included to capture country risk, as the latter is expected to play a role in the setting of corporate tax policies across countries (Mardan and Stimmelmayr 2020). Country risk needs to be controlled for, as previous studies point to the role of governance infrastructure in reducing profit shifting (Mardan and Stimmelmayr 2020; Sugathan and George 2015). The control of corruption indicator is sourced from World Governance Indicators (WGI). The subsidiary's age is also included as a control variable. The full model to be estimated takes the following form:

$$pbt\_asset_{ict}^{k} = \alpha + \beta \times ctax_{ct} + \delta \times gdppc_{ct} + \gamma \times unemp_{ct} + \lambda \times sage_{it} + \mu \times coc_{ct} + \upsilon_i + \varepsilon_{ict}$$

where *i* represents the subsidiary (the panel unit); subsidiary *i* belongs to firm *j* located in country *c*; *t* is a subscript for time and *k* represents whether the subsidiary is established via an OFC or directly; *pbt_asset* is the profit before tax of the subsidiary. The profitability is expresses in relation to total assets. The profitability ratio captures how well the subsidiary is able to utilize assets under its possession. Corporate tax rate (*ctax*) is the key explanatory variable; *gdppc* is the income per capita in country *c*, which represents the level of development of the country; *unemp* represents the economic environment of the country; *sage* is the age of the subsidiary and is measured by the number of years since establishment, i.e. year minus the establishment year; and *coc* is a measure of country risk, capturing level of corruption. A description of the variables and data sources is provided in Table 2.

Table 2: Variables and data sources

Variable	Description	Data sources
pbt_asset	Profit before tax divided by total asset of the subsidiary	Annual reports of Indian parent firms (various issues)
ctax	Corporate tax rate	KPMG
gdppc	GDP per capita	WDI
unemp	Unemployment, percentage of labour force (national estimate)	WDI
sage	Subsidiary age (year minus the year of establishment)	Annual reports of parent firms (various issues)
coc	Control of corruption, estimate	WGI

Source: author's compilation.

The econometric testing is based on a microeconomic technique. The measure of profitability is similar to those applied in earlier work that uses profit before taxation (see Dharmapala 2014). However, the estimation differs from a semi-elasticity approach, which ignores subsidiaries with negative profit. Considering the fact that a significant proportion of subsidiaries earn negative profit, the semi-elasticity estimation restricts the sample. Therefore, in this paper, the partial effects of corporate tax rates are derived.

Profit shifting is expected when the (average) profitability of subsidiaries established via an OFC is higher than that of direct subsidiaries.[5] However, comparison of profitability between the two

[5] Comparisons with domestic subsidiaries could be made in future studies.

groups may be overly simplistic, as profitability could be high in some non-OFC countries. Therefore, economic and institutional factors need to be accounted for. In the presence of profit shifting, a negative relationship is expected between corporate tax rate and profitability of subsidiaries. I carry out some additional checks. Sectoral difference in profit sharing is expected. The model was re-estimated separately for manufacturing and services sector firms. Similarly, an analysis was carried of the business group status of the parent firm.

The analysis was extended by classifying the subsidiaries on the basis of parent characteristics. I re-estimated the model by classifying via-OFC subsidiaries based on transaction of intangible assets, export intensity, and external commercial borrowing by the parent firm. These classifications were made to examine the working of various channels of profit shifting. The parent firms were first classified on the basis of transaction of intangible assets (patent, designs, etc.). The extent of intangible asset transaction is captured by royalties paid or received by the parent firm. The reason for the inclusion of royalties paid is that emerging MNEs source technological assets from overseas. The export intensity of the parent was used. Finally, the external commercial borrowing status of the parent was used. In this analysis, we limit our focus to via-OFC subsidiaries to detect channels of profit shifting based on the evidence of profit shifting by these subsidiaries.

3.2 Data and variables

Annual reports of the parent firms were instrumental in classifying the overseas subsidiaries into direct and indirect subsidiaries established through the OFC channel. These reports also contain subsidiary-specific financial details such as profit after tax, turnover, assets, and capital. The profitability ratio of the two groups of subsidiaries over the period 2010–19 was constructed using subsidiary-specific profit before tax and asset information. These ratios are presented in the results section. Note that data on foreign subsidiary performance were sourced from sections 212(8) and 129(3) of the annual reports of Indian MNEs. Previous studies have used such data to examine the performance of overseas subsidiaries of Indian MNEs in the extractive sector (Das and Mahalik 2020) and the closure of overseas subsidiaries in the software services sector (Das 2021).

