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Working Paper

European banks and tax havens: Evidence from country-by-country reporting

IES Working Paper, No. 38/2018

Provided in Cooperation with:

Charles University, Institute of Economic Studies (IES)

Suggested Citation: Jansky, Petr (2018) : European banks and tax havens: Evidence from country-by-country reporting, IES Working Paper, No. 38/2018, Charles University in Prague, Institute of Economic Studies (IES), Prague

This Version is available at:

<https://hdl.handle.net/10419/203217>

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IES Working Paper: 38/2018



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Bibliographic information:

Jansky P. (2018): "European Banks and Tax Havens: Evidence from Country-by-Country Reporting". IES Working Papers 38/2018, IES FSV, Charles University.

This paper can be downloaded at: <http://ies.fsv.cuni.cz>

European Banks and Tax Havens: Evidence from Country-by-Country Reporting

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December 2018

Abstract:

Banks in the European Union recently started publicly reporting data on profit, number of employees, turnover and tax on a country-by-country basis. I introduce the largest, hand-collected data set of its kind, which covers almost 50 banks for up to 5 years between 2013 and 2017. I identify the main locations of European bank's profits, which include the largest European economies as well as tax havens. I focus on answering the question of how geographically aligned these profits are with economic activity. I find that some of the tax havens have maintained high shares of profits in contrast with their much lower shares of employees. These results indicate that banks are likely shifting their profits to tax havens, but for the profit shifting to be directly observed, regulators will need to ask banks to publish even better data.

JEL Classification: F21, F23, G21, G28, H25, H87

Keywords: country-by-country reporting; banks; tax havens; profit shifting; financial transparency; European Union

Acknowledgements: I acknowledge the support from the Grant Agency of the Czech Republic P403/18-21011S. I am grateful for useful discussions and comments on an earlier version of this research from Stephen Abbott Pugh, Alex Cobham, Jonathan Gray, Ondřej Kopečný, Dominika Langenmayr, Markus Meinzer, Richard Murphy, and Miroslav Palanský. In addition, this paper is using the latest version of the banks' country-by-country reporting data set of that has been put together by researchers and students at Charles University, Prague, Czech Republic. Quite a few individuals contributed to the data collection. I am grateful to Eliška Jelínková, Petr Procházka, Anna Bartoňová, Lukáš Bíro, Jakub Siegl, Tereza Palanská, who were among the most important contributors. I have coordinated the data collection work and will be grateful for any feedback, since I aim to improve the data set in the future. The data has been collected since early 2016 and has benefited from feedback from an array of experts at different stages of its preparation. This data set has been published online through the Open Data for Tax Justice in December 2018.

1 Introduction

When companies make use of tax havens' low tax rates and financial secrecy, governments increasingly react by introducing financial transparency measures to better align rights to tax with economic activity. Following one such measure implemented in the European Union, banks publicly report data on profit, number of employees, turnover and tax on a country-by-country basis. Banks publish their country-by-country reporting (CBCR) information in annual reports or on their websites, but there is no easy way to obtain the data in bulk. In this paper, I introduce the largest, hand-collected data set of its kind, which covers almost 50 banks for up to 5 years between 2013 and 2017.

The data set enables me to identify the main locations of European bank's profits. The main research question is how well aligned European banks' profits are with economic activity. I aim to identify locations where banks report their profits and where they carry out their economic activities. I exploit the panel dimension of the data and I estimate how the alignment between profits and economic activity changes over time. I also investigate how much profit is reported in tax havens and how this share develops over time.

By answering the research question, I contribute to three strands of literature. First and most importantly, I am introducing and exploiting the CBCR data for banks and thus contributing to the related tiny but expanding literature. While this is not the first paper to do so, there are a few innovations, starting with the extent of the data set used. Both in terms of years and number of banks, this is, as far as I know, the largest data set of its kind. This paper is using it to shed light on geography of the banks and the role of tax havens. In contrast with some other recent papers such as Bouvatier, Capelle-blancard, Delatte (2017) or Fatica & Gregori (2018), in addition to the larger data set, I am using different indicators, specifically those of profit misalignment, that enable me to observe how well is the location of profits aligned with economic activity. The second strand of literature is profit shifting by banks. While I am not able to capture profit shifting directly, my indirect evidence using five-year-long time series helps to shed light on the likely changes in the profit shifting behaviour of European banks. Thirdly and more generally, I contribute to the literature of the effects of financial transparency for banks as well as other companies.

I structure the remainder of this paper as follows. In Section 2 I briefly introduce the related literature on CBCR data, profit shifting by banks and financial transparency. I introduce the data in Section 3. I introduce methodology of four specific measures of profit misalignment in Section 4 and then I discuss the results of each of them in Section 5. In Section 6, I identify main conclusions as well as policy recommendations.

2 Related literature

In this section I focus on three areas of relevant literature. I first discuss the use of banks' and other multinational enterprises' CBCR data. I then discuss profit shifting by banks and ways of measuring misalignment of real economic activity and profits. Lastly, I provide a brief introduction into the more general literature on financial transparency.

2.1 Country-by-country reporting data

The CBCR bank data have become only recently available, but there are already a few notable analyses. Richard Murphy, the originator and advocate of the CBCR (Murphy, 2003), published one of the first empirical analyses using the data in a report for a group of members of the European Parliament (Murphy, 2015). Murphy (2015) uses data for 26 banks, 17 of which had published the full data, 7 of which published only partial data, to conclude that overstatement of profits in low tax and

offshore jurisdictions appears to be occurring. Jelínková (2016) uses the data for 32 banks (28 of them for both 2014 and 2015) in her student thesis and finds that banks report their profits disproportionately to their activities. She estimates that if profits were apportioned across countries on the basis of employees and turnover, on average around 60% of the profits would be redistributed. With similar, but extended data, more advanced analyses have been carried out by Bartoňová (2017) and Jelínková (2018) in their student theses. Oxfam has been very active in this area with a few reports focused on individual countries such as France in 2016, Oxfam (2016), and a recent report (Oxfam, 2017) for which SOMO (2017) prepared estimates focused on CBCR data of 20 European banks and their presence in tax havens. Janský (2017) extended their data with banks important in the Czech Republic and applied a methodological approach consistent with Oxfam (2017) to enable a comparison.

In a recent addition to this literature, Bouvatier, Capelle-blancard, Delatte (2017) estimate that being a tax haven increases the presence of foreign affiliates by 168 % and estimate that the related tax savings for EU banks is between 1 and 3.6 billion euros. They build on the dataset provided by Oxfam (2017) to have a final sample of 36 banks for one year, 2015, and use Hines Jr & Rice (1994) for their main definition of tax havens. They Bouvatier, Capelle-Blancard, & Delatte (2017) use a gravity model to arrive at Luxembourg, Isle of Man and Guernsey as the main tax havens for their sample of EU banks. Even more recently, Fatica & Gregori (2018) use CBCR data for years 2014-2016 to find that profits in tax havens as well as elsewhere are negatively related to statutory corporate tax rates. They estimate that the bulk of profit is shifted among subsidiaries, as foreign-to-foreign tax differences matter significantly more than home-to-foreign differentials. These two studies are close in terms of focus to this paper. However, I use a different methodology and a larger dataset than both these studies.

A few recent papers examine the effects of the CBCR requirement introduction on banks' behaviour. Overesch & Wolff (2018) use Compustat and Orbis databases to find that European multinational banks increased their tax expenses relative to unaffected other banks after CBCR became mandatory. Also Joshi, Outslay, & Persson (2018) treat the introduction as an exogenous shock to disclosure requirements. They use firm-level Orbis data to find a significant decrease in the income shifting activities by the financial affiliates in the post-adoption period and they also find evidence of an increase in income shifting activities by these banks' industrial affiliates, which are not subject to reporting and disclosure requirements. Furthermore, using an even study methodology, Dutt, Ludwig, Nicolay, Vay, & Voget (2018) do not find significant abnormal returns for the banks affected by the political decision to include a CBCR obligation, which is in contrast with Johannesen & Larsen (2016), who find an effect for extractive companies' CBCR.

In this second part of this subsection, I discuss literature that focuses on CBCR data, not exclusively limited to CBCR data on banks. Following the introduction of public country-by-country for extractive sector companies listed in the EU and USA (Wójcik, 2015), international civil society activists might make this spread across the globe (Seabrooke & Wigan, 2015). Johannesen & Larsen (2016) find that country-by-country reporting of tax payments is associated with significant decreases in firm value in extractive industries and they associate this effect of disclosure rules with a reduction of rents derived by firms from tax evasion. A recent study for the European Commission by Porsch et al. (2018) provides a review of country-by-country reporting requirements for extractive and logging industries. Knobel & Cobham (2016) explain how restricted access to the CBCR data according to the OECD-led plans is likely to exacerbate global inequalities in taxing rights. Norway has adopted one of the most progressive CBCR requirements for its companies and PWYP Norway (2018) has been analysing the reporting of one of the Norway's biggest companies, Statoil. Cobham, Janský, & Meinzer (2018) argue that country-by-country reporting is the key proposal to re-establish appropriate disclosure and ultimately accountability of multinational enterprises and they see the OECD as providing a valuable

step forward by facilitating the publication of partially aggregated CBCR for large multinational enterprises (as outlined in Annex C of a recent report by OECD, 2018). In a recent paper, Hanlon (2018) discusses the disconnect between the OECD-led CBCR requirements and current tax policy of the arm's length principle of transfer pricing and what implications country-by-country reporting might have for the international allocation of taxing rights.

There is a more comprehensive overview of the other CBCR standards by Cobham, Gray, & Murphy (2017). Additionally, Akamah, Hope, & Thomas (2017) find that US multinational companies that operate more extensively in tax havens tend to disclose their foreign operations at a higher level of aggregation. They argue that the evidence is consistent with managers attempting to avoid strong criticisms of their firms' tax-avoidance practices by making geographic disclosures less transparent. They further argue that multinationals have the incentive to hide these activities because increased transparency may provoke public scrutiny from the media, policy makers, and tax-watchdog groups, which can damage the firm's reputation or serve as a red flag for potential government sanctions or additional regulation. The regulatory accounting standards that they make use of (ASC 280 or IFRS 8) offer little specific guidance on how firms define material countries for geographic reporting purposes. In this respect, the new EU regulation requires activities in all the countries to be reported, although in reality quite a few banks do have an "Other" category in their financial reports which could potentially be used to conceal some of their activities. They conclude that the findings are consistent with the suggestion of policy makers and civil-society organizations around the world that country-by-country reporting is needed to better highlight tax-avoidance activities of multinational companies.

2.2 Profit shifting

This paper aims to contribute to the small existing literature that addresses profit shifting by banks. While I am not able to document profit shifting itself, I show the extent of misalignments of locations of profits and economic activity as well as the use of tax havens and present these findings as indirect evidence of profit shifting. This is in line with most other studies that report indirect evidence. An important example of this is an article by Demirgüç-Kunt & Huizinga (2001), who find that the profitability reported by foreign-owned banks across 80 countries is negatively related to statutory corporate tax rates.

