Tax-driven wealth chains: A multiple case study of tax avoidance in the Finnish mining sector

Lauri Finér\textsuperscript{a}, Matti Ylönen\textsuperscript{b,c,*}

\textsuperscript{a}University of Helsinki, Faculty of Law, Eerikinkatu 44B 47, 00180 Helsinki, Finland
\textsuperscript{b}University of Helsinki, Department of Political and Economic Studies, World Politics, Hiihtäjänintie 8C 23, 00810 Helsinki, Finland
\textsuperscript{c}Aalto University Business School, Department of Economics, POB 11000, 00076 Aalto, Finland

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**ABSTRACT**

This paper contributes to recent discussions of corporate tax avoidance and global wealth chains. Drawing on multiple case studies, we outline the key strategies adopted by Finnish mining companies as they seek to lower their tax burden. After screening the accounts of the companies mining metallic ores in Finland, we provide an in-depth analysis of the tax avoidance arrangements at three of these mines. The mines were operated by two Canadian enterprises that utilized seven different tax avoidance arrangements. The multiple case study approach adopted in this paper is helpful in developing both quantitative and qualitative tax avoidance research, since our findings highlight major deficiencies of datasets commonly used in the dominant quantitative tax avoidance research. Our qualitative approach helps tackle some of the limitations imposed on tax researchers as a result of the considerable secrecy surrounding tax matters. In particular, we argue that the existing tax avoidance research has focused too much on statutory corporate income tax rates even though today, tax minimization relies mostly on specific tax incentives and other loopholes in tax laws. We argue that the arrangements we describe mirror a wider phenomenon where multinational enterprises exert societal power commonly associated with sovereign states. Crossing the disciplinary boundaries of accounting, political economy and tax law, we also contribute to the emerging research agenda on global wealth chains. We call for more attention to the intersections between accounting and tax law for understanding how enterprises can separate their value chains from the intra-firm flows of wealth.

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1. Introduction

The system of prices is like the system of words or the system of numbers. Words, prices and numbers are nominal and not real. They are signs and symbols needed for the operation of working rules. . . . Words are deceptive if they do not convey the meaning intended; numbers are lies if they do not indicate the actual quantities; prices are inflated or deflated if they do not reflect the course of real value.


* Corresponding author at: University of Helsinki, Department of Political and Economic Studies, World Politics, Hiihtäjänintie 8C 23, 00810 Helsinki, Finland.

\textit{E-mail addresses:} matti.v.ylonen@gmail.com, matti.v.ylonen@helsinki.fi (M. Ylönen).

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Corporate tax avoidance is an emerging academic topic (e.g., Dallyn, in press; Jenkins & Newell, 2013: 381; Sikka & Willmott, 2010; Sikka, in press). Tax has long been marginalized in political science, law, and social policy, and it has not received the ‘intellectual attention it deserves from accounting scholars’ (Boden, Killian, Mulligan, & Oats, 2010: 541–544). This obscurity has gradually changed. Tax avoidance has gathered increasing attention in academia, among inter- and non-governmental organizations and the media (for example Oxfam, 2016). Tax policies are no longer an isolated enclave within enterprises; rather, they are discussed ‘in the boardroom’ (KPMG, 2005). These tensions have resulted in calls for research of ‘transfer pricing in broader social, political and organizational contexts’ in order to understand how accounting techniques re-allocate wealth (Sikka & Willmott, 2010: 353).

This, however, is easier said than done. Graham and Tucker (2006: 2, 22) note that ‘information about tax shelters is notoriously hard to find’, suggesting that scholars should ‘creatively obviate this lack of information’ in order to understand tax shelters better (Lisowsky, 2010). Hanlon and Heitzman (2010: 157) also suggest the use of ‘some other’ data sources. We answer to these calls by providing a multiple case study (Yin, 2003) of mining industry tax planning. Cognizant that enterprises in most major mining countries are not obliged to disclose financial accounts of their subsidiaries, we turned our attention to thin capitalization related tax avoidance in an extractive-rich country where local financial accounts were available – Finland. The Finnish mining industry has developed significantly in the past decade, while still being of a reasonable size for an industry-wide analysis (see Section 3.2). In addition, Finland is a member of the EU and the OECD, and its corporate income taxation system is similar to most countries (see Section 3.2). Therefore, the findings can be used to assess the deficiencies of the global tax system in general. Moreover, our analysis on three different thin capitalization structures can be useful, not only in understanding the specific rules are needed to tackle them, but also in illustrating the underlying problems in the current international corporate taxation regime.