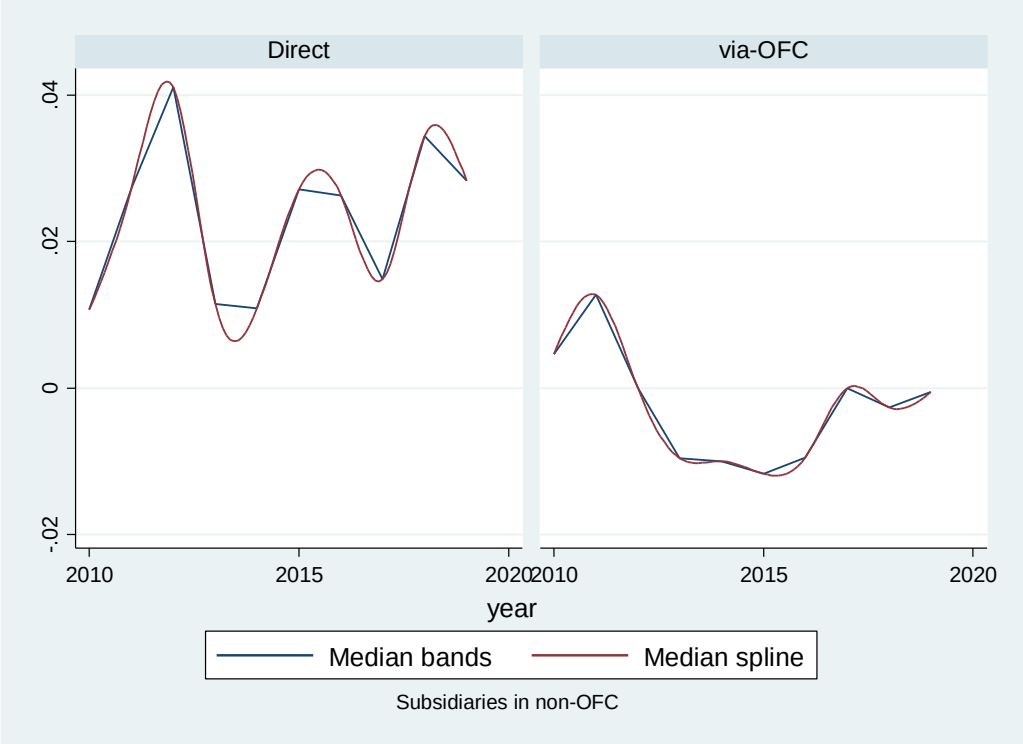
For the econometric analysis, parent firm-specific data were sourced from the ProwessIQ database maintained by the Centre for Monitoring Indian Economy (CMIE). ProwessIQ is the largest corporate database of Indian companies, which contains audited financial information on Indian corporations. There are also statutory requirements in India to report foreign subsidiary information and related party transactions in their annual reports, which were accessed for this analysis. Host-country-specific corporate tax rate information was sourced from KPMG's Corporate Tax Rates Table.[6] Other economic and institutional quality variables were sourced from World Bank's World Development Indicators (WDI) and World Governance Indicators (WGI) databases. Among the institutional variables available in the literature, the control of corruption score was used to capture country risk. The study period is 2010–19.

4 Results and discussion

The pattern of profitability across the two groups of subsidiaries is examined before estimating its relationship with corporate tax rate. Median profitability is presented in Figure 2, while mean profitability (locally weighted smoothing) is presented in Figure 3.

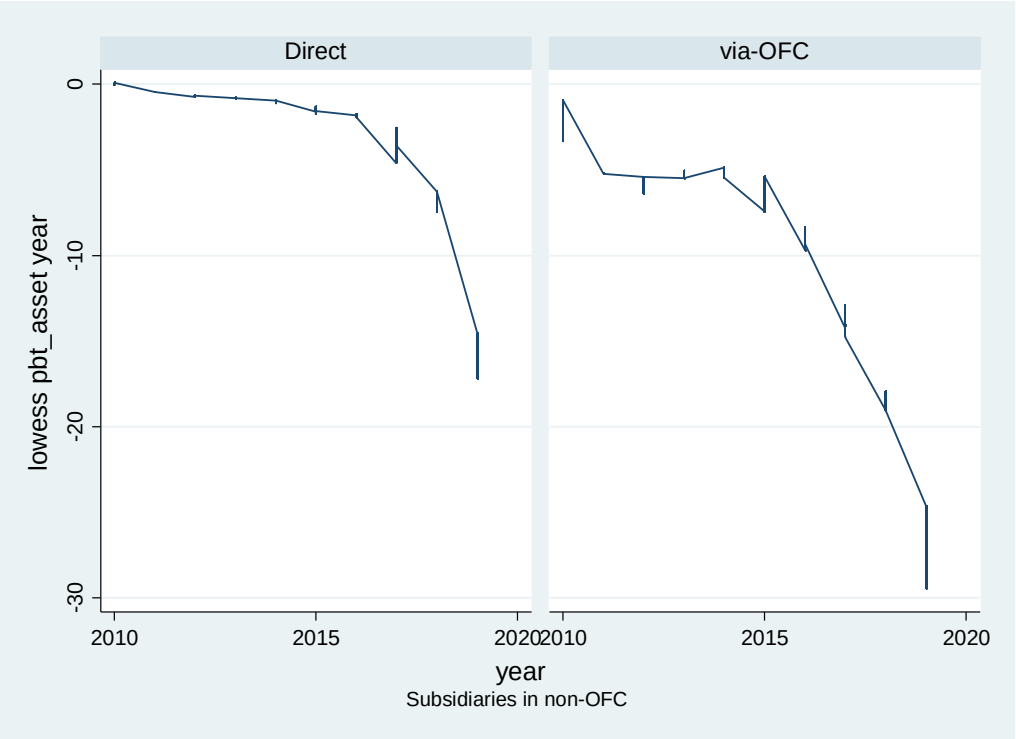
[6] https://home.kpmg/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/corporate-tax-rates-table.html

Figure 2: Median profitability (*pbt_asset*)



Source: author's compilation.

Figure 3: Lowess plot of profitability (*pbt_asset*)



Source: author's compilation.