In one of the most relevant recent papers on profit shifting by banks, Langenmayr & Reiter (2017) use regulatory data from the German central bank to provide evidence of a bank-specific method of profit shifting - the strategic relocation of proprietary trading to low-tax jurisdictions. They document that a one percentage point lower corporate tax rate increases banks' fixed-income trading assets by 4.0% and trading derivatives by 9.0% and that this increase does not arise from a relocation of real activities (i.e. traders); instead, it stems from the relocation of book profits.

Some of the existing analyses of profit shifting are based on the Orbis database. However, Orbis covers only subsidiaries, not branches and banks use branches extensively. According to Cerutti, Dell'ariccia, & Martinez Peria (2007), about a quarter of foreign affiliates of the 100 largest banks worldwide are branches, and the choice between opening a subsidiary or a branch varies systematically with a country's tax rate. This omission of branches from Orbis might lead to systematic biases. In contrast, CBCR data include information on all activities of the banks across all countries, including subsidiaries and branches. Indeed, Jelínková (2018) shows that in contrast with CBCR data, Orbis data for banks tend to overreport profits and underreport the number of countries where bank groups operate, tax, or the number of employees.

There are three main recognised profit shifting channels: debt shifting, location of intangible assets and intellectual property, and strategic transfer pricing. All three are motivated mostly by the multinational enterprises' desire to lower their taxes by transferring their profits to countries where

they pay lower taxes, but especially debt shifting seems to be relevant for banks that do not have much intellectual property or opportunities for strategic transfer pricing. Because of the specific characteristics of banks and the rest of the financial sector, many profit shifting studies exclude them from their empirical analyses. But then analyses focused on banks such as this paper are perhaps even more important.

Rather than looking at CBCR data through profit-shifting literature lens, I focus on the misalignment between reported profits and economic activity, e.g. how much more profit is reported in some countries such as tax havens in comparison with little economic activity there. The policy consensus (OECD, 2013) on the need to apply corporate taxation where a given value was created is empirically investigated by two sets of estimates. First, Cobham & Loretz (2014) use company-level balance sheet data retrieved from the Orbis database provided by Bureau van Dijk. Second, Cobham & Janský (2019) estimate the size of the misalignment of economic activity using US data provided by the government Bureau of Economic Analysis. Relatedly, Riedel, Zinn, & Hofmann (2015) find that the tightening of transfer pricing rules raises reported operating profits of high-tax affiliates, and vice versa for low-tax ones, and reduces the sensitivity of affiliates' pre-tax profits to corporate tax rate changes, and they therefore suggest the effectiveness of the regulations in limiting tax-motivated profit shifting behaviour. In another similar analysis, MSCI (2015) identify 243 companies (out of 1,093 companies within their MSCI World Index constituents; health care and IT companies stood out) paying an average rate of 17.7%, versus 34.0%, if these companies were paying taxes in the jurisdictions where they generate revenues, i.e. equivalent to comparing the location of reported profits and sales (the total difference amounts to USD 82 billion per year).

2.3 Financial transparency

There is a growing research area estimating the effects of financial transparency. Johannesen and Zucman (2014) assess the impact of G20 policy crackdown on tax havens and find that tax evaders tend to shift deposits to havens not covered by a treaty with their home country. Cobham, Janský, & Meinzer (2015) evaluate the financial transparency of countries in the form of the Financial Secrecy Index and operationalise a secrecy or tax haven spectrum capable of accommodating all jurisdictions. Bilateral tax treaties can provide another set of opportunities for tax avoidance and can increase secrecy through complexity in international taxation (McGauran, 2013; Weyzig, 2012). Choy, Lai, & Ng (2017) document that the stock prices of the nonfinancial firms experienced a 0.9% abnormal drop after a 2011 ActionAid report condemned the FTSE 100 firms for holding an unusually large number of subsidiaries in tax haven and thus raising the firms' costs of holding tax haven subsidiaries.

Braun & Weichenrieder (2015) find evidence that the conclusion of a bilateral tax information exchange agreement with tax havens is associated with fewer operations of German multinational enterprises in those tax havens and therefore that these tax agreements affect FDI as well, which they consider as suggesting that firms seek out tax havens not only due to tax, but also because of the secrecy they offer. Similarly, Bennedsen & Zeume (2017) find that an increase in transparency through the signing of tax information exchange agreements between home countries and tax havens is associated with a 2.5% increase in the value of affected firms. Furthermore, they find that some firms respond to the agreements by moving subsidiaries from affected to non-affected tax havens and such firms do not experience an increase in firm value. Dyreng, Hoopes, & Wilde (2016) examine the effects of ActionAid International's, a nongovernmental organisation, public pressure on noncompliant United Kingdom firms in the FTSE 100 to comply with a rule requiring them to disclose the location of all of their subsidiaries.

An increasing number of academic papers has used the Panama Papers or a similar leaked documents to shed more light on finance and financial secrecy. Alstadsaeter, Johannesen, and Zucman (2017) use

stratified random audits and leaked data from offshore financial institutions, including the Panama Papers, to study tax evasion by wealthy individuals. The Panama Papers have also been used by O'Donovan et al. (2017), who estimate that the leak erases \$135 billion in market capitalization among 397 public firms that they trace as users of offshore vehicles exposed in the leak. Caruana-Galizia & Caruana-Galizia (2016) used a leaked data set to show that the growth of EU-owned entities declined, in contrast with a control group of non-EU-owned entities, after the implementation of the 2005 Tax and Savings Directive that obliges cooperating jurisdictions to withhold tax or report on interest income earned by entities whose beneficial owner is an EU resident. Similarly to Johannesen and Zucman (2014), Caruana-Galizia & Caruana-Galizia (2016) observe the substitution of EU ownership for non-EU ownership, as well as the substitution of cooperative for non-cooperative offshore jurisdictions. Along similar lines, Ruf & Weichenrieder (2013) use firm level data on the allocation of passive assets in German multinationals to show an increased preference for low-tax European countries compared to non-European countries following a change in German controlled foreign corporation rules. It is now possible to study the effects of financial transparency in the form of the current availability of the CBCR data and, especially when there is more CBCR data available in the future, the data itself should be used to study effects of other financial transparency changes on profits and economic activity of banks and other multinational enterprises.

There is also literature on transparency in banking that I discuss briefly here and refer to the referenced research for more comprehensive reviews. The earlier literature often investigates the potentially negative implications of increased transparency of banks. Cordella & Yeyati (1998) argue that public disclosure of bank risk exposures might reduce the probability of banking crises only if banks control their risk exposure, whereas Hyttinen & Takalo (2002) argue that the costs of complying with disclosure requirements might contribute to financial fragility. These papers often include a model in which an improvement in the transparency of the banking system has two contradictory, positive and negative, effects on welfare, for example, related to a probability of bank runs. However, with the case of an improved transparency in the form of the publication of the CBCR data, there are hardly any effects that could affect welfare negatively. Therefore, in the case of public CBCR, I would expect the positive effect to dominate so that it will lead to an increase in welfare. In the discussed or other recent literature on bank runs (Gertler & Kiyotaki, 2015; He & Manela, 2016), they do not seem to be related to the publication of CBCR data.

In another theoretical paper Chen & Hasan (2006) argue that an improvement in the transparency of a bank may reduce depositor welfare by increasing the chance of an inefficient contagious run on other banks. Their argument that excessive transparency might lead to a loss in welfare relies on several assumptions. One assumption, that increased transparency can lead to bank runs, does not seem very relevant for the case of the publication of the CBCR data. The authors themselves are well aware of the sensitivity of their results and discuss a different assumption in their concluding remarks. If they defined improvements in transparency as when depositors know better whether the problems of the failed banks are systematic in nature or idiosyncratic in nature rather than an increase in the precision of the public signals used in the main body of their paper, they argue that an improvement in transparency would always reduce the chance of a contagious run. Indeed, the publication of the CBCR data might be used to shed light on whether the problems of the failed banks are systematic in nature.

There is also research on transparency of central banks in both supervision of commercial banks and their policy roles. As an example of the former, Bernanke (2010) argued that more public disclosure of stress tests of banks allows for scrutiny by outside analysts and this improved transparency enhances credibility of Federal Reserve. As an example of the latter, Horváth & Vaško (2016) evaluated the transparency of central banks regarding their policy framework to safeguard financial stability and

showed it to be higher for central banks that have a transparent monetary policy and those in developed countries.

3 Data

In this paper I use, as far as I know, the most comprehensive data set of banks' CBCR. I use the newly available country-by-country reporting data of biggest European banks for 2013-2017 to shed more light on locations of banks' activities. Credit institutions and investment firms established in the EU (hereafter "banks") have had to publish sectoral country-by-country reports since 2015 (i.e. for year 2014). The banks' data are available thanks to disclosures required by the Capital Requirements Regulations 2013.

The requirements originate from Article 89 of the Capital Requirements Directive – CRD IV, of which paragraph 1 says:

“From 1 January 2015 Member States shall require each institution to disclose annually, specifying, by Member State and by third country in which it has an establishment, the following information on a consolidated basis for the financial year:

- (a) name(s), nature of activities and geographical location;
- (b) turnover;
- (c) number of employees on a full time equivalent basis;
- (d) profit or loss before tax;
- (e) tax on profit or loss;
- (f) public subsidies received.”

There are a few challenges related to the data. Some of them are common to all the CBCR data for banks and have been discussed by the existing studies such as Oxfam (2017), Bouvatier, Capelle-blancard, Delatte (2017) or Fatica & Gregori (2018), and so I do not discuss them in detail here. For example, as discussed by Cobham et al. (2018), the CRD IV disclosures fall well short of the potential of CBCR and, in addition, the transposition of the directive into EU members' national laws allowed for major inconsistencies within and between countries. Nonetheless, the information available in thanks to this CBCR requirement is interesting as well as illustrative of the potential value of CBCR.

3.1 Data set

Since the resulting CBCR data are not aggregated across banks by any institution and are often hard to find on banks' webpages, I use a data set collected by a group of researchers and students at Charles University, Prague, of which I have been a coordinator. The earlier versions of the data set were used in student theses by Jelínková (2016), Bartoňová (2017) and Jelínková (2018) and in a policy paper by Janský (2017). The data set is going to be updated in the future and this paper uses the data as they were on 18 December 2018. Since 19 December 2018 the data set has been publicly available through Open Data for Tax Justice.

The data set is presented in three sheets. The Data sheet includes the data itself. The Exchange rates sheets is an auxiliary tool to help convert the information in the Data sheet into the same currency, euro. The Banks sheet provides an overview of the banks for which data is recorded and contains additional information about the data including notes.

The Data sheet includes the CBCR information itself. The guiding principle in collecting the data is to have all the information that is available in the reports in poor format copied in its fullness and exactness into the dataset's standardised format. For each combination of bank, year and country, there is information for the various economic variables copied from the relevant bank's report (if available). In addition to all the required information being copied, also other available numbers and other information are usually copied and so there is, for example, a column for total assets included because some banks report it on country-by-country basis. All data (except information about employees) are in millions of euro. If there is information in, for example, thousands in the original source document, it is copied into the cell and divided it by 1000 (so that the copied information corresponds to the original).