The literature on corporate tax avoidance has typically relied on two categories: intra-firm transfer pricing and thin capitalization (e.g., Becker, Fuest, & Riedel, 2012). These categories are occasionally supplemented by a third category of intellectual property rights (IPR) related tax avoidance (e.g., Corrick, 2016; Dischinger & Riedel, 2011). Of these, thin capitalization is typically understood as a practice whereby subsidiaries based in low-tax countries grant loans to subsidiaries in high-tax countries where the interest costs are tax-deductible (Becker et al., 2012; Buettner & Wamsler, 2007; Bartelsman & Beetsma, 2003; Clausing, 2003; Desai, Foley, & Hines, 2005). For reasons discussed later, for the most part multinationals can select their capital structure in each country independent of the external funding needs of individual investments (Ting, 2014). Furthermore, IPR-related tax avoidance is usually discussed in the context of patents, copyrights and other products of the knowledge economy (e.g., Dischinger & Riedel, 2011). We contrast these generalizations by analyzing seven different types of tax avoidance arrangements we discovered in our case studies. In addition to thin capitalization we also discuss other arrangements such as the use of immaterial mining concessions in tax planning. This is the first contribution of this article.

Second, and related to the previous point, we argue that a better understanding of the cash flows and profit shifting arrangements can be helpful in developing the research methodologies that assess the effects of corporate tax avoidance. Since the mid-1990s, a lacunae of statistical research has emerged focusing on the factors and drivers of corporate tax planning. Based on the findings from our case studies, we maintain that many of the approaches and variables typically employed by econometric studies on corporate tax avoidance are too straightforward. As for an example, the statutory corporate income tax rates – a very common variable in the statistical research on corporate tax avoidance – play very little role in our case studies. We found that the low tax rates derived largely from specific tax incentives and questionable advance tax rulings while statutory tax rates had only a minimal role. The LuxLeaks tax deals (Marian, 2016a) and multiple famous cases discussed in the media related to American technology corporations such as Apple have previously highlighted this phenomenon (European Commission, 2016a; Vleggeert, 2016). Many academics and the OECD (2015a) have also noted that the data used in quantitative tax avoidance studies is poor, which seriously impacts its use in the analysis of tax avoidance. We are able to tackle this problem by using multiple data sources and show that the databases used in econometric studies do not include the tax avoidance structures we discover. We discuss the deficiencies of quantitative tax avoidance research more in Section 2.1.

Third, drawing from the tradition of evolutionary economics as well as from contemporary research on the global political economy, we maintain that much world trade has little to do with market mechanisms as the prices are planned in corporate headquarters (Ylönen & Teivainen, 2015). The dominant quantitative approach in tax research offers few tools for analyzing this phenomenon because it operates on an aggregate statistical level, thus framing the phenomenon in a way that provides little information on the specifics of tax avoidance policies. We criticize some of the taken-for-granted assumptions behind the existing studies (Golden-Bibble & Locke, 2007: 6) and provide suggestions on how to improve their research methodologies. Contributing to the nascent literature on wealth chains, we argue that the artificial corporate price planning mechanisms thrive on two pillars of the international tax system, namely the separate entity doctrine and the arm’s length principle. According to these principles, individual companies belonging to the same group are separately liable for their taxes and use of the arm’s length prices in their mutual transactions. The separate entity doctrine not only facilitates tax

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1 When using concepts such as ‘tax avoidance’ or ‘tax planning’, we do not judge the legality of the arrangements, since aggressive tax planning structures are often legal (OECD, 2013). The national tax authorities and ultimately courts assess the legality of certain arrangements based on local legislation, obtaining also confidential corporate information not available for research purposes (for further discussion, see for example Otusanya, 2011).
avoidance arrangements (Eden & Kudrle, 2005) but is also a key concept in understanding the rupture between value creation and places of production (Ting, 2014: 71). Separate entities are fictional in a world where enterprises plan their operations as a single economical unit (Biondi, 2013; Biondi, Canziani, & Kirat, 2007; Graham, 2003). This facilitates artificial wealth creation in locations that attract multinational enterprises with tax incentives (Palan, 2002).

This multidisciplinary paper also answers to a call by O’Dwyer and Unerman (2014: 1227) for greater integration of ‘theoretical framings drawn from multiple disciplines’. The remainder of this article progresses as follows. In the next section, we will review the key literature on tax avoidance and global wealth chains. In Section 3, we introduce principles of mining taxation and the characteristics of the Finnish metal ore mining industry and its regulation. Section 4 describes our research materials and methodology, and Section 5 is devoted to the case studies. The penultimate section discusses the case studies in light of the questions posed in this introduction. We conclude by discussing the implications of this study in the context of wider developments in corporate taxation.