The median profitability of the direct subsidiaries shows fluctuation around 2 per cent, whereas in the case of via-OFC subsidiaries the median profitability is closer to zero, with limited fluctuation.

The LOWESS plot shows that mean profitability is negative in the case of both via-OFC and direct subsidiaries and that towards the end of the sample period, average profitability reduces further. The fact that the median is slightly above the mean suggests a negatively skewed distribution of profitability. A similar observation can be made from the descriptive statistics (Table 3). It should be noted that higher profitability can be location-specific (Barrios et al. 2012). Non-OFC location is important as there can be profit generation due to economic conditions. This is a justification for establishing subsidiaries directly (as some parent firms may not be concerned about paying applicable tax on profit). But not all parent companies will have the same thinking about tax avoidance.

Table 3: Descriptive statistics

	Mean	Median	Standard deviation	Obs.	Subsidiaries	Parent
pbt_asset (direct & via OFC)	-7.262	0.008	153.629	4137	664	117
ctax	27.731	26.500	7.948	4137	664	117
Gdppc	32611.50	40644.80	22917.22	4137	664	117
Unemp	6.611	4.870	5.268	4137	664	117
Sage	7.243	7	4.655	4137	664	117
Coc	0.792	1.269	1.012	4137	664	117
pbt_asset (direct)	-2.959	0.027	93.967	1981	321	79
pbt_asset (via OFC)	-11.216	-0.001	192.750	2156	343	44

Source: author's calculations.

The Mann–Whitney U test (Mann and Whitney 1947) also suggests a significant difference in profitability between the two groups of subsidiaries (Table 4). The null hypothesis that profitability is similar for the direct and via-OFC subsidiaries is rejected at conventional levels of significance. Differences in profitability between the two groups of subsidiaries (direct and via-OFC) could be seen even after bifurcating the sample by sector.

Table 4: Two sample Wilcoxon (Mann–Whitney) test of difference between groups

	All sectors		Manufacturing		Services	
	Obs.	Rank-sum	Obs.	Rank-sum	Obs.	Rank-sum
Direct	2118	5067431	938	1223822	1157	1176677
via OFC	2345	4893986	1557	1889939	774	688670
combined	4463	9961416	2495	3113760	1931	1865346
z	7.911		3.052		4.915	
p-value (p>|z|)	0.000		0.002		0.000	

Note: Ho: pbt_asset(Direct)= pbt_asset(via-OFC)

Source: author's calculations.

As can be seen in Table 3, for subsidiaries classified as direct and via-OFC, there are 4,137 observations pertaining to 664 subsidiaries of 117 MNEs. The average corporate tax rate is found to be 27.73 per cent. GDP per capita is US$32,612 and the average unemployment rate 6.61 per cent. Average subsidiary age is 7.24 years. The mean of the control of corruption score is positive (0.792).

The profitability of the two groups of subsidiaries is presented in the last two rows of Table 3. In both cases the mean profitability is negative, whereas the median profitability is slightly above zero (0.8 per cent). Direct subsidiaries are found to have positive median profitability, whereas the median profitability of via-OFC subsidiaries is closer to 0 per cent. However, negative or positive profitability of the subsidiaries could be due to economic and institutional factors in the host

country. In the econometric analysis, we examine the profitability of these two group of subsidiaries in relation to corporate tax rate after controlling for economic and institutional factors. Nevertheless, correlation between corporate tax rate and country risk could be expected as country risk levels could play an important role in tax rate setting (Mardan and Stimmelmayr 2020). Keeping this in mind, the regression is run without the *coc* as well.

The fixed-effects estimation pertaining to direct and via-OFC subsidiaries reveals an interesting pattern (Table 5). Results pertaining to via-OFC subsidiaries are presented in columns 1–6, and those of direct subsidiaries in columns 7–12. Column 1 includes host-country variables, namely *gdppc* and *unemp*. In column 2 subsidiary age (*sage*) is included as a control variable. Column 3 includes the control of corruption in the host country. Similar models are presented in columns 4–6 but with an added time dummy. The pattern is repeated for direct subsidiaries (columns 7–9 and columns 10–12). The effect of *ctax* on profitability is found to be negative and statistically significant in all six estimations (columns 1–6). However, *ctax* systematically ceases to be significant in the case of direct subsidiaries. This indicates that via-OFC subsidiaries have access to mechanisms such as the transaction of intangible, intra-company debt that leave them with higher (lower) profitability in low (high) tax jurisdiction. Such a relationship was not statistically significant in the case of direct subsidiaries.

Since there are subsidiary-fixed effects in Table 5, the identification comes from subsidiaries located in countries where the corporate tax rate changes over time. In 34 sample host countries the corporate tax rate changed at least once during 2010–19. However, in 49 host countries there was no change in corporate tax rate during the study period. Therefore, to get more variation and as a robustness check, I performed another set of regressions excluding subsidiary-fixed effects but including country-fixed effects, year-fixed effects, and sector-fixed effects. The results are found to hold, i.e. there is significant negative impact of *ctax* on the dependent variable in the case of via-OFC subsidiaries but insignificant impact for direct subsidiaries (see Table A2 in the Appendix).