The tax information in the Data sheet requires a careful treatment. For one thing, in most cases, when recording the data, the sign of the tax variable was changed so that when tax is due it is with a positive sign rather than negative one. A more important issue to consider is that the tax could be reported for a different financial year than the other variables. This is due to the fact that banks differ in their understanding of the reporting requirements. Some banks report tax due for a given year and some other banks tax paid in a given year. For example, as Lloyds says in one of its reports, "In any given year tax paid will not directly relate to the accounting profits earned in that year – this is because there is often a difference between accounting profit and taxable profit (as a result of applying local tax legislation) and any tax due on taxable profits is usually payable across multiple years." When there is no additional information given, it is assumed that the bank reports tax due for a given year and therefore the information for tax in a given report relates to the same year as for the other information reported. Sometimes banks provide additional information and this information is then recorded in the data set. In addition to one tax variable, the Data sheet includes columns for up to four additional tax variables (current, paid, deferred, other), which are recorded whenever a bank reports the information. When this information is included, it is possible to align the tax concepts across banks and years. In the end, because of the focus of the paper, I do not use the tax information much, but it should be exploited in future research.

The Exchange rates sheets is an auxiliary tool to help convert the information in the Data sheet into the same currency, euro. If the data is reported by the bank in different currency than euro, the relevant cell in the Data sheet is filled in with the original information (in that currency in which it was reported by bank) and it is linked and multiplied by a cell (in the Exchange rates sheet), which contains the exchange rate for the currency in given year. Information on exchange rates in the form of annual averages comes from European Central Bank (2018).

The final, Banks sheet includes a list of banks for which there are data in the Data sheet and data availability is indicated in the Banks sheet. The Banks sheet includes any notes regarding the data. Specifically, there are notes for the various tax concepts reported, which varies across banks. Also, when banks include the country group Other in their reports and say what countries are included in this group, this information is recorded in the Banks sheet. Along similar lines, a few banks do not report Honk Kong separately from China and, in these cases, there is a separate country group "China with HK".

The banks were selected into the data set so that it includes the biggest and most important banks. A leading list of Europe's 50 largest banks by assets was used (S&P Global Market Intelligence, 2018; earlier editions were reported by SNL Financial, which is now S&P Global Market Intelligence, a division of S&P Global). In addition, a few relatively large banks that are not on this list (or were not on the list in the previous editions used), but for which data are available in the data set were included in the analysis to improve the coverage. Although the data are available as a result of the EU regulations, the data also provide information about other European as well as non-European countries' and banks' activities, which I use in this paper. So rather than having an EU or European

focus, I use the data to shed light on the global activities of banks using a sample skewed heavily towards having better EU and European coverage.

Table 1 shows banks included in the data with a ranking according to the largest banks in Europe by total assets in 2017 (S&P Global Market Intelligence, 2018). There is data for 23 banks that were the largest banks in Europe in 2017, but there is no data for 10 out of the top 50 largest European banks by total assets. For these banks, the CBCR information does not seem to be publicly available.

Table 1. Banks in the data with a ranking according to the largest banks in Europe by total assets in 2017

Bank	Ranking	Bank	Ranking
HSBC Holdings Plc	1	ABN AMRO Group NV	26
BNP Paribas SA	2	KBC Group NV	28
Crédit Agricole Group	3	Svenska Handelsbanken AB	29
Deutsche Bank AG	4	DNB ASA	30
Banco Santander SA	5	Nationwide Building Society	31
Barclays Plc	6	Skandinaviska Enskilda Banken AB	32
Société Générale SA	7	Landesbank Baden-Wuerttemberg	33
Groupe BPCE	8	Swedbank AB	35
Lloyds Banking Group Plc	9	Banco de Sabadell SA	36
ING Groep NV	10	Bankia SA (BFA Sociedad Tenedora de Acciones)	37
UniCredit SpA	11	Erste Group Bank AG	38
Royal Bank of Scotland Group Plc	12	Bayerische Landesbank	39
Intesa Sanpaolo SpA	13	Dexia SA	43
Crédit Mutuel Group	14	Belfius Banque SA	44
UBS Group AG	15	Norddeutsche Landesbank Girozentrale	45
Credit Suisse Group AG	16	Landesbank Hessen-Thueringen Girozentrale	47
Banco Bilbao Vizcaya Argentaria SA	17	Banca Monte dei Paschi di Siena SpA	49
Rabobank	18	Allied Irish Banks Plc	>50
Nordea Bank AB	19	Banco Popular Espanol SA	>50
Standard Chartered Plc	20	DekaBank	>50
DZ Bank AG	21	KfW	>50
Danske Bank A/S	22	NIBC Bank NV	>50
Commerzbank AG	23	Raiffeisen Bank International AG	>50

Source: Author; ranking by S&P Global Market Intelligence (2018).

3.2 Descriptive statistics

Most banks with available CBCR information report most required economic variables from 2014 to 2017. Quite a few banks publish data also for year 2013, although some of them only for some variables. So, while the publication of country-by-country reports is compulsory for year 2014, some banks voluntarily opted to publish CBCR data already for year 2013. A special case is Banco Popular, which merged into Grupo Santander in June 2017 and therefore its final CBCR is for 2016.

In the data, there is information for a maximum of 46 banks for up to 5 years between 2013 and 2017, which together cover 148 countries and jurisdictions, terms that I use interchangeably throughout the paper. Altogether this data consists of 208 bank-year groups of observations and, in sum, 4688 (bank-year-country) observations. Table 2 shows the number of banks and observations by year and it distinguishes between number of banks or observations with any data or, specifically any profit data. The profit data are generally less available and the difference in availability is striking for 2013, when 25 banks voluntarily reported some CBCR information, but only 10 of these reported profit on country-by-country basis.

Country-level descriptive statistics are included, together with selected results, in Table A1 in the Appendix. It provides information for all banks summed up on a country-by-country basis, including their respective global shares as well as average value of the misalignments estimated below. The number of observations in the first column show how many country-bank-year-level observations there are for a given country. The first set of four columns in Table A1 displays the absolute values of sums. The financial data are displayed in million euros. The countries are sorted by an average annual sum of all non-negative values of profit. For example, all banks in the sample together have reported more than 10 billion of profit on average every year between 2013 and 2017 in three European countries: France, United Kingdom and Germany. These three countries also dominate in terms of number of employees, turnover and tax paid. The second set of columns in Table A1 shows the same data as the first set, but in relative terms, as shares of global totals. From this I can read, for example, that all banks had within the sample on average 10-15% shares of the four variables in each of France, United Kingdom and Germany. By dividing the country-level numbers for tax and profit, I can get a rough estimate of effective tax rate the banks face in each of the countries (not shown in the table) – among the ten countries with most profit reported in them, only three countries have the rate below 20% and all of them are sometimes considered tax havens: Luxembourg (16%), Ireland (5%) and Singapore (13%). Some other tax havens have even lower effective tax rates than Ireland, but they are less important in terms of profit. The final four columns of Table A1 include results that I discuss later.

Table 2. Number of banks and observation by year

Year	Number of banks with any data	Number of banks with profit data	Number of (country-bank) observations with any data	Number of (country-bank) observations with profit data
2013	25	10	548	198
2014	46	42	1011	917
2015	46	44	1030	964
2016	46	45	1048	1021
2017	45	45	1051	1018
Total	208	186	4688	4118

Source: Author.

4 Methodology

In this paper, I use a range of measures of profit misalignment. I begin with correlation-based one and then introduce two other indicators of relative and absolute profit misalignment and I conclude with an indicator focused on tax havens. I introduce the misalignment measures below for one specific indicator of economic activity, number of employees, which I believe is the best information on real economic activity that is available in the data and is also the preferred comparator in recent research (e.g. Tørsløv, Wier, & Zucman, 2018). Still, the measures are general in the sense that other indicators of economic activity, such as turnover, can be plugged in, which I do as a supplementary measure below.

The correlation coefficient of factors of economic activity (in particular number of employees) with profit is a simple measure to show the relative intensity of misalignment or alignment. I consider the Pearson correlation coefficient as the most suitable. It is a measure of the linear dependence between two variables and it has a value between 1 and -1, where 1 is total positive linear correlation, 0 is no linear correlation, and -1 is total negative linear correlation. Perfect alignment of profits with economic activity would give rise to a total positive linear correlation between the series, i.e. a value of 1. A total negative linear correlation of -1 would, equivalently, imply perfect misalignment. The correlation coefficient can be interpreted directly as the measure of the misalignment (i.e. the higher

its value, the lower the misalignment) and I am going to use it in this way. Alternatively, an inversed value of the coefficient can be used instead (i.e. the higher its value, the higher the misalignment), as introduced by Cobham & Janský (2019). The correlation coefficients can be estimated across countries or banks at various levels separately for years: estimated for data aggregated at country-level or at the country-bank-level, for which there are the most detailed data. More formally, the correlation coefficients at the country level can be written as:

$$\text{Corr}(\text{profit}_{it}, \text{turnover}_{it}) = \frac{\text{Covariance}(\text{profit}_{it}, \text{turnover}_{it})}{\text{Standard deviation of profit}_{it} \times \text{Standard deviation of turnover}_{it}} \quad (1)$$

where t stands for a year and i can stand for data aggregated at country-level or at the country-bank-level. Any negative values of the coefficient estimates for both country-level and country-bank-level data would point to a relative misalignment across countries (i.e. profits would be reported mostly in some countries and economic activity in other countries) and for country-bank-level data also to a variation across banks (e.g. varying relationship of profits and economic activity for different banks).

More graphically striking are the relative misalignment measures, which show the ratios, aggregated for all banks in the sample, of each country's profit and employment. In this way, a number over 100% indicates a country with a higher proportion of bank profit than of economic activity. The most extreme cases show profit misalignment far in excess of any proportionate real activity; and to countries that consistently fail to capture an aligned profit share. The indicator of relative misalignment is the ratio of the shares of a given country's profit per employee, multiplied by 100 for a clearer interpretation:

$$\text{Relative misalignment}_{it} = \frac{\text{Share of profit}_{it}}{\text{Share of employees}_{it}} \times 100\% \quad (2)$$

The relative misalignment can have values between zero and, theoretically, infinity. The higher the estimated values of relative misalignment, the higher is the misalignment. If all the profits were aligned perfectly with number of employees, the relative misalignment would have values of 100% for all countries. In reality, I expect countries with a concentration of real economic activity to have values of around 100% and lower, and for tax havens to have values higher than 100%. This helps to answer questions such as which countries have a higher share of banks' income than employees. If a country has a value of 200%, that implies that twice as much profit is reported there than would correspond to its share of employees.

As an absolute measure of profit misalignment, I estimate a misaligned profit to show much profit is elsewhere than economic activity, in the following way:

$$\text{Profit misaligned}_{it} = \frac{\text{Employees}_{it}}{\text{Total employees}_t} \times \text{Total profit}_t - \text{Profit}_{it} \quad (3)$$

in million euro, where for every year t . I estimate total profit and number of employees as sums of positive values across all countries i and banks and individual country shares in these totals. It is a value of profits that would need to be declared elsewhere in order to be aligned with their economic activity. The profit misaligned reflects the scale of the distortion: in effect, how much profit is elsewhere than the economic activity. This formula was introduced by Cobham & Janský (2019) and they call it excess profit if the result is negative (since alignment would require its removal, e.g. for tax havens) and they call it missing profits if the result is positive. This can be calculated as the sum of either the (positive) 'excess' profits recorded in jurisdictions where there is not concomitant economic activity; or equivalently the sum of the (negative) 'absent' profits from jurisdictions with activity.