2. Review of earlier research

2.1. Quantitative and qualitative research on tax avoidance

The impact of tax avoidance has been mostly studied quantitatively with econometric methods. The branch of quantitative studies began with a study by Hines and Rice (1994), who disentangled profit shifting from real economic profits and analyzed the ‘semi-elasticity of reported income with respect to the tax rate differential across countries’ (Dharmapala, 2014: 2; for other recent summaries of these studies, see Heckemeyer & Overesch, 2013; OECD, 2015a). These studies have focused on tax planning at an aggregate level, and the lack of publicly available data impacts the use of the methods (Lisowsky, 2010; OECD, 2015a). The vast majority of the European and global studies is based on the financial data of the Orbis database (OECD, 2015a: 94–95). In the United States, researchers have also used confidential data collected by the United States Bureau of Economic Analysis (BEA) from U.S. based multinational enterprises (OECD, 2015a: 33). Both databases have severe deficiencies that we discuss later in this section. The poor quality of aggregate source data has meant that while most of these studies document the existence of tax avoidance, they do not reliably address the magnitude of its effects for economies or the types of arrangements used (Dharmapala, 2014). The OECD (2015a: 17) has also criticized econometric studies on tax avoidance for failures ‘to disentangle real economic effects from the effects of BEPS-related behaviours’ (see also Killian, 2006).

The most severe deficiency on the Orbis database is that it includes information from only a very few countries that are used in corporate tax avoidance. The database is not exhaustive, because it is based on public financial statements (Weyzig, 2014: 151). These are generally available only in Europe and a few other countries. Even in Europe, the database lacks crucial information from corporate tax havens such as Luxembourg and Switzerland (Huizinga & Laeven, 2008: 1170; Lohse & Riedel, 2013: 19). Therefore, the database fails to include a vast part of corporate tax avoidance, since it utilizes non-transparent tax havens (Dharmapala, 2014: 441). The absence of data from tax havens heightens the risk that these studies fail to illustrate the true magnitude and impact of tax avoidance. We tackle this obstacle by complementing our research material with original financial statements and consolidated annual returns that include information on cash flows to tax shelters (see Section 4).

The U.S. BEA database does not have a similar shortage of information from non-transparent hubs of tax avoidance, but it is limited because it only includes information on MNEs headquartered in the United States. This leaves out most of the global MNEs. Additionally, the generalizability of research based on the BEA database is limited, since the U.S. worldwide corporate tax system is exceptional (Kleinbard, 2011). Practically all other developed countries have a territorial tax system; i.e., they only tax the profits generated within their jurisdiction. Together with the fact that the 35% statutory corporate tax rate in the United States is by far highest in the OECD countries, this means that tax avoidance techniques of U.S. based multinationals as well as their effects are unique and differ from those employed by Canadian or European MNEs. The tax avoidance techniques of Canadian MNEs highlighted in our case studies could however be employed within most territorial tax regimes.

Another shortcoming of previous quantitative research is its focus on statutory corporate tax rates. Due to the lack of information from corporate tax havens and countrywide effective tax rates, many studies compare pre-tax profits with statutory tax rates (OECD, 2015a: 94–95). Controlled foreign company (CFC) rules and other anti-tax avoidance measures restrain the use of tax havens with low or no corporate taxation (see Section 3.2). Because of this, tax avoidance especially in the EU relies usually on specific tax incentives and tax rulings granted by jurisdictions that often have above average

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3 According to Dharmapala (2014), “A representative consensus estimate from the literature, based on a metaregression study by Heckemeyer and Overesch (2013), is a semi-elasticity of reported income with respect to the tax rate differential across countries of 0.8. This entails that a 10 percentage point increase in the tax rate difference between an affiliate and its parent (e.g., because the tax rate in the affiliate’s country falls from 35% to 25%) would increase the pretax income reported by the affiliate by 8% (for example, from $100,000 to $108,000).”

4 Bureau van Dijk’s database contains financial information on over 170 million companies worldwide. Some studies are also based on Bureau van Dijk’s Amadeus database that has similar information only on European companies.
statutory tax rates (Marian, 2016a; OECD, 2013). Our case studies are illustrative examples of this, since the tax avoidance arrangements we analyze rely on specific tax incentives granted for example by Luxembourg.

Moreover, publicly available raw data in financial statements included in the Orbis database often fail to give unequivocal information on tax costs and thus requires further interpretation (Hanlon, 2003: 850–852). Due to the fact that Orbis does not include explicit information on tax residence, statistical studies generally presume that the formal registration jurisdiction is also the residence jurisdiction for tax purposes. However, relying on this presumption could significantly warp the data as tax jurisdiction differs from registration jurisdiction specifically in tax avoidance cases. First, the permanent establishments that are taxable parts of entities are often employed in tax avoidance (OECD, 2015c). However, they are not included in databases, since they do not file their separate financial statements to public registries. Second, some countries do not necessarily tax all entities registered in there, which is a feature that is a common tool for tax avoidance. As for example, Ireland has not taxed the Irish subsidiaries of Apple and many other American MNEs in cases where their business has been effectively managed outside Ireland (Ting, 2014). These MNEs have been able to avoid billions of euros of taxes by shifting a large share of their profits to the Irish subsidiaries that are not tax resident in Ireland, but in a tax haven such as Bermuda. Another disturbing factor in the previous statistical studies is the rough classification of financial data in Orbis. The taxable income often differs from the pre-tax profits presented in Orbis for other reasons than tax avoidance. As for example, the intra-group dividends accounted in profits are usually wholly or partially tax exempt. We are able to take into account these deficiencies of raw data or at least analyze their possible impact when we discuss the limitations of our research (see Section 6.5).