It is possible that direct subsidiaries earn higher (lower) profitability in high tax jurisdictions if they experience greater (lower) productivity or a larger (smaller) quantity of viable projects. However, tax-related arbitrage was not observed, which provides evidence that the establishment of via-OFC subsidiaries could help multinational firms to shift profits from high tax jurisdictions. The relationship between *ctax* and *pbt_asset* is estimated both with and without the control of corruption variable. The results are consistent. Corruption does not seem to have driven the results. Later on, I examine some of the mechanisms that could help subsidiaries to maintain such a relationship between corporate tax rate and profitability (particularly intangible asset transaction, export, and external commercial borrowing). Previous studies report institutional quality to be a significant determinant of the performance of subsidiaries in the extractive industry (Das and Mahalik 2020). However, in this study, control of corruption has not been significant in affecting profitability when subsidiaries are disaggregated on the basis of its linkages with OFC. Further checks could be carried out by including other aspects of institutional quality.

I carry out additional checks before examining the via-OFC subsidiaries for which the relationship between *ctax* and *pbt_asset* was statistically significant. First, the model was estimated separately for manufacturing and services sector firms. Second, a similar estimation was carried out for the different business group statuses of the parent firm—affiliated vs. non-affiliated. However, since most of the MNEs in the sample are affiliated to business groups, the differential behaviour of business group-affiliated subsidiaries compared with subsidiaries of standalone firms could not be examined. The results of these checks suggest no significant impact of *ctax* on *pbt_asset* in the case of subsidiaries of both manufacturing (NIC 10-33) and services (NIC 35-71) firms. As the impact of *ctax* was not significant, the results are not reported.

The next set of results is related to the channels of profit shifting. The estimation was done specifically for the via-OFC subsidiaries, as the relationship between corporate tax rate and profitability was statistically significant for this category of subsidiaries (see Table 5). The estimation was done by classifying parent firms of the via-OFC subsidiaries according to the transaction of intangible assets, export intensity, and external commercial borrowing. The results, presented in Tables 6, 7, and 8, suggest a distinct pattern of relationship between corporate tax rate and profitability and refute the claim that profit shifting is all pervasive.

The fixed effect estimations based on transaction of intangible assets by the parent firm, relating to via-OFC subsidiaries, are presented in Table 6. It is found that the coefficient of *ctax* is different for the two sets of subsidiaries. Subsidiaries of a parent firm with no transaction of intangible assets demonstrate a negative relationship between corporate tax rate and profitability (columns 7–12). On the contrary, in the case of subsidiaries of a parent firm with positive transaction of intangible assets, there is no significant relationship between corporate tax rate and profitability (columns 1–6). This implies that profit shifting is not universal. Contrary to expectation, when intangible assets are transacted, the relationship between *ctax* and profitability turns out not to be statistically significant. But when intangible assets are not transacted, there is still a negative relationship. One would have expected an intensification of the negative relationship in cases where intangibles are transacted. It is possible that, apart from the qualifier at the firm level, there are modes of profit shifting other than the transaction of intangible assets. The insignificant relationship between the corporate tax rate and profitability for via-OFC subsidiaries when the parent is involved in the transaction of intangible assets requires further examination. One explanation could be that the small sample in this category of subsidiaries (93 subsidiaries) increases the standard errors. However, transfer pricing could still occur through other channels. Several other motives, discussed in Section 2.5, could be behind the establishment of subsidiaries via an OFC. Many of the non-OFC subsidiaries in our sample are established through a chain of OFC subsidiaries, which increases the complexity of tracing true profitability. This could be investigated in further studies by employing granular related party transactions between parent and subsidiaries established via selected OFCs. It is worth noting that Indian multinationals were found to have been involved in related party transactions with overseas subsidiaries (reported under section 188 of their annual reports).

Table 5: Fixed effects by OFC linkage (dependent variable: *pbt_asset*)

	Via-OFC subsidiaries						Direct subsidiaries					
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
ctax	-3.717**	-5.006***	-4.974***	-4.576**	-4.576**	-4.553**	-0.315	-0.562	-0.446	-0.643	-0.643	-0.430
	(1.784)	(1.901)	(1.907)	(1.917)	(1.917)	(1.925)	(0.829)	(0.869)	(0.890)	(0.902)	(0.902)	(0.921)
gdppc	-0.005***	-0.005***	-0.005***	-0.006***	-0.006***	-0.006***	-0.001	0.001	0.001	-0.001	-0.001	-0.0004
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
unemp	8.947**	6.212	6.190	5.684	5.684	5.677	0.305	-0.448	-0.533	0.149	0.149	0.112
	(3.569)	(3.831)	(3.833)	(3.890)	(3.890)	(3.891)	(1.979)	(2.131)	(2.136)	(2.201)	(2.201)	(2.201)
sage		-3.901*	-3.901*		-23.843	-23.988		-1.055	-0.994		-17.274**	-18.660**
		(1.994)	(1.995)		(14.957)	(14.995)		(1.108)	(1.113)		(8.114)	(8.202)
coc			-8.629			-5.945			-15.663			-31.627
			(40.769)			(41.448)			(26.031)			(27.467)
constant	160.646**	252.322***	257.663***	218.222***	462.967***	467.649***	28.076	49.617	58.475	20.518	217.357**	250.120**
	(74.827)	(88.250)	(91.809)	(82.923)	(170.566)	(173.707)	(40.528)	(46.413)	(48.958)	(43.529)	(97.715)	(101.763)
time	No	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
Obs	2156	2156	2156	2156	2156	2156	1981	1981	1981	1981	1981	1981
Groups	343	343	343	343	343	343	321	321	321	321	321	321
R2	0.02	0.02	0.02	0.02	0.02	0.02	0.001	0.001	0.001	0.004	0.004	0.005
F (model)	9.33***	7.96***	6.37***	3.44***	3.44***	3.15***	0.36	0.50	0.47	0.62	0.62	0.68
F (pool)	2.58***	2.58***	2.49***	2.59***	2.59***	2.50***	1.65***	1.65***	1.61***	1.65***	1.65***	1.63***

Note: ***<0.01, **<0.05, *<0.10. Figures in the parentheses represent standard errors of coefficients. Similar results were obtained with cluster robust standard errors (clustered by host country).