The final methodological approach is to estimate the share of profits reported in tax havens. Since there is no consensus on a single classification of tax havens and partly as a robustness check, I use a range of twelve classifications of tax havens discussed below. For each list of tax havens, I calculate the following:

$$\text{Share of profits in tax havens}_{it} = \frac{\text{Sum of profits in tax havens}_{it}}{\text{Sum of all profits}_{it}} \quad (4)$$

I combine the banks' CBCR data with twelve various classifications for whether a country is considered a tax haven or not. I source the lists of tax havens from a variety of sources, from academic papers to international organisations. Here I discuss them briefly one by one. I use two classifications by Oxfam (2017): one original, which is quite inclusive, and one adjusted - without Austria and Belgium. Hines Jr & Rice (1994) use the Internal Revenue Manual's list of 29 tax haven countries for purposes of U. S. businesses and complement it by a few other lists to arrive at 41 jurisdictions. OECD (2000) lists 41 jurisdictions that fulfil its earlier definition of tax havens (OECD, 1998). Hines (2010) uses his own list of 52 countries and territories commonly considered to be tax havens. Zucman (2013) uses his own list of tax havens (on page 74 of his online appendix, it is not clear what he means by British Antilles, and British Overseas Territories, but I consider it to be the following jurisdictions: Anguilla, British Virgin Islands, Montserrat). Since he explains the geographical breakdown of Switzerland's fiduciary deposits, he does not include Switzerland itself – but I classify it as a tax haven because I consider it in line with his research. This results into a list of 46 tax havens.

In another paper that I use as one of the sources for the classifications of tax havens, Johannesen & Zucman (2014) compile a list of 52 tax havens to study the effects of the G20 tax haven crackdown (their list is drawn from work undertaken by the OECD over the course of many years, which the authors have adjusted in vague terms). UNCTAD (2015) use a list of 41 offshore hubs, which they differentiate in two groups: tax havens (of 37 jurisdictions, based on an earlier OECD list) and jurisdictions (not identified as tax havens, according to the authors) offering special purpose entities or other entities that facilitate transit investment (Austria, Hungary, Luxembourg and the Netherlands). I include two classifications – only what they call tax havens (37) and tax havens and the other countries (41). I also use the classification of Janský & Kokeš (2015) , who compile a list of 13 classifications of tax havens and consider country a tax haven if it is present in at least seven of these lists. I also include secrecy scores from the 2013 Financial Secrecy Index (Cobham et al., 2015) that indicate how financially secretive a jurisdiction is, using the cut-off of 65 to distinguish between tax havens and other countries. IMF's Crivelli et al. (2016) used the list compiled by US government's Gravelle (2013) and I use the later version by Gravelle (2015). Methodologically, I do not rate the country group Other or "China with HK" as a tax haven, regardless whether any listed countries in the Other group, or China or Honk Kong in the other case, is classified as one.

I do not extend any of these methodological approaches to estimate tax revenue foregone or at risk from profit shifting for the countries affected. This is mainly because the data are not of sufficient quality to support these specific claims and more detailed country-by-country reporting would be needed. Furthermore, with the exception of the correlation coefficients that I apply at the level of both countries and banks, the above indicators are focused on misalignment at the level of countries; further research could estimate similar indicators for the level of banks and answering questions such as which banks have a higher misalignment.

There are a few of additional adjustments that I make to the data before applying the described methodology. When there is loss reported, i.e. the profit is negative (around one seventh of observations), I input zero so that it does not distort the methodology approach described below. For the misalignment measures, I use a bank-year-country-observation only if it has information for all relevant variables (e.g. both profit and employees for a misalignment between profit and employees). Also, in addition to using the full sample of all banks in all years, I create samples that are consistent over years and have any or profit data available from 2013 or 2014 – I check whether the main results are robust to the use of these various samples, but I present the results only for the full sample.

5 Results

The straightforward misalignment measure of correlation coefficients points to relatively high and, possibly increasing alignment of profits and employees. Table 3 and Figure A1 in the Appendix show the estimated correlation coefficients of profit and number of employees (equation 1 above) for banks' CBCR data at the most detailed, bank level (banks) or aggregated in annual totals at the country level (countries). The correlation coefficients are all positive and relatively high, range between 0.64 and 0.77 for country-bank-level and between 0.87 and 0.92 for country-level data. The fact that the former correlations are lower than the latter ones implies that there is higher misalignment at the bank level than when I sum up the profit and employees at the country level across the banks. The number of observations increased substantially between 2013 and 2014 and therefore it makes more sense to evaluate the trends on the more consistent sample only from 2014. Since 2014, the correlation between the locations of banks' profits and employees has, if anything, slightly increased. The trend seems to be towards higher alignment, but it is not very strong, and it will be interesting to see whether forthcoming data for future years will confirm it. I now turn to other indicators of misalignment to see what they suggest and how consistent they are with these correlations measures.

Table 3. The correlation coefficients between profits and employees at the bank and country levels by year

	Number of observations (banks)	Number of observations (countries)	Correlation (banks)	Correlation (countries)
2013	146	189	0.77	0.87
2014	876	882	0.64	0.87
2015	945	948	0.72	0.87
2016	1002	1009	0.70	0.92
2017	981	989	0.75	0.89

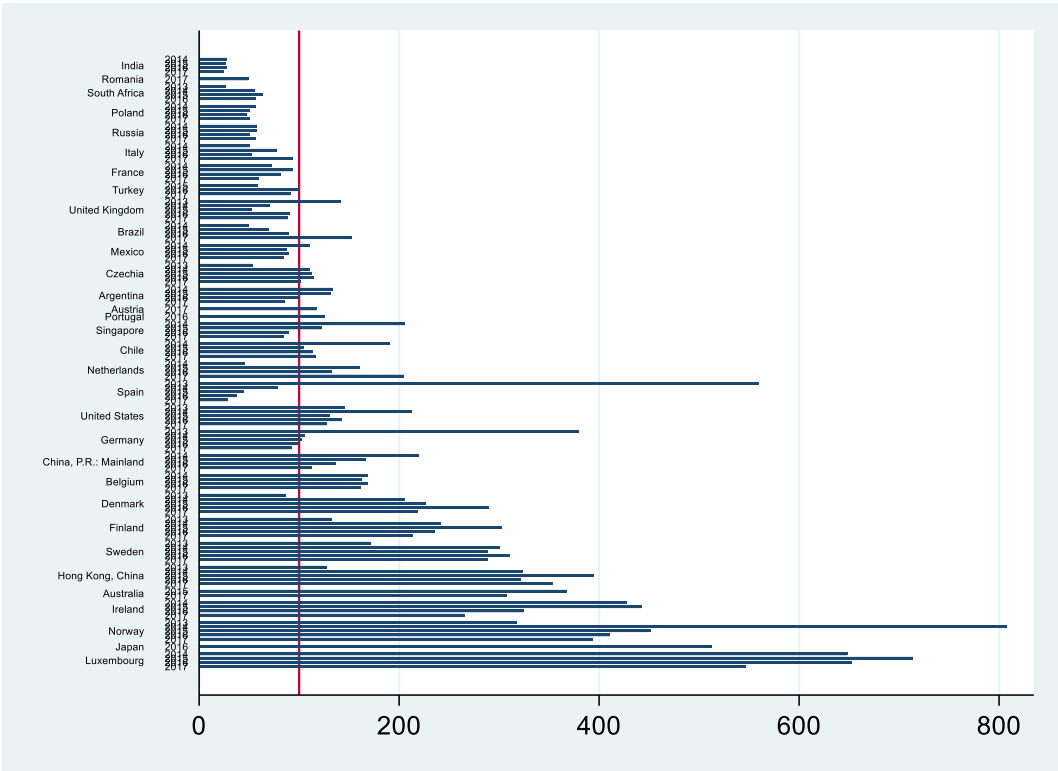
Source: Author.

I now turn to the measures of relative misalignment between profits and employees (equation 2 above). I include in the Table A1 in the Appendix the results for every country regardless of its importance in terms of reported profits in it. For a clarity of presentation – so that it fits into a graph and the scale is not affected by extreme outliers - I first display relative misalignment for average across the five years and only for countries that have substantial amounts of profit reported (either higher than 100 or 1000 million euro in at least one of the years). Figures A2 and A3 in the Appendix show relative misalignment between profits and employees as the 2013-2017 mean for countries with at least 1000 or 100 million euro, respectively, in profits reported in them in at least one of the years. Figures A2 and A3 indicate that there are substantial differences in relative misalignment across countries. In addition, Figure 1 shows relative misalignment between profits and employees for countries and years with at least 1000 million euro in profits reported in that given year (with one exception that I exclude – Luxembourg in 2013 has the relative misalignment of 22604 and would spoil the graph for the other countries and years shown). Figure 1 highlights the extent of variation in relative misalignment across years. For each country there is some variation across years Furthermore, Figure 2 plots the relative misalignment of profit with the number of employees against the relative misalignment with turnover, with the size of the circle reflecting the absolute value of profit reported in the country. Figure 2 exhibits the implications of using other indicator of economic activity than, given the data availability, the preferred number of employees. There are differences between the two measures, but there is a clear positive correlation between these them.

The results in Figures A2-A3 and 1-2 point to countries being spread along quite a wide spectrum of relative misalignments. Most big economies, including France and Germany, have very low misalignments. Their values are about 100% for both the number of employees and turnover, %, which would be a sign of perfect alignment (i.e. banks declaring the same proportion of their global gross profits as the share of their global economic activity in these jurisdictions).

Some of the countries have substantially more income reported in them than the number of employees of banks suggested. These jurisdictions include Ireland and Luxembourg, for which there are ample data and both of which are important locations of profit. Ireland and Luxembourg stand out for several reasons, as already highlighted in Cobham et al. (2018). They are the two countries with some of the highest relative misalignments with the number of employees as well as with turnover, as is clear from Figure 2. Their average misalignments with the number of employees are above 350% for Ireland and 1100% for Luxembourg and with turnover about 230% for both. Hong Kong (China) is another jurisdiction that is often considered a tax haven and has high levels of reported profits and exhibits high levels of relative misalignment with both the number of employees and turnover. There are other tax havens with similar relative misalignment, such as Cayman Islands, Curacao, Jersey, Guernsey, Bermuda, Mauritius, Qatar and Isle of Man but for these there are not many observations and the profit reported in them is lower (but still above 100 million euro in at least one of the years). In addition to examining further the role of these tax havens, research should focus on other results that I find hard to explain. Some other countries' results do not allow for a straightforward interpretation and are suitable cases for future research with the CBCR and other data sources. Examples are those of China (which show high relative misalignment with turnover in particular) and of Spain (which both seem to have substantially less income reported than the number of employees or turnover of banks would suggest).