The few earlier tax avoidance case studies have used material from public hearings (Otusanya, 2011; Ting, 2014), court decisions (Bal, 2016; Otusanya, 2011; Sikka & Willmot, 2010; Waris, 2016), research reports from non-governmental organizations (Wu, 2015), public financial account data (Ylönen & Laine, 2015) and information acquired directly from enterprises (Ali-Yrkkö & Rouvinen, 2015). These studies suggest that a qualitative approach can help to understand tax avoidance structures, their underlying reasons (Ting, 2014; Ylönen & Laine, 2015) and the global division of value added between MNE functions as they show tax planning is decisive in determining where profits are accounted (Ali-Yrkkö & Rouvinen, 2015). The case studies also highlight the deficiencies of a quantitative approach using aggregate data from financial account databases as it fails to include information on the discovered high-profile tax avoidance affairs (OECD, 2015a: 19).

While the case studies provide ‘a rich and emerging source of evidence’ on BEPS arrangements (OECDa, 2015: 17), their small number and incidental nature limits their usability for broader analysis. Our systematic industry-wide multiple case study approach described in Section 4 improves the generalizability of the findings significantly.

2.2. From value chains to wealth chains

The dominant quantitative research on corporate tax avoidance has demonstrated the blatant gap between the places where MNEs book their profits and where the actual value is created. However, other tools are needed to assess the impact that this discrepancy has on the balance of power between MNEs and states. The global wealth chain approach that draws from the studies on global value chains can be useful in conceptualizing how MNEs exert power over states with their tax planning capabilities.

The global value chain research agenda emerged from the economic dependency research within the studies of international development, and its main focus was on the relationship between the core and the periphery of the world-economy. Known especially from the works of Immanuel Wallerstein and his colleagues (Hopkins & Wallerstein, 1977), these ideas were later turned into a new research agenda under the title global commodity chains (Gereffi & Korzeniewicz, 1994). Consequently, this resulted in a large body of empirical research on intra-firm and inter-firm value chains (e.g., Daviron & Ponte, 2005; Ponte & Gibbon, 2005; Sturgeon, Van Biesbroeck, & Gereffi 2008). The value chains research agenda gained popularity as it was realized that the core-periphery approach was not sufficient to describe the globalized economy where MNEs are able to outsource much of the activities that were conducted before within the MNEs themselves to almost any place in the world. Wallerstein’s framework was based on the capitalist world-economy as it had existed for some 500 years before the economic globalization that has dramatically changed the economy in the past few decades (Patomäki, 2003). The revolution of the global economy was also noted in international business research, where the work of Michael Porter (1985) played a key role in steering the research agenda of corporate value chains. Consequently, many researchers began to study the commodity and value chains involving several enterprises, and the increased understanding of the role of the service economy shifted the focus from commodities to more general value chains.

More recently, research on financialization and the offshore economy (Palan, 2002) has underlined that the value chain framework alone cannot explain where the profits of international business are booked and for what reasons. A number of scholars have pointed out how ‘decentered corporations’ (Desai, 2008) utilize power over states that attempt to design and impose effective tax laws on corporations (Genschel and Rixen, 2014). There is a need for more research into how enterprises are able to design fictional wealth chains that ‘hide, obscure and relocate wealth to the extent that they break loose from the

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5 This is meant to relieve economic double taxation within MNEs, since usually the entity paying out the dividend has already paid income tax for its profits. The dividends are paid out of accumulated after-tax profits.
location of value creation’ (Seabrooke & Wigan, 2014a: 7; see also Seabrooke & Wigan, forthcoming). The wealth chains within MNEs are in many ways fictional as the arm’s length transfer prices are determined by methods not used in the business-to-business markets where the prices are generally based on supply, demand and negotiations.

Statistical studies on corporate tax avoidance (see Section 2.1) have highlighted the fact that much wealth is being relocated within large corporations in ways that break from the location of actual value creation. However, global wealth chains thrive in secrecy and complex financial arrangements that undermine some of the key assumptions in quantitative strain of tax research. As for an example, our case studies show that the statutory corporate income tax levels – a common variable in the quantitative studies – played a relatively minor role in the tax arrangements we analyzed. Moreover, much of the econometric research on corporate tax avoidance departs from the notion of the arm’s length principle. However, the concept is only a theoretical principle, i.e., the in-practice price setting of intra-group transactions is part of a tax planning policy rather than actual arm’s length pricing (Ylönen & Teivainen, 2015). The scarce critical literature on the arm’s length principle usually discusses its abuse in the context of the mispriced trade of services and goods within enterprises (Ylönen & Teivainen, 2015). However, the same principle also applies to intra-group interests (Heckemeyer & Overesch, 2013). These deficiencies of the international tax system give multinational enterprises an increasing ‘autonomy with the absence of constrained choice or limits to choice or behavior’ (Samuels, 1972: 277).