Source: author's construction.

Table 6: Fixed effect by intangible asset (dependent variable: *pbt_asset*)

	Via-OFC with intangible transaction						Via-OFC without intangible transaction					
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
ctax	-1.013	-6.109	-5.941	-4.106	-4.106	-3.834	-4.643***	-4.742***	-4.765***	-4.539***	-4.539***	-4.632***
	(5.954)	(6.543)	(6.566)	(6.751)	(6.751)	(6.773)	(1.368)	(1.436)	(1.441)	(1.444)	(1.444)	(1.450)
gdppc	0.003	0.002	0.002	0.004	0.004	0.004	-0.006***	-0.006***	-0.006***	-0.007***	-0.007***	-0.007***
	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
unemp	8.183	4.250	3.349	5.639	5.639	4.228	8.264***	7.951***	7.942***	6.870**	6.870**	6.797**
	(12.544)	(12.688)	(12.955)	(12.805)	(12.805)	(13.060)	(2.723)	(3.045)	(3.046)	(3.100)	(3.100)	(3.102)
sage		-12.141*	-12.124*		-107.553*	-109.302*		-0.368	-0.362		-4.208	-3.606
		(6.548)	(6.555)		(55.875)	(56.007)		(1.597)	(1.598)		(10.973)	(11.002)
coc			-50.567			-81.558			5.886			24.384
			(143.537)			(145.449)			(31.044)			(31.590)
constant	-137.617	138.110	166.368	-159.727	926.900	984.268	254.135***	262.794***	259.056***	300.809***	344.229***	324.818**
	(237.061)	(279.290)	(290.851)	(271.836)	(595.165)	(604.364)	(58.072)	(69.193)	(71.970)	(64.268)	(128.617)	(131.071)
time	No	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
Obs	533	533	533	533	533	533	1623	1623	1623	1623	1623	1623
Groups	93	93	93	93	93	93	272	272	272	272	272	272
R2	0.002	0.01	0.01	0.02	0.02	0.02	0.05	0.05	0.05	0.06	0.06	0.07
F (model)	0.24	1.04	0.85	0.85	0.85	0.80	25.87***	19.40***	15.52***	8.41***	8.41***	7.76***
F (pool)	1.85***	1.89***	1.82***	1.86***	1.90***	1.85***	3.45***	3.44***	3.30***	3.50***	3.49***	3.35***

Note: ***<0.01, **<0.05, *<0.10. Figures in the parentheses represent standard errors of coefficients. Similar results were obtained with cluster robust standard errors (clustered by host country). Intangible transaction used is measured by royalties (paid or received).

Source: author's construction. Data on royalties from ProwessIQ and CMIE.

Table 7: Fixed effects by export intensity (dependent variable: *pbt_asset*)

	Via-OFC with high export intensity						Via-OFC with low export intensity					
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
ctax	-1.030	-1.421	-1.330	-1.026	-1.026	-0.973	-4.748***	-5.047***	-5.165***	-4.601**	-4.601**	-4.768**
	(4.494)	(4.859)	(4.879)	(5.020)	(5.020)	(5.034)	(1.707)	(1.824)	(1.827)	(1.836)	(1.836)	(1.841)
gdppc	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**	-0.006***	-0.006***	-0.006***	-0.008***	-0.008***	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
unemp	-0.253	-0.545	-0.900	-0.333	-0.333	-0.614	9.763**	8.921**	9.076**	7.148	7.148	7.223*
	(7.662)	(7.794)	(7.933)	(8.012)	(8.012)	(8.159)	(3.874)	(4.273)	(4.275)	(4.359)	(4.359)	(4.359)
sage		-0.946	-0.876		-0.810	-0.770		-1.015	-0.930		-23.901*	-22.475*
		(4.437)	(4.451)		(70.753)	(70.849)		(2.171)	(2.173)		(12.844)	(12.892)
coc			-17.318			-13.296			43.855			56.224
			(69.859)			(70.24)			(44.072)			(45.049)
constant	144.926	169.918	175.881	156.222	165.065	172.168	241.938***	265.466***	233.865**	304.392***	545.048***	497.236***
	(131.721)	(167.430)	(171.501)	(153.523)	(751.480)	(753.429)	(86.889)	(100.423)	(105.325)	(95.463)	(159.862)	(164.355)
time	No	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
Obs	502	502	502	502	502	502	1654	1654	1654	1654	1654	1654
Groups	133	133	133	133	133	133	333	333	333	333	333	333
R2	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
F (model)	2.14*	1.62	1.30	1.17	1.17	1.08	13.90***	10.48***	8.58***	4.78***	4.78***	4.52***
F (pool)	1.15	1.14	1.10	1.14	1.13	1.09	6.07***	6.05***	5.93***	6.09***	6.09***	5.97***

Note: ***<0.01, **<0.05, *<0.10. Figures in the parentheses represent standard errors of coefficients. Similar results were obtained with cluster robust standard errors (clustered by host country). Export intensity is measured by export as a percentage of sales.