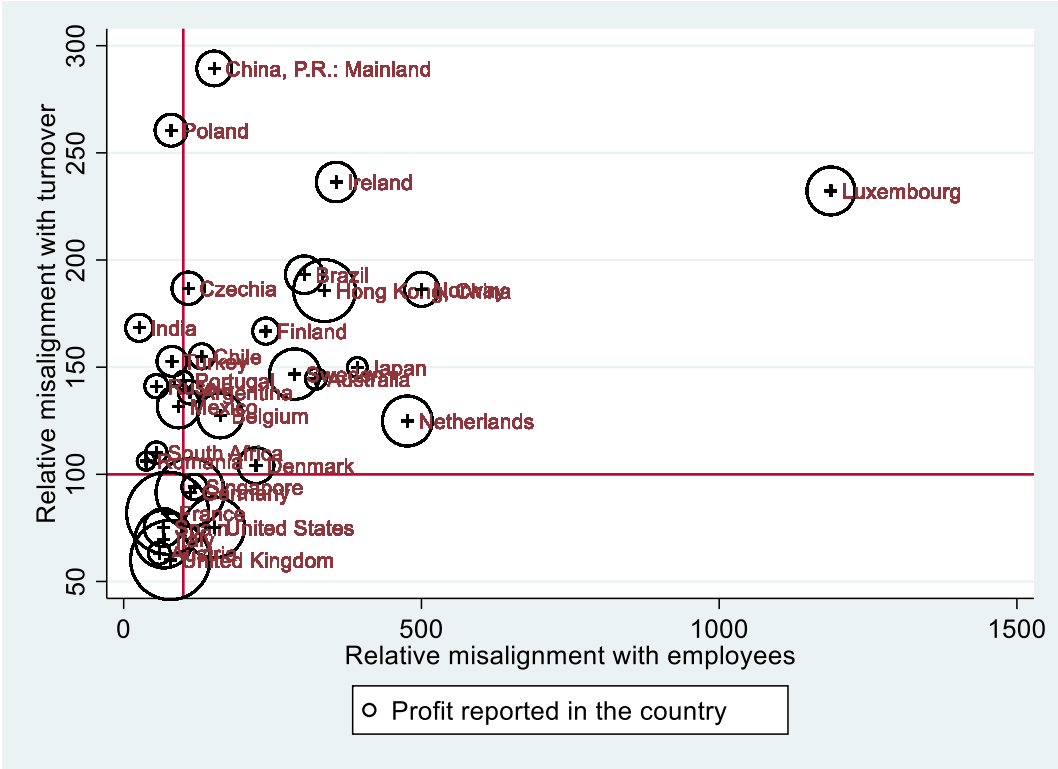
Figure 1. Relative misalignment between profits and employees (% of gross profits), for countries and years with at least 1000 million euro in profits reported in that given year



Source: Author.

Note: The vertical red line in this and other graphs indicates a perfect alignment of 100%.

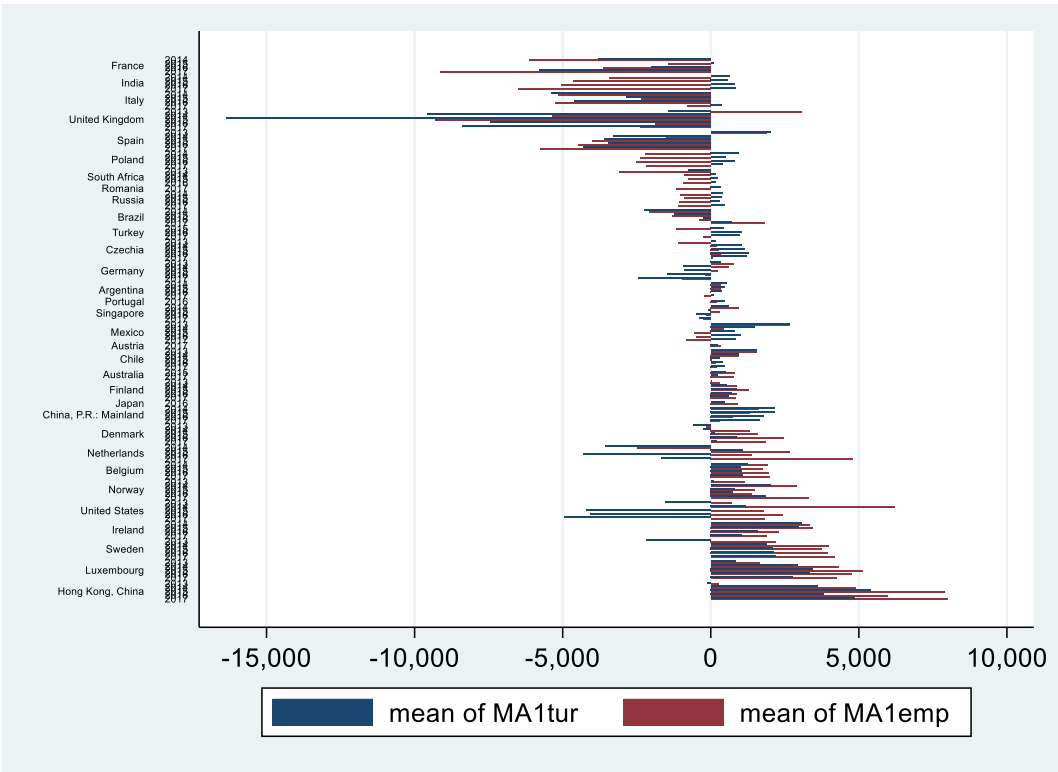
Figure 2. Relative misalignment between profits and employees and turnover, respectively (% of gross profits), 2013-2017 mean for countries with at least 1000 million euro in profits reported in at least one of the years



Source: Author.

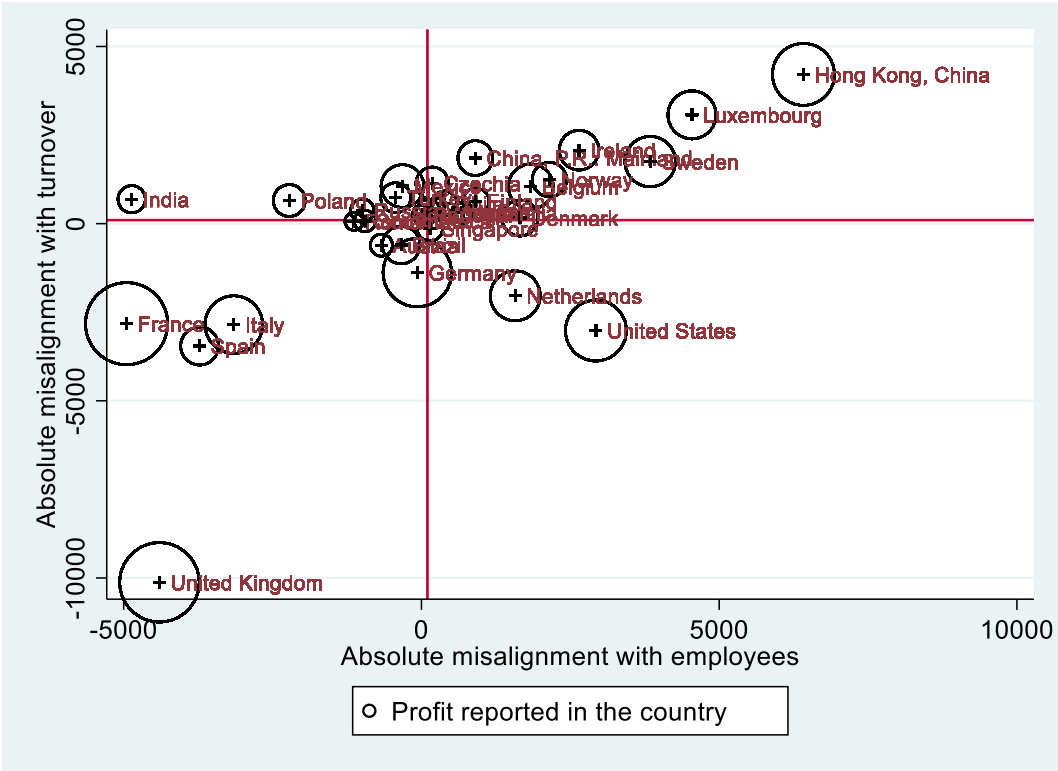
The absolute measures of profit misalignment combine the relative scale of misalignment with the importance of profits in given countries. This enables me to shed light on the countries that benefit most as well as lose most from the current distribution of profits relative to economic activity. Figures A4 and A5 show absolute misalignment between profits and employees (equation 3 above) as the 2013-2017 mean for countries with at least 1000 or 100 million euro, respectively, in profits reported in them in at least one of the years. Figure 3 displays the absolute misalignment between profits and employees in million euro, for the 2013-2017 mean for countries and years with at least 1000 million euro in profits reported in that given year. Figure 4 displays the absolute misalignment between profits and employees and turnover, respectively, in million euro for the 2013-2017 mean for countries with at least 1000 million euro in profits reported in at least one of the years. As is obvious from both Figures 3 and 4, Hong Kong has the highest positive misalignment, but both Luxembourg and Ireland are closely behind. The United Kingdom as well as three other big European economies of France, Italy and Spain are highlighted on the opposite side of the misalignment spectrum with much more economic activity than profit having reported in them.

Figure 3 Absolute misalignment between profits and employees (million euro), 2013-2017 mean for countries and years with at least 1000 million euro in profits reported in that given year



Source: Author.

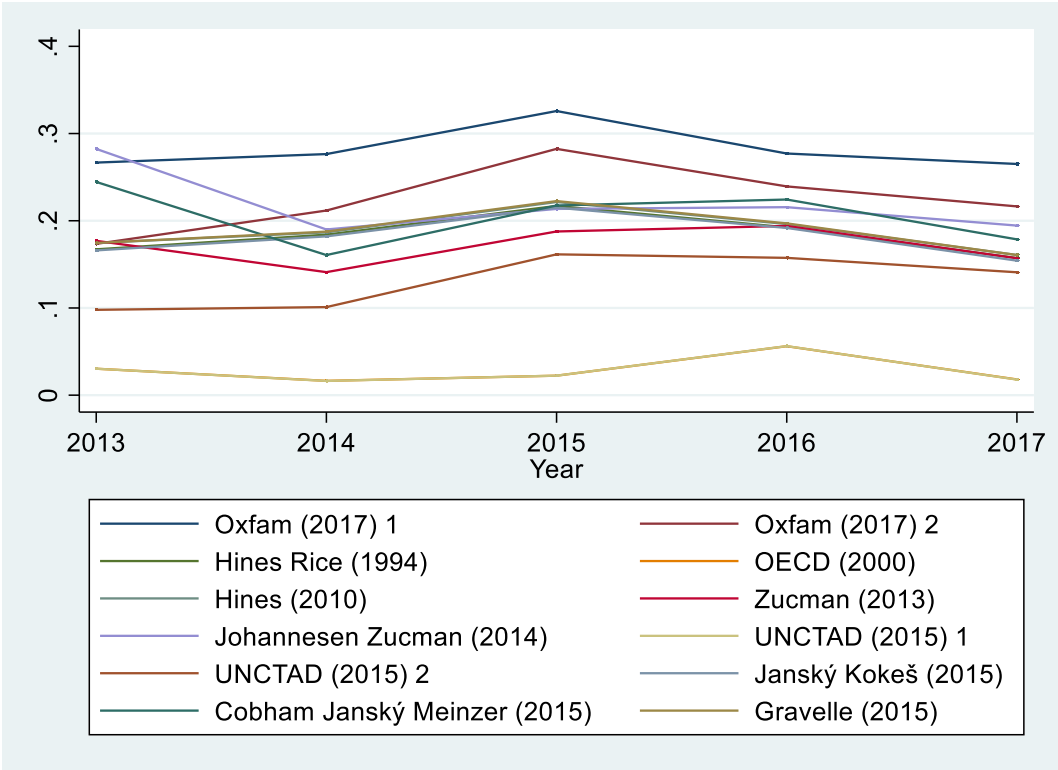
Figure 4. Absolute misalignment between profits and employees and turnover, respectively (million euro), 2013-2017 mean for countries with at least 1000 million euro in profits reported in at least one of the years



Source: Author.