Global wealth chains cannot be fully analyzed and understood without in-depth firm-level research. The case study approach, we utilize in this article, not only allows a detailed analysis on the nuances of the tax planning arrangements commonly employed by the MNEs (i.e., how wealth chains are structured), but is also helpful in understanding how MNEs and their front groups are able to lobby and maintain legislation that facilitates tax avoidance even in highly developed countries such as Finland.

3. Mining taxation and the metal ore mining industry in Finland

3.1. Taxing the mining industry: concepts, developments, and challenges

Mining is a peculiar industry. Some of the central characteristics highlighted in mining studies are the finite and immobile nature of ores, and the major environmental and social effects and risks created by their extraction (Otto et al., 2006: 19). Mineral resources are typically considered to be a part of national wealth, and the resource rights are owned by the state (Guj, 2012: 3; Ministry of Employment and the Economy, 2010: 2). These factors give weight to demands for charging ‘rent’ from mining enterprises (Baunsgaard, 2001: 5). The rent is a compensation for the mine’s location jurisdiction and is usually charged in the form of a tax. Mining policies typically aim to manage the exploitation of extractives for the benefit of the communities involved, maximizing the revenues in the long term (Guj, 2012: 5–7). Other objectives should also be taken into account, such as revenue stability, equity between taxpayers, transparency, and administrative efficiency (Guj, 2012).

Corporate income tax (CIT) is only paid from taxable profits; therefore, it is not an adequate tool for charging rents from mining enterprises (Beadway & Keen, 2010: 32–44). Consequently, there is a myriad of mining-specific taxes (Guj, 2012: 4–5). Exploration and mining are risky but can also result in high rewards. In order to be effective, mineral taxes should be sufficiently low to enable the initial high capital investment and exploration costs. However, the rents should be sufficiently high to compensate for the right to exploit national resources and for the potential damages. As a result, most countries have resorted to a regular CIT supplemented with a royalty system. Governments often mix instruments in order to achieve a balance between economic efficiency and effectiveness in raising revenues (Barma, Kaiser, & Le, 2012: 123; see also Otto et al., 2006: 278).

Early mining royalty systems were typically based on the amount of production. However, since the 1950s, value-based royalty systems (ad valorem) have gained popularity as production-based royalties can tilt the production path by reducing initial output (Baunsgaard, 2001). Mining royalties are usually project-based, and a few countries aim to secure CIT revenues from the natural resources industry with a ‘ring fencing’ system that prohibits offsetting profits from one mine with losses to another mine belonging to the same enterprise (Guj, 2012: 4; Barma et al., 2012: 125). In addition to the CIT and ad valorem royalty systems, presumptive income taxes, resource rent taxes, and property taxes are also common as well as other taxes such as value-added tax and import and export duties (Barma et al., 2012: 125).

3.2. The Finnish mining industry and its regulation

Finland has a notably long mining industry history, as the first mines were established in the sixteenth century (Puuustinen, 2003). Since then, minerals have been extracted from over 1000 mine sites. After a surge in new mines in the post-war decades, the significance of the mining industry declined in the 1980s. In the following decade, the training of mining professionals was downsized (Lindborg, 1996: 180). Technical development and the commodity price boom of the early 2000s led to the revival of mine exploration and the opening of 10 new metallic ore mines in this millennium (Kaldany, 2006: xi). There were 12 operational metallic ore mines at the end of 2013 (Finnish Safety and Chemicals Agency, 2013). In addition, there was extraction of other minerals at 34 mines. The industry’s total turnover was around €1.5 billion in 2013.

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6 Finland does not have a ring fencing system.
out of which metal ore mines accounted for €1.1 billion, and the mines employed approximately 3000 people directly, with some 27,000 indirectly employed (Kokko, 2014; Ministry of Employment and the Economy, 2014). Notwithstanding, the GDP share of the mining industry in Finland was estimated at only 0.3% in 2014 (Official Statistics of Finland, 2016). With falling market prices, six mines were closed in 2014. In the beginning of 2016, there were no pending mine projects. Investments in mine exploration slumped to €40 million in 2014 from nearly €90 million in the peak year of 2012, and the downward trend is expected to continue (Finnish Safety and Chemicals Agency, 2015).