Source: author's construction. Data on export intensity from ProwessIQ and CMIE.

Table 8: Fixed effects by external commercial borrowing (ECB) status (dependent variable: *pbt_asset*)

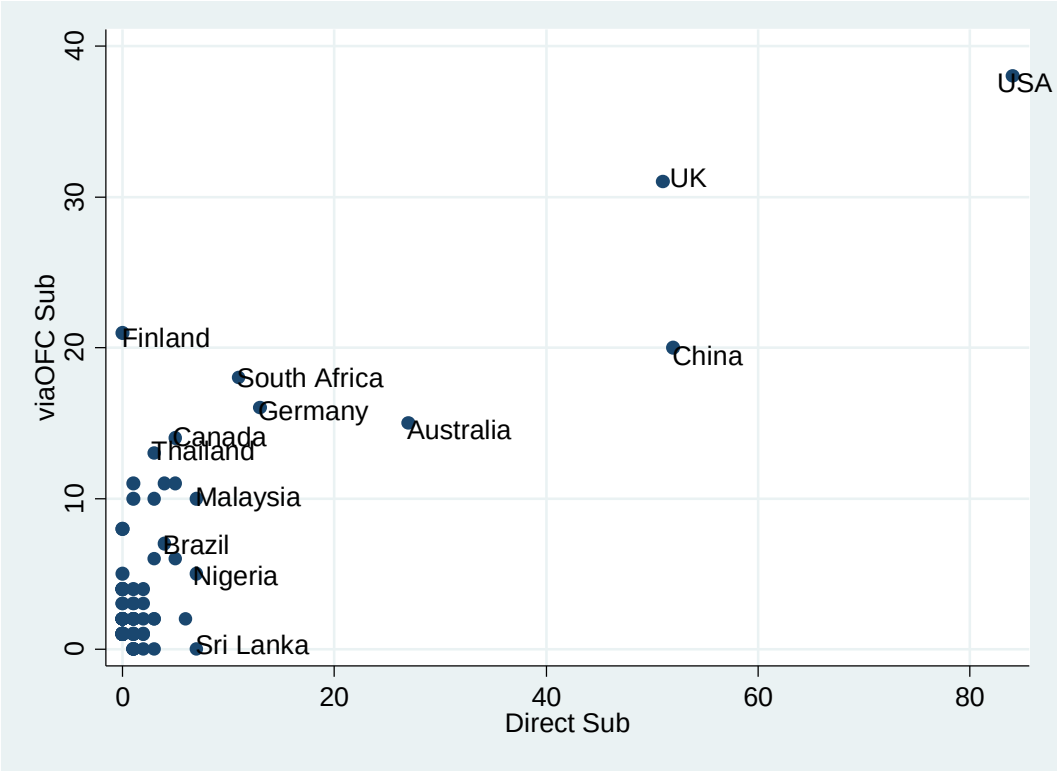
	Via-OFC with ECB						Via-OFC without ECB					
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
ctax	-1.525	-6.127	-6.139	-2.455	-2.455	-2.426	-4.963***	-4.981***	-5.010***	-4.658***	-4.658***	-4.782***
	(7.526)	(7.985)	(7.997)	(8.418)	(8.418)	(8.434)	(1.379)	(1.451)	(1.459)	(1.476)	(1.476)	(1.483)
gdppc	0.001	-0.001	-0.001	0.001	0.001	0.001	-0.007***	-0.007***	-0.007***	-0.008***	-0.008***	-0.008***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
unemp	8.091	5.749	5.858	6.958	6.958	6.742	8.601***	8.546***	8.550***	7.302**	7.302**	7.258**
	(13.657)	(13.698)	(13.882)	(13.849)	(13.849)	(14.051)	(2.923)	(3.236)	(3.237)	(3.294)	(3.294)	(3.294)
sage		-11.940*	-11.985*		-147.093**	-147.087**		-0.069	-0.045		-2.946	-2.062
		(7.037)	(7.101)		(64.048)	(64.121)		(1.718)	(1.723)		(10.961)	(11.008)
coc			6.364			-12.126			7.329			32.509
			(126.216)			(127.957)			(36.296)			(37.022)
constant	-65.035	183.522	181.067	-149.839	1391.411**	1396.469**	298.244***	299.783***	294.412***	344.378***	374.371***	345.487**
	(251.802)	(290.854)	(295.222)	(287.748)	(706.109)	(708.922)	(63.813)	(74.396)	(79.035)	(69.529)	(129.674)	(133.792)
time	No	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes
Obs	602	602	602	602	602	602	1554	1554	1554	1554	1554	1554
Groups	154	154	154	154	154	154	303	303	303	303	303	303
R2	0.001	0.01	0.01	0.02	0.02	0.02	0.06	0.06	0.06	0.07	0.07	0.07
F (model)	0.13	0.81	0.65	0.93	0.93	0.85	26.48***	19.84***	15.87***	8.56***	8.56***	7.90***
F (pool)	1.42***	1.44***	1.41***	1.42***	1.45***	1.42***	2.88***	2.88***	2.74***	2.92***	2.91***	2.77***

Note: ***<0.01, **<0.05, *<0.10. Figures in the parentheses represent standard errors of coefficients. Similar results were obtained with cluster robust standard errors (clustered by host country).