In the final part of the results, I discuss the role of so called tax havens as a group over time. Figure 5 shows the share of profits in tax havens (equation 4 above) during the period 2013-2017 for the twelve various classifications of tax havens. The classifications differ in the estimated levels, but most of them estimate the share at about 15-20%. The trends in the share are not identical but quite similar across the classifications. According one list of tax havens used quite often in recent academic research, Gravelle (2015), the share of profits in tax havens went from 17% in 2013 to its peak at 22% in 2015 and then declined to 16% in 2017. Overall, the share of profits in tax havens mostly stay about the same during the observed period, without much regard to which classifications of tax havens is used.

Figure 5. Share of profits in tax havens during the period 2013-2017



Source: Author.

6 Conclusions

The country-by-country reporting data is one of the few implemented financial transparency recommendations following the global financial crisis, albeit only for banks in the European Union and only since 2014. What I learnt from these recently available data? Although the correlation between the locations of banks’ profits and employees is quite strong, I find that several countries have substantially more profit reported in them than a proportion of employees suggests would be in line with their economic activity. These jurisdictions include Ireland and Luxembourg and also other countries that are often considered tax havens exhibit high levels of misalignment. Overall, these results indicate the pattern and scale of profit misalignment and of the specific countries that appear to pose the greatest risk to the countries where most of their real economic activity takes place.

Naturally I can see some limitations to the current analysis and there is a plenty of space for further research. Some of them are related to the data quality. The data are not fully comparable across banks and resulting biases might affect also the country-level results. For example, some of the banks from among the fifty biggest banks by total assets do not seem to publish their CBCR reports. Furthermore, the inclusion of the other group of countries in the data published by some of the banks refutes the

basic idea of CBCR data – that the information is published on a country-by-country basis and not in groups of countries - and limits its usefulness. The regulators should make sure that future data releases are even more useful than the currently available data.

Even what is known now from this and other existing research, I venture to make the following observation. The existing evidence warrants not only more research, but also calls for more explanatory data to be published by banks as well as increased scrutiny from regulators. Let me discuss two interlinked policy recommendations, each of which has been discussed at least since the implementation of the public CBCR for banks. First, the CBCR publication requirement should be extended from banks to all other multinational enterprises. Together with extractive industries, the banks are the sectors paving the way for a public CBCR across all sectors. Following a recent agreement among governments, all large multinational enterprises now need to share CBCR information with their headquarter country's tax authority. OECD is in charge of facilitating the publication of partially aggregated CBCR for these large multinational enterprises (as outlined in Annex C of a recent report by OECD, 2018). So, the firms are doing the reporting, but not publicly, at least not yet. A proper evaluation is needed in the future, but the public CBCR requirement for all firms already seems a good candidate for a cost-benefit analysis winner. The costs seem low - banks seem to be copying quite well with preparation and publication of CBCR - and the benefits might be high and are already tangible – as other researchers and I in this paper have shown, the resulting data can provide useful insights.

The second recommendation is that banks should publish more detailed CBCR information than they currently do. Specifically, banks should start reporting publicly the information they already report to the tax authority privately. Along with other more important positive effects, these recommendations' implementation would obviously lead to a much bigger scope for similar research in the future. With this and in the future improved analysis of the misalignment, the aim should not be only to track the extent of the misalignment but also - especially if the future research finds that a large part of it is due to profit shifting - contribute to decreasing it.

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8 Appendix

Table A1. Descriptive statistics and results at the country level

Country or a jurisdiction	Number of observations	Average annual sum of all non-negative values (million euro; number of employees)				A country's share in global sum of all non-negative values (%)				Misalignment with employees		Misalignment with turnover	
		Income	Employees	Turnover	Tax	Income	Employees	Turnover	Tax	Relative (% gross profit)	Absolute (million euro)	Relative (% gross profit)	Absolute (million euro)
Albania	13	44	2377	155	6	0.03	0.1	0.03	0.02	29	-109	107	4
Algeria	23	174	3725	368	49	0.12	0.16	0.06	0.14	73	-69	181	78
Angola	2	4	36	16	1	0	0	0	0	132	1	72	-1
Argentina	33	1278	17739	3535	401	0.86	0.76	0.61	1.17	111	115	138	349
Armenia	4	8	344	32	3	0.01	0.01	0.01	0.01	38	-15	87	0
Australia	54	1001	4689	2635	342	0.66	0.2	0.46	0.98	323	696	145	309
Austria	62	1114	26716	6514	315	0.78	1.33	1.18	0.96	60	-672	63	-607
Bahamas	11	34	67	90	0	0.03	0	0.02	0	555	30	118	11
Bahrain	12	61	883	219	0	0.04	0.05	0.04	0	109	0	112	1
Bangladesh	8	215	2502	350	98	0.17	0.16	0.08	0.29	129	36	224	117
Belarus	4	108	2043	195	28	0.07	0.09	0.03	0.08	82	-25	209	57
Belgium	70	4725	44122	13968	1386	3.15	1.96	2.48	3.95	162	1836	127	1048
Benin	4	1	238	20	0	0	0.01	0	0	7	-14	19	-4
Bermuda	15	140	588	307	0	0.09	0.03	0.05	0	384	103	166	60
Bolivia	4	5	342	22	1	0	0.01	0	0	21	-17	82	-1
Bosnia and Herzegovina	12	103	3575	297	13	0.07	0.15	0.05	0.04	44	-130	131	25
Botswana	10	40	1752	166	9	0.05	0.18	0.06	0.04	30	-101	79	-12
Brazil	66	3306	56635	14935	1029	2.22	2.41	2.57	3.09	303	-340	193	-601
British Virgin Islands	4	5	0	5	0	0	0	0	0		5	400	4

Brunei	8	17	619	60	5	0.01	0.04	0.01	0.02	42	-26	95	1
Bulgaria	28	337	11165	851	32	0.22	0.49	0.15	0.09	45	-395	146	113
Burkina Faso	8	17	555	56	3	0.01	0.02	0.01	0.01	48	-19	117	3
Cambodia	3	2	50	0	0	0	0	0	0	0	-1	0	2
Cameroon	12	50	1331	172	19	0.03	0.06	0.03	0.05	60	-38	110	5
Canada	44	688	6355	1826	161	0.45	0.27	0.31	0.46	167	274	142	210
Cayman Islands	42	73	33	72	0	0.05	0	0.01	0	3894	71	329	54
Chad	4	4	212	23	1	0	0.01	0	0	28	-10	63	-2
Channel Islands	5	568	2262	947	39	0.39	0.1	0.17	0.12	412	431	239	330
Chile	29	1464	16698	3449	266	1.05	0.71	0.59	0.78	131	381	155	564
China with HK	10	71	357	152	10	0.05	0.02	0.03	0.03	297	46	171	29
China, P.R.: Mainland	72	2821	29026	3696	195	1.88	1.32	0.66	0.57	152	905	289	1851
Colombia	20	355	6829	941	116	0.24	0.29	0.16	0.33	81	-90	147	108
Congo, Republic of	4	6	214	22	3	0	0.01	0	0.01	42	-8	103	0
Croatia	21	425	13977	1813	95	0.28	0.63	0.32	0.27	45	-488	86	-50
Curacao	13	50	32	101	1	0.03	0	0.02	0	2400	48	144	25
Cyprus	4	7	45	9	2	0	0	0	0	224	4	333	4
Czechia	64	2446	34416	4961	462	1.67	1.6	0.91	1.37	108	182	187	1138
Denmark	53	2999	19792	10573	624	2.07	1.01	2.04	1.81	222	1655	104	160
Djibouti	3	2	265	23	0	0	0.01	0	0	10	-15	31	-4
Ecuador	3	1	22	2	0	0	0	0	0	55	-1	88	0
Egypt	21	654	10889	1118	157	0.44	0.48	0.2	0.45	91	-56	219	363
Equatorial Guinea	4	12	293	33	5	0.01	0.01	0.01	0.01	64	-7	146	3
Estonia	25	343	3544	642	69	0.28	0.27	0.17	0.2	154	82	191	160
Falkland Islands	2	2	23	4	0	0	0	0	0	95	0	152	1

Fiji	3	0	95	4	0	0	0	0	0	0	-6	0	-1
Finland	49	1600	9948	3541	346	1.21	0.57	0.79	1.06	239	914	167	630
France	99	15872	321483	71711	5538	10.51	13.73	12.34	15.86	74	-4951	82	-2823
French Polynesia	8	28	573	107	16	0.02	0.02	0.02	0.04	74	-9	99	0
Gambia	2	2	152	10	1	0	0.01	0	0	15	-9	54	-1
Georgia	3	19	643	44	3	0.01	0.03	0.01	0.01	31	-20	172	8
Germany	135	11007	170033	47257	2481	7.31	7.29	8.18	7.12	112	-69	92	-1383
Ghana	13	146	2388	310	43	0.13	0.18	0.09	0.14	85	-32	163	55
Gibraltar	8	21	145	57	3	0.01	0.01	0.01	0.01	226	12	140	6
Greece	24	17	550	105	12	0.01	0.02	0.02	0.04	47	-19	66	-10
Guernsey	31	154	509	266	12	0.1	0.02	0.05	0.03	395	119	183	82
Guinea	6	22	517	61	8	0.01	0.02	0.01	0.02	66	-13	143	6
Hong Kong, China	61	9029	39585	18149	1108	5.98	1.78	3.23	3.19	337	6415	186	4214
Hungary	59	493	14461	1846	127	0.32	0.69	0.35	0.37	50	-463	97	3
India	58	1717	98436	3832	820	1.18	4.58	0.73	2.36	26	-4866	168	690
Indonesia	27	239	8652	928	101	0.16	0.4	0.17	0.29	42	-333	98	-7
Iraq	2	4	16	13	1	0	0	0	0	364	3	114	0
Ireland	102	3662	15628	6033	182	2.45	0.68	1.06	0.52	357	2647	236	2074
Isle of Man	27	214	1242	403	15	0.17	0.07	0.1	0.05	255	128	189	102
Israel	14	29	198	93	13	0.02	0.01	0.02	0.04	253	16	124	4
Italy	86	7789	167340	40624	1842	5.01	7.16	6.98	5.3	68	-3150	70	-2850
Ivory Coast	12	70	1686	198	15	0.05	0.07	0.03	0.04	58	-41	126	17
Japan	59	896	3469	2241	292	0.6	0.16	0.4	0.84	392	669	150	305
Jersey	42	450	2284	833	30	0.4	0.11	0.22	0.09	424	293	191	209
Jordan	5	8	183	29	5	0.01	0.02	0.01	0.02	64	-7	92	-1
Kazakhstan	7	12	302	35	2	0.01	0.01	0.01	0.01	93	-6	161	3
Kenya	9	179	4112	434	61	0.19	0.42	0.16	0.23	59	-157	139	43