Finland began revising its mining legislation in 2009. The government proposal briefly discussed different mining royalty systems (Government of Finland, 2009). However, the idea of introducing specific mining taxes was abandoned.7 The new Mining Act (621/2011) came into effect in 2011. It allowed exploration without a permit in most cases and granted the explorer an exclusive right to exploit deposits. The required exploration permits are relatively cheap and are denoted to cover only the immediate costs of the authorities (Government of Finland, 2009). Moreover, whereas in the past compensation was negotiable, the mining company must now compensate the landowner 0.15% of the value of the extracted minerals annually. The National Geological Survey of Finland (GTK) has also been involved in exploration. The Finnish government sells the rights to mine sites discovered by the GTK. In at least one case, the sale has resulted in a royalty agreement (see Section 5.3). These royalties are not taxes since they are contract-based. According to the Finland State Budget, the total amount of royalties is expected to be €3 million in the year 2015, which accounts for less than half percent of the value of all ores mined in Finland.

In general, the structure of the Finnish corporate tax regime is similar to most developed countries and Finland is not involved in harmful tax competition that would attract profit shifting from abroad (European Commission, 2015b).8 Mining companies pay the statutory CIT for their taxable profits.9 In 2014, the tax rate was reduced from 24.5 to 20%, which is relatively low,10 but still considerably higher than effective tax rates in the countries engaged in harmful tax competition (Marian, 2016a). Tax competition in developed countries is usually in form of specific tax incentives or rulings that provide a low effective tax rate for profits generated for example by intra-group interests or intellectual property (Zammit, 2015).11 Our cases demonstrate that even with the relatively competitive statutory CIT rate profits are shifted away from Finland due to the special tax treatment in Barbados and Luxembourg.

As in other OECD countries, all intra-group transactions in Finland should be at arm’s length and the OECD (2010) Transfer Pricing Guidelines are used to interpret the arm’s length principle (Finnish Tax Administration, 2009, Act on Assessment Procedure, 1558/1995, §31). However, there are a few exceptions to the general principle that facilitate tax avoidance. According to case law (KHO:2014:119), the general anti-avoidance rule (Act on Assessment Procedure, §28) provides the only legal basis for the authorities to re-classify interest-carrying loans as equity, which significantly reduces the possibilities for re-characterizing tax-deductible interests as non-deductible dividends. Due to this, it is unlikely that the Finnish tax authorities would challenge the thin capitalization arrangements described in this article. The Finnish group relief system also allows intra-border group contributions that enable local subsidiaries and permanent establishments to offset profits and losses (Contributions between Affiliated Companies Act, 21.11.1986/825). We show how this enables structurings that create huge tax-deductible interests not related to any real investments (see Sections 5.2 and 5.3) Mining companies are also able to offset their mining profits with losses from other activities (see Sections 5.2–5.4). Losses can be carried forward for ten years (The Income Tax Act, 30.12.1992/1535, Section V), which allows deferred tax savings from excess interest costs in the starting phase of a mine, when the business is generally loss-making and there is no tax on profits to be paid (see Section 5.2). With certain limitations, companies can exploit previous losses after mergers and acquisitions (see Section 5.4). There is no withholding tax for interest paid abroad, and generally, all intra-group payments to other EU countries are exempt from withholding tax (see directives 2011/96/EU and 2003/49/EC).

The lack of withholding tax on interest allows the full benefit of interest tax deductions in thin capitalization structures. The tax exemption of intra group dividends in the EU enables holding companies registered in the EU for avoiding the Finnish withholding tax on payments to third countries. All three case enterprises used Swedish holding companies to avoid the Finnish withholding tax (Sections 5.2–5.4). The tax treaties Finland has with most developed third countries dictate that withholding tax on dividends paid directly outside the EU is usually five percent (Finnish Tax Administration, 2014b).12

Most countries limit cross-border tax avoidance with specific regulations such as CFC rules, thin capitalization rules and the general anti-avoidance rule (GAAR). Finland has GAAR and CFC legislation in place, but the EU case law limits their application on low-tax subsidiaries registered in the EU area (Finnish Tax Administration, 2014a; C-196/04 – Cadbury

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7 In 2012, the Ministry of Employment and the Economy commissioned a consultancy study from a Swedish private consulting firm to review a large number of tax regimes. This study concluded that regions with a large market share and other stable regions (e.g., South Africa) were increasing their resource taxes while mainly developing countries with unstable regions were looking to expand their market share with lower tax rates (Erikkson & Farooki, 2012). Curiously, the study was never published. We were only able to obtain the study after submitting an official information request.

8 For an in-depth study on international corporate taxation in Finland, see Helminen (2015).

9 Taxable income is calculated according to the Business Tax Act (360/1968). Calculations are based on financial statements prepared according to the Finnish Accounting Act (1336/1997).

10 The sixth lowest among OECD countries (OECD, 2016).

11 The LuxLeaks documents showed that Luxembourg has given advance tax rulings to MNEs that often provided effective tax rate below one percent in a country where the statutory corporate income tax rate has remained relatively high at 29%. The intellectual property tax incentives usually offer a tax rate between 5% and 10% (European Commission, 2014).