Source: author's construction. Data on parent firms' ECB from ProwessIQ and CMIE.

It can be observed from our sample that OFC subsidiaries have control over several subsidiaries in non-OFC countries; there are cases of one single OFC subsidiary holding ownership in more than a dozen subsidiaries in non-OFC countries. We also see a higher number of direct subsidiaries than via-OFC subsidiaries in several of the largest economies (USA, China, UK, Australia). On the other hand, more indirect subsidiaries have been formed in a large set of economies (see Figure 4). However, subsidiary profitability is a little higher in the case of direct subsidiaries than via-OFC subsidiaries (Figure 2), which suggests that economic gravity could be behind the establishment of direct subsidiaries. In other words, countries where such gravity is weaker will have more indirect subsidiaries because those markets are served through OFCs and investment hubs. Further, the difference between companies establishing subsidiaries via OFCs and companies doing so directly within the same subsidiary country is not straightforward, as there are cases where the same firm has both types of subsidiaries within the same host country. There could be a self-selection aspect here. While there has been examination of location decision in OFCs (Chari and Dixit 2020; Das and Banik 2015; Vineeth and Nidheesh 2021), future studies could examine the parent firm and country-specific drivers of the decision to establish direct and/or via-OFC subsidiaries, which will throw further light on multinational behaviour.

Figure 4: Scatterplot of number of direct and via-OFC subsidiaries



Source: author's compilation.

Similarly, via-OFC subsidiaries were further classified on the basis of export intensity of the multinational firm. The median export intensity of the sample firms was 9.47 per cent. Firms with an export intensity higher than the median were considered to be export intensive. The fixed effect estimation was repeated for the via-OFC subsidiaries classified by export intensity of the parent firm. It was observed that the impact of corporate tax rate on profitability was distinctly different for the two sets of subsidiaries classified by export intensity of the parent (Table 7). A significant negative relationship between corporate tax rate and profitability was observed in the case of subsidiaries belonging to low-export-intensive parents (columns 7–12). However, the relationship was not statistically significant in the case of subsidiaries of parent firms with high export intensity

(columns 1–6). This further suggests that, although having an export channel is expected to intensify profit shifting, the evidence is not conclusive. However, the existence of a negative relationship even for firms with low export intensity suggests that profit shifting could be more sporadic than all pervasive. Further, such channels help MNEs to coordinate resource flows within the network of affiliates. The level of merchanting activity also differs by OFC. Considering that many of the foreign subsidiaries involved in exporting are located in specific OFCs, such as Singapore, this finding is not unexpected.

In order to investigate the debt channel, I classify subsidiaries on the basis of whether the parent firm resorts to external commercial borrowing. The results, presented in Table 8, suggest that for the subsidiaries of parents with external commercial borrowing, the relationship between corporate tax rate and profitability, albeit negative, is not statistically significant. However, the relationship between *ctax* and profitability is negative and statistically significant in the case of subsidiaries of parent firms with little use of external commercial borrowing (columns 7–12). This implies that evidence of the universal nature of profit shifting is hard to find. These channels could help MNEs to channel resources to their advantage. Nonetheless, evidence of profit shifting cannot be ruled out, as the negative relationship between corporate tax rate and profitability could still be found in the case of a section of via-OFC subsidiaries. Further evidence pertaining to profit shifting through specific OFCs could complement these results.

All three channels examined here are important channels for establishing better control over firm resources across borders, in which profit shifting can be part of the story. The above analysis suggests that MNEs could establish better control over intra-firm resources by establishing via-OFC subsidiaries. This need not be synonymous with profit shifting. However, such profit shifting could be selective and coordinated from selected OFCs. The results also have implications for transfer pricing regulation and policies involving external commercial borrowing. Although India has implemented transfer pricing regulation since 2012, this still has shortcomings in preventing profit shifting. The corporate debt channel is another important channel of profit shifting. Although I did not deal with inter-company debt directly, the ability of the parent to borrow externally (either from the host country or from subsidiaries) did yield a striking pattern. Therefore, there is a need to look into the sources of ECB by MNEs to detect a profit-shifting motive.

While I have implemented robustness checks including a set of country-specific time-varying controls, there may still be some omitted variables driving the results. For instance, local government may implement policies that affect profitability in tandem with corporate tax rate changes (Dharmapala 2014). This could be a concern if these policies are sector-specific and if via-OFC subsidiaries operate in different sectors than direct subsidiaries. In the current set-up, this could not be controlled for, since it is not possible to include country-year- or country-sector-year-fixed effects.

5 Conclusion and contribution to policy debate

In this research, I examined the profit-shifting behaviour of emerging MNEs from India using subsidiary-level data. The linkage of non-OFC-based subsidiaries with OFCs, which had received limited coverage in the extant research, was considered. The analysis detects some evidence of profit shifting by emerging MNEs from India, though the pattern is not all pervasive. While the negative relationship between corporate tax rate and profitability was significant in the case of via-OFC subsidiaries, further investigation suggested that the phenomenon is rather selective.