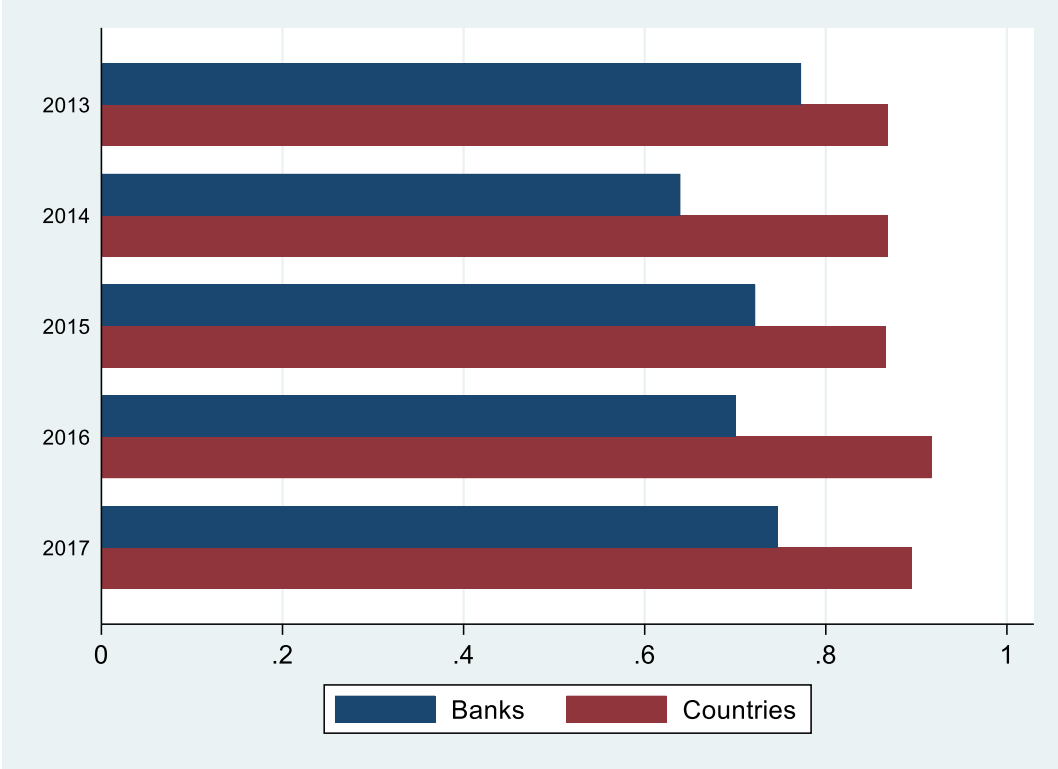
Korea, Rep.	43	361	5652	1464	71	0.23	0.27	0.27	0.2	121	-21	100	-30
Kosovo	4	20	720	49	2	0.01	0.03	0.01	0.01	43	-27	156	7
Kuwait	8	20	98	45	0	0.01	0	0.01	0	320	14	169	9
Laos	1	1	175	8	0	0	0.01	0	0	9	-10	49	-1
Latvia	35	202	3072	463	33	0.16	0.2	0.11	0.1	103	-16	161	72
Lebanon	10	32	184	37	4	0.02	0.01	0.01	0.01	288	19	354	22
Liechtenstein	1	0	13	0	0	0	0	0	0	0	-1		0
Lithuania	27	220	5405	510	32	0.17	0.35	0.13	0.1	60	-164	157	75
Luxembourg	120	5385	12922	8834	845	3.61	0.55	1.55	2.41	1188	4544	232	3070
Macao, China	8	55	210	84	6	0.04	0.01	0.02	0.02	426	41	236	33
Macedonia, F.Y.R.	4	6	385	24	1	0	0.02	0	0	24	-19	99	0
Madagascar	8	44	1225	83	9	0.03	0.05	0.01	0.03	55	-36	204	22
Malaysia	32	486	14755	1526	106	0.33	0.68	0.28	0.31	52	-496	135	76
Maldives	4	15	25	18	5	0.01	0	0	0.01	924	13	322	10
Mali	4	3	97	14	1	0	0	0	0	44	-4	77	-1
Malta	23	224	1406	345	29	0.14	0.06	0.06	0.08	237	131	242	133
Marshall Islands	4	0	0	0	0	0	0	0	0		0		0
Mauritius	33	399	1536	444	15	0.27	0.08	0.08	0.04	382	296	329	283
Mexico	45	4256	70105	12192	1037	2.89	2.99	2.1	3	92	-318	132	1060
Moldova	4	11	724	28	2	0.01	0.03	0	0	24	-36	152	4
Monaco	38	204	1497	605	39	0.14	0.07	0.11	0.11	206	107	126	45
Montenegro	4	8	280	24	1	0	0.01	0	0	41	-11	119	1
Morocco	24	279	9150	875	98	0.18	0.39	0.15	0.28	47	-316	122	50
Mozambique	3	10	761	52	0	0.01	0.03	0.01	0	22	-39	80	-4
Namibia	1	0	9	0	0	0	0	0	0	0	-1		0
Nepal	3	19	461	28	5	0.02	0.06	0.01	0.02	51	-23	209	9
Netherlands	94	5849	66097	29891	1446	3.78	2.82	5.13	3.98	476	1575	125	-2036

New Caledonia	8	68	753	149	28	0.05	0.03	0.03	0.08	144	20	177	29
New Zealand	14	189	551	463	48	0.13	0.02	0.08	0.14	538	154	190	67
Nigeria	3	123	897	240	6	0.13	0.1	0.1	0.03	165	45	156	42
Norway	56	2734	8400	5369	534	2.01	0.44	1.17	1.64	500	2150	186	1245
Oman	9	41	944	168	5	0.03	0.04	0.03	0.01	62	-23	86	-4
Other	66	389	5356	1385	86	0.28	0.3	0.32	0.28	114	33	100	10
Pakistan	9	106	3073	197	43	0.08	0.25	0.05	0.13	50	-130	180	49
Panama	9	2	4	4	0	0	0	0	0	608	1	160	1
Paraguay	6	28	464	80	3	0.02	0.02	0.01	0.01	89	-3	129	6
Peru	13	505	5630	1065	138	0.33	0.24	0.18	0.4	139	140	182	227
Philippines	21	73	7764	349	20	0.05	0.34	0.06	0.05	16	-442	78	-20
Poland	90	2368	70960	6564	596	1.6	3.03	1.13	1.71	80	-2219	261	653
Portugal	53	818	12412	2146	143	0.55	0.55	0.38	0.42	100	8	144	257
Puerto Rico	5	47	1145	292	21	0.06	0.05	0.05	0.08	42	-27	30	-28
Qatar	19	106	417	204	8	0.07	0.02	0.04	0.02	377	79	192	52
Romania	54	739	28580	2560	108	0.48	1.28	0.46	0.3	38	-1132	106	67
Russia	69	1246	34556	3356	281	0.83	1.49	0.58	0.81	55	-992	141	371
Saint-Martin, France	4	1	8	3	0	0	0	0	0	100	0	83	0
Saudi Arabia	20	496	108	145	8	0.33	0	0.03	0.02	6900	489	1315	458
Senegal	8	27	1211	121	9	0.02	0.05	0.02	0.03	33	-52	81	-5
Serbia	29	256	9382	734	21	0.17	0.41	0.13	0.06	41	-355	129	64
Seychelles	3	11	161	22	3	0.01	0.01	0	0.01	98	0	180	5
Sierra Leone	3	3	109	11	1	0	0.01	0.01	0	36	-7	90	-1
Singapore	95	1476	19721	6049	195	1.05	0.99	1.17	0.58	119	143	94	-141
Slovakia	44	781	15395	1976	175	0.54	0.73	0.37	0.51	77	-241	148	258
Slovenia	16	93	2297	293	14	0.06	0.1	0.05	0.04	63	-56	123	17

South Africa	26	1053	28823	3532	265	0.83	1.81	0.86	0.83	55	-947	110	74
Spain	80	3350	109052	26177	1238	2.38	4.68	4.53	3.53	66	-3725	75	-3452
Sri Lanka	12	121	4336	232	57	0.08	0.2	0.04	0.16	42	-166	194	59
Sweden	66	5950	30517	15015	1260	4.5	1.73	3.59	3.82	287	3843	147	1752
Switzerland	79	458	7077	2690	160	0.32	0.31	0.48	0.46	108	-2	66	-249
Taiwan Province of China	39	311	5577	926	37	0.21	0.26	0.17	0.11	92	-62	131	65
Tanzania	9	23	1868	138	7	0.02	0.2	0.05	0.02	18	-131	58	-21
Thailand	22	100	2188	330	22	0.07	0.09	0.06	0.06	88	-42	124	14
Togo	3	1	28	4	0	0	0	0	0	24	-1	39	0
Tunisia	19	85	2961	202	26	0.06	0.13	0.03	0.07	44	-108	160	32
Turkey	47	2080	38216	5100	388	1.35	1.63	0.87	1.07	81	-432	153	732
Uganda	7	38	1178	127	3	0.03	0.07	0.03	0.01	46	-45	105	2
Ukraine	35	185	20539	545	33	0.12	0.87	0.09	0.09	16	-1137	119	42
United Arab Emirates	42	569	5870	2151	115	0.41	0.29	0.42	0.33	152	171	103	-11
United Kingdom	153	14838	293809	94689	3216	10.3	13.06	17.07	9.92	78	-4399	60	-10122
United States	140	8700	88446	44585	2268	5.9	3.87	7.9	6.45	152	2930	75	-3016
Uruguay	18	135	2262	495	38	0.09	0.1	0.09	0.11	88	-12	99	5
Vanuatu	2	3	128	12	1	0	0.01	0	0	35	-6	94	0
Venezuela	7	136	4858	449	55	0.1	0.21	0.08	0.17	42	-179	140	22
Vietnam	20	82	2155	221	16	0.05	0.1	0.04	0.05	55	-63	135	23
Zambia	9	62	1517	156	19	0.06	0.16	0.06	0.07	56	-63	136	12
Zimbabwe	7	23	1159	100	8	0.02	0.08	0.02	0.02	29	-60	83	-5