12 If there was no tax treaty between Finland and the resident country of the dividend recipient, the withholding tax rate would be 30%.
Table 1
Collected figures from all Finnish mines 2011–2014 (€ million).

<table>
<thead>
<tr>
<th>Mine/Parent company (country)</th>
<th>Mining company and other Finnish subsidiaries*</th>
<th>First year of production</th>
<th>Total ore revenue</th>
<th>Aggregate operating result</th>
<th>Total CIT costs (2014)</th>
<th>Equity (2014)$</th>
<th>Liabilities (2014)$</th>
<th>Equity ratio</th>
<th>Thin capitalized (yes/no)$</th>
<th>Main ore</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitura/ Belvedere Resources Ltd (Canada)</td>
<td>Belvedere Mining Oy</td>
<td>1970</td>
<td>54.3</td>
<td>–1.6</td>
<td>0.0</td>
<td>–0.8</td>
<td>3.9</td>
<td>negative</td>
<td>no</td>
<td>nickel</td>
<td>Production shutdown since 2013 due to low nickel price. Two other subsidiaries in Finland. Negative equity due to losses. Same company operates two mines and also a processing plant in Sastamala. Negative equity due to losses. Has offset profits with loss-making group companies in Finland. Stainless steel production is Outokumpu Plc’s main business. See section 5.2 and Table 2.</td>
</tr>
<tr>
<td>Jokissivu and Orivesi/ Dragon Mining Ltd (Australia)</td>
<td>Dragon Mining Oy</td>
<td>2009/2007</td>
<td>103.7</td>
<td>–27.6</td>
<td>0.0</td>
<td>–17.6</td>
<td>32.5</td>
<td>negative</td>
<td>no</td>
<td>gold</td>
<td></td>
</tr>
<tr>
<td>Kemi/ Outokumpu Oy (Finland)</td>
<td>Outokumpu Chrome Oy</td>
<td>1966</td>
<td>1213.7</td>
<td>195.0</td>
<td>0.0</td>
<td>120.7</td>
<td>534.3</td>
<td>18%</td>
<td>no</td>
<td>chrome</td>
<td></td>
</tr>
<tr>
<td>Kevitsa/First Quantum Minerals Ltd (Canada)</td>
<td>FQM KH No. 1 Oy</td>
<td>2012</td>
<td>379.3</td>
<td>7.5</td>
<td>2.6</td>
<td>–133.9</td>
<td>954.3</td>
<td>negative</td>
<td>yes</td>
<td>copper</td>
<td>Swedish Boliden AB acquired the mine in 2014. Four other subsidiaries in Finland. Former Boliden subsidiaries not accounted.</td>
</tr>
<tr>
<td></td>
<td>Kevitsa Mining Oy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kylylahi/ Altona Mining Ltd (Australia)</td>
<td>Kylylahi Copper Oy</td>
<td>2010</td>
<td>115.8</td>
<td>22.2</td>
<td>0.0</td>
<td>–27.4</td>
<td>95.7</td>
<td>negative</td>
<td>yes</td>
<td>copper</td>
<td></td>
</tr>
<tr>
<td>Laiva/Nordic Mines AB (Sweden)</td>
<td>Nordic Mines Oy</td>
<td>2011</td>
<td>81.4</td>
<td>–111.4</td>
<td>0.0</td>
<td>12.7</td>
<td>30.7</td>
<td>29%</td>
<td>no</td>
<td>gold</td>
<td>Production shutdown since 2014 due to low profitability. Negative equity due to losses. Figures from the Finnish subsidiary missing, because of bankruptcy early in 2014. Sales based on parent company annual reports 2011–2013. One other subsidiary in Finland.</td>
</tr>
<tr>
<td>Pahkavara/ Lapland Goldminers AB (Sweden)</td>
<td>Lapland Goldminers Oy</td>
<td>2008</td>
<td>61.1</td>
<td>n/a</td>
<td>0.0</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>no</td>
<td>gold</td>
<td>Figures are based on consolidated IFRS accounts. The group has one additional company in Finland. Bankrupt in 2014.</td>
</tr>
<tr>
<td>Pampalo/ Endomines AB (Sweden)</td>
<td>Endomines Oy</td>
<td>2011</td>
<td>82.0</td>
<td>–3.5</td>
<td>0.0</td>
<td>17.4</td>
<td>14.5</td>
<td>55%</td>
<td>no</td>
<td>gold</td>
<td>See Section 5.3 and Table 3.</td>
</tr>
<tr>
<td></td>
<td>Pyhäsalmi Minerals Ltd (Canada)</td>
<td>Pyhäsalmi Mine Oy</td>
<td>2001</td>
<td>629.7</td>
<td>303.7</td>
<td>71.5</td>
<td>118.5</td>
<td>49.8</td>
<td>70%</td>
<td>yes</td>
<td>copper</td>
</tr>
<tr>
<td></td>
<td>Inmet Finland Oy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suurikuusikko/ Agnico-Eagle Mines Ltd (Canada)</td>
<td>Agnico-Eagle Finland Oy</td>
<td>2009</td>
<td>676.2</td>
<td>244.9</td>
<td>18.1</td>
<td>181.8</td>
<td>365.8</td>
<td>33%</td>
<td>yes</td>
<td>gold</td>
<td>See Section 5.4 and Table 4.</td>
</tr>
<tr>
<td>Talvivaara/ Talvivaaran Kaivosos. Plc (Finland)</td>
<td>Talvivaaran Kaivososakeyhtiö Oy</td>
<td>2008</td>
<td>464.1</td>
<td>–895.4</td>
<td>0.0</td>
<td>–729.9</td>
<td>741.2</td>
<td>negative</td>
<td>no</td>
<td>nickel</td>
<td></td>
</tr>
</tbody>
</table>

Total sales 3861.4 Total CIT 92.2 Total CIT/Sales 2.4 %

The figures are based on financial accounts according to the Finnish GAAP with an exception of Talvivaara. The data is sourced from Orbis, financial statements and the Finnish Tax Administration.

* Only significant subsidiaries listed.
$ Includes all Finnish subsidiaries. Figures based on the Finnish tax administration figures. Kevitsa has paid no tax according to its financial statements.
\[*\] Total additional deprecations are included in equity.
\[d\] Provisions are included in liabilities.
\[\$\] The ratio was calculated by dividing the equity with the total liabilities and equity.
\[\text{yes/no}\]$ Thin capitalized due to tax planning. Some companies were thin capitalized at least partially due to losses. See Section 5.4.
\[\text{Kylylahi Copper Oy’s accounting period ends in June. Its name was changed to Boliden Kylylahi Oy in 2014.}\]
Schweppes and Cadbury Schweppes Overseas). In 2014, the government also introduced a new rule limiting the intra-group interest deductions (Business Tax Act §18a). Despite its proportional coverage, a study commissioned by the EU Commission pointed out 12 loopholes in the Finnish tax legislation that facilitate tax avoidance (European Commission, 2016b). Our case studies in Section 5 demonstrate how these loopholes are exploited in an interplay with the tax regimes of other countries (see also e.g. Altshuler and Grubert, 2005; Killian, 2006).13

4. Research methodology and the selection of the case enterprises

In contrast to the mainstream quantitative approach described in Section 2.1, we combined an industry-wide analysis of financial accounts accompanied with a multiple case study of MNEs that were particularly interesting in the light of our research questions. The qualitative approach is useful in increasing understanding of complex social phenomena such as tax planning and in allowing access to previously unknown observations (Yin, 2003). Moreover, the multiple case study approach allows for highlighting the societal and legal factors behind tax-driven wealth chains in ways that quantitative methods would not. The central idea of the multiple case study method is to constantly compare theory to the research findings arising from the cases (Eisenhardt, 1989: 541).

Our approach differs from previous case studies (see Section 2.1) as we chose multiple enterprises based on a systematic industry-wide screening instead of analyzing just a single case enterprise based on earlier media coverage or public inquiries that have revealed the tax avoidance structures (Ting, 2014; Ylönen & Laine, 2015). The material consisted of both consolidated and subsidiary level numeric financial accounts and we complemented this with information from annual reports. Our industry-wide approach accompanied with the three critical and revelatory cases (Yin, 2003: 42) provide generalizable information (Yin, 2003: 53–54) on the difficulties that Finland faces in taxing its mining sector enterprises in the sense that ‘if it happens there, it will happen everywhere’ (Patton, 1990: 174). By doing this, we open up new avenues for qualitative generalization, which has received too little attention in the accounting research (Parker & Northcott, 2014).

The availability of the financial statements of local subsidiaries in most European countries as well as that on taxable income and taxes paid in Finland provided the starting point for the systematic selection of case studies. First, we acquired publicly available financial data of 2011–2013 from all enterprises mining metallic ores at the 12 mines operating in Finland in 2013 (see Table 1). This data included not only the financial statements of local subsidiaries but also stock exchange data, such as the consolidated annual reports and a number of financial statements of non-Finnish subsidiaries that were relevant for the operations in Finland. We also utilized data from corporate websites and the Orbis database. To improve the validity of our findings, we consequently also included financial data from 2014 as it became available during the research process.

A preliminary screening of this data enabled us to obtain a reliable overall picture of the business models, corporate structures, and the profitability of the 12 mines. We chose the mines for case studies specifically based on two criteria. First, we looked for companies whose actual business operations had been highly profitable in Finland and therefore the enterprise had an incentive to shift taxable profits abroad.14 Second, we were interested in companies that appeared to have thin capitalization arrangements based on the initial screening.15 This criteria allowed us to assess the external and internal validity of the case studies so that they would provide relevant