Nevertheless, the results throw light on the effectiveness of international taxation and outward FDI policies of developing countries. Insights could also be drawn regarding measures that may be used to discourage profit-shifting behaviour through the establishment of subsidiaries via OFCs. The study contributes to policy debate by detecting the nature of profit-shifting behaviour of emerging multinationals using subsidiary-level data, and examining the effectiveness of international taxation and outward FDI policies in emerging countries, which has also received limited coverage in the extant research. In particular, simultaneous improvement of both tax and financial systems will be necessary to change multinational behaviour.

We can further conclude that taxation policies based on profitability could have limited effectiveness for MNEs that are spreading across nations through a network of subsidiaries often established via OFCs. For MNEs, taxation needs to consider the transaction of intangible assets, export intensity, external commercial borrowing and other related party transactions. Investment and taxation-related treaties with OFCs could be effective in controlling unwanted profit shifting. A destination-based cash flow or turnover tax could be experimented with, even though implementing such a measure would be challenging. Cross-country research suggests that moving to such alternative tax systems could be beneficial for developing countries, especially countries with trade deficits and countries that are not reliant on the resource sector (Hebous et al. 2020). Further, there is a greater need to introduce controlled foreign corporation legislation in developing countries experiencing a significant volume of outward FDI. In the absence of CFC rules there will be no tax on foreign profits that remain unremitted from overseas subsidiaries. The repatriation of profits also needs to be encouraged by adopting a moderate tax rate regime and by linking it with transparent transfer pricing regulation.

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Appendix A

Table A1: List of host countries by OFC status

OFCs	Bahamas, Bermuda, BVI, Cayman Islands, Cyprus, Isle of Man, Marshall Islands, Mauritius, Netherlands, Singapore, Switzerland, UAE
Non-OFCs	Algeria, Argentina, Australia, Austria, Bahrain, Bangladesh, Belgium, Bolivia, Botswana, Brazil, Bulgaria, Cameroon, Canada, Chile, China, Colombia, Congo, Costa Rica, Côte D'Ivoire, Czech Republic, Denmark, DRC, Ecuador, Egypt, Ethiopia, Finland, France, Gabon, Germany, Ghana, Guernsey, Hong Kong, Hungary, Indonesia, Iraq, Ireland, Israel, Italy, Japan, Kazakhstan, Kenya, Lithuania, Luxembourg, Madagascar, Malawi, Malaysia, Malta, Mexico, Morocco, Mozambique, Namibia, New Zealand, Nigeria, Norway, Oman, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Saudi Arabia, Senegal, South Africa, South Korea, Spain, Sri Lanka, Sudan, Sweden, Taiwan, Tanzania, Thailand, Tunisia, Uganda, UK, Ukraine, Uruguay, USA, Venezuela, Viet Nam, Zambia, Zimbabwe

Note: average profit tax (percentage of commercial profits) during 2010–19 in the OFC jurisdictions ranged from 0 per cent to 10.30 per cent (except in the Netherlands).

Source: author's construction.

Table A2: Country-, time-, and sector-fixed effects by OFC linkage (dependent variable: *pbt_asset*)

	Via-OFC subsidiaries			**Direct subsidiaries**		
	1	**2**	**3**	**4**	**5**	**6**
ctax	-4.799**	-5.078**	-5.051**	-0.156	-0.399	-0.395
	(1.883)	(2.020)	(2.024)	(0.760)	(0.828)	(0.828)
gdppc	-0.006***	-0.007***	-0.007***	-0.001	-0.0004	-0.0004
	(0.001)	(0.002)	(0.002)	(0.001)	(0.0007)	(0.0007)
unemp	5.325	3.388	3.402	0.281	0.269	0.274
	(3.690)	(3.944)	(3.947)	(1.734)	(1.898)	(1.899)
sage	-1.906	-1.399	-1.378	0.058	0.200	0.208
	(1.177)	(1.307)	(1.317)	(0.388)	(0.400)	(0.401)
coc	-13.663	-8.045	-7.851	-17.166	-29.020	-29.330
	(42.972)	(43.663)	(43.691)	(22.999)	(24.340)	(24.362)
constant	182.959*	214.075**	225.327*	-7.849	-25.577	-23.948
	(100.086)	(105.876)	(117.706)	(42.638)	(45.817)	(49.250)
Time effect	No	Yes	Yes	No	Yes	Yes
Country effect	Yes	Yes	Yes	Yes	Yes	Yes
Sector effect	No	No	Yes	No	No	Yes
Obs	2156	2156	2156	1981	1981	1981
Countries	69	69	69	48	48	48
R2	0.07	0.07	0.07	0.23	0.24	0.24
F (model)	2.08***	1.97***	1.92***	11.37***	9.97***	9.65***

Note: ***<0.01, **<0.05, *<0.10. Figures in the parentheses represent standard errors of coefficients. There are 78 (non-OFC) host countries in the sample. In 34 of them the corporate tax rate changed during the study period. These countries are Algeria, Argentina, Bangladesh, Belgium, Canada, Chile, Colombia, Denmark, Ecuador, Egypt, Finland, France, Germany, Hungary, Israel, Italy, Japan, Luxembourg, Malaysia, Morocco, Namibia, Netherlands, Norway, Oman, Peru, Portugal, South Africa, South Korea, Spain, Sri Lanka, Sweden, Thailand, Tunisia, Ukraine, UK, USA, Viet Nam, Zimbabwe.

Source: author's construction.