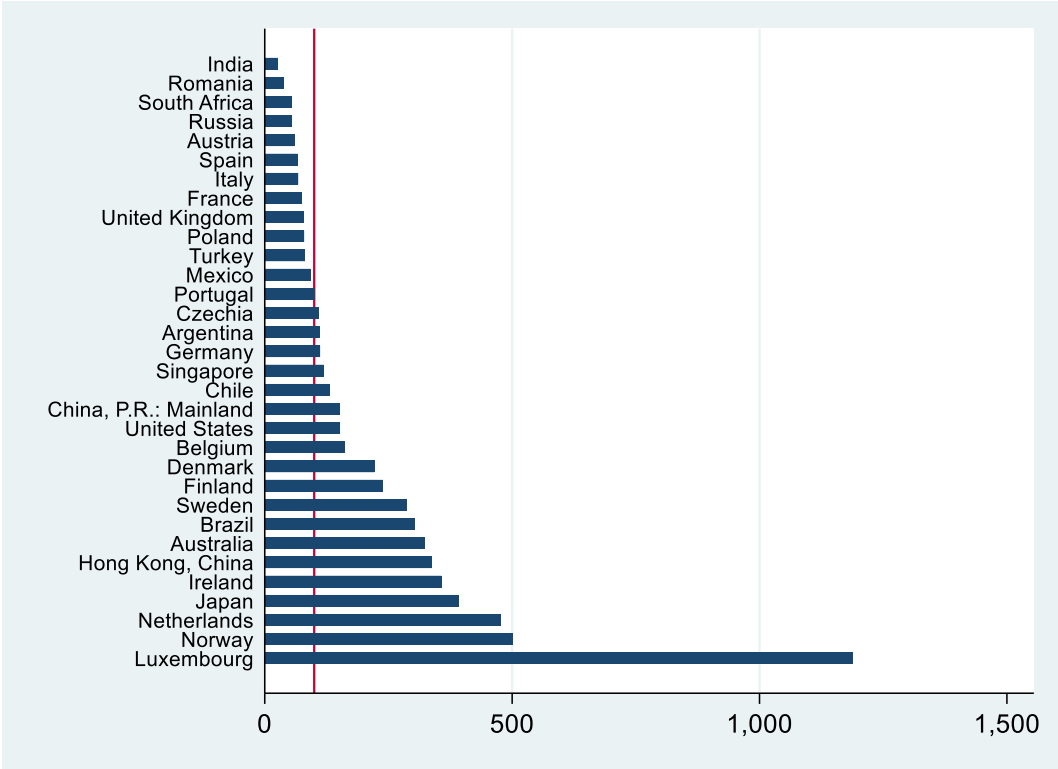
Source: Author.

Figure A1. The correlation coefficients between profits and employees at the bank and country levels by year



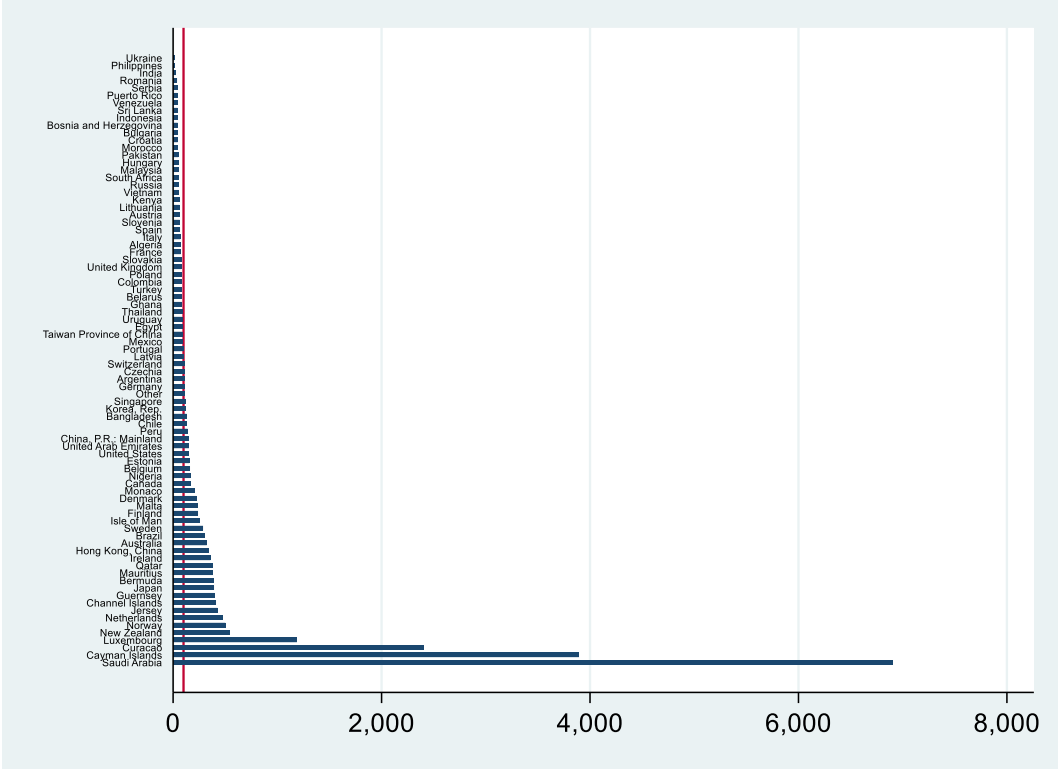
Source: Author.

Figure A2. Relative misalignment between profits and employees (% of gross profits), 2013-2017 mean for countries with at least 1000 million euro in profits reported in at least one of the years



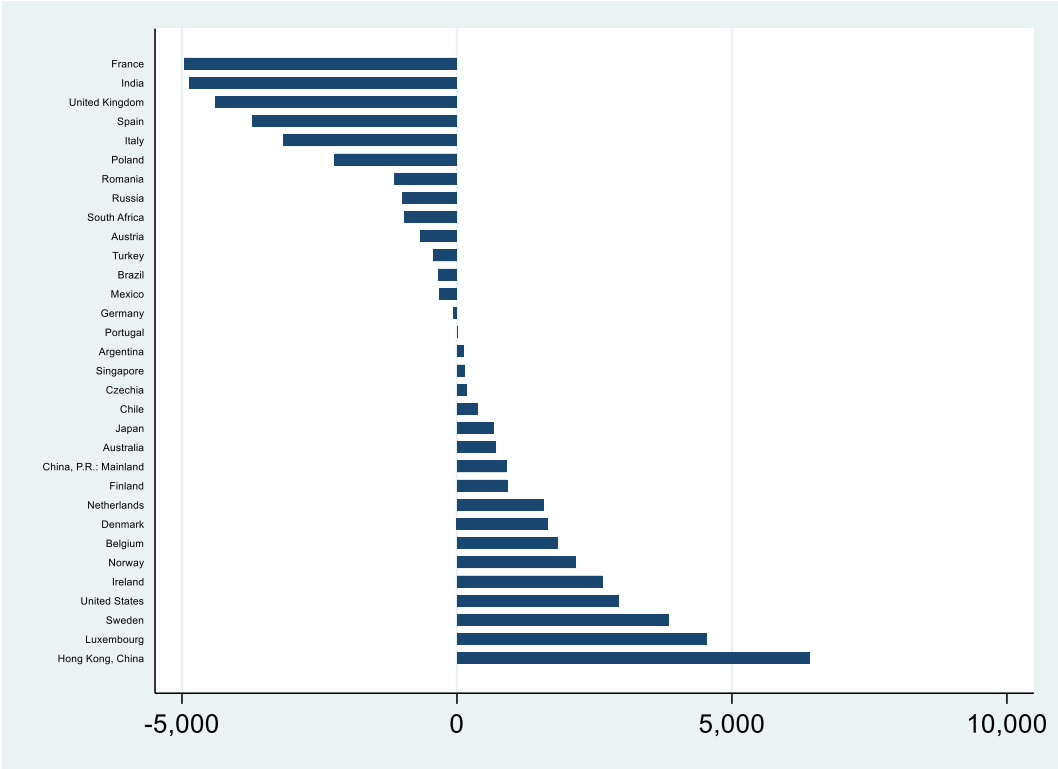
Source: Author.

Figure A3. Relative misalignment between profits and employees (% of gross profits), 2013-2017 mean for countries with at least 100 million euro in profits reported in at least one of the years



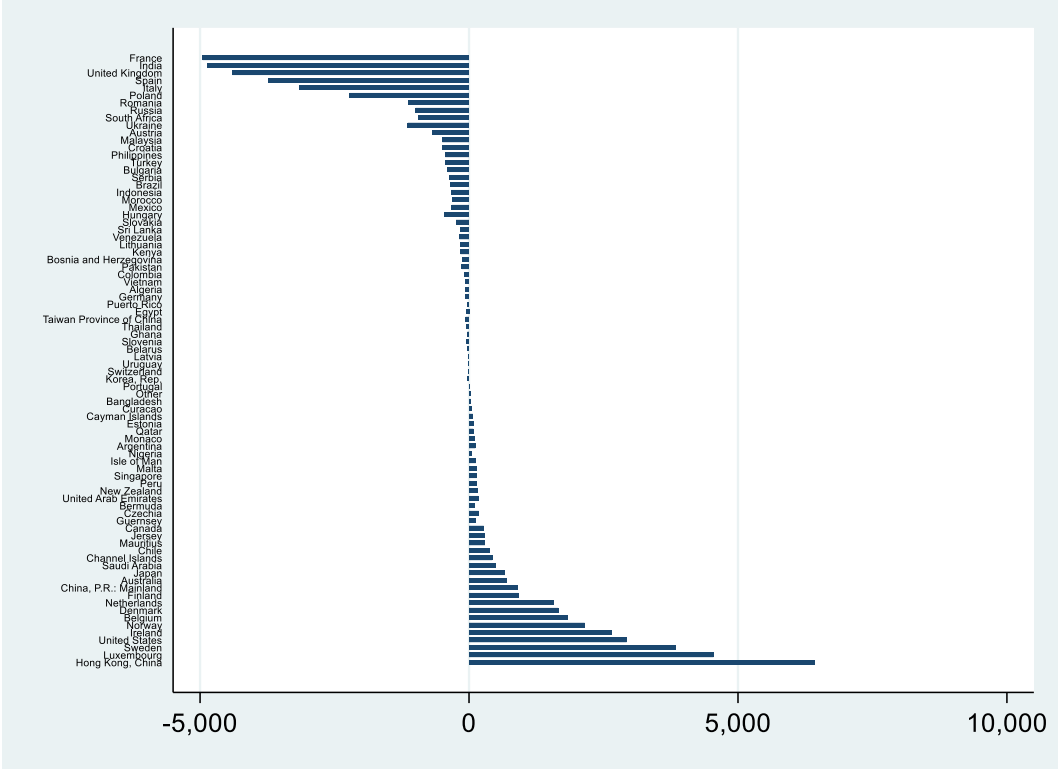
Source: Author.

Figure A4. Absolute misalignment between profits and employees (million euro), 2013-2017 mean for countries with at least 1000 million euro in profits reported in at least one of the years



Source: Author.

Figure A5. Absolute misalignment between profits and employees (million euro), 2013-2017 mean for countries with at least 100 million euro in profits reported in at least one of the years



Source: Author.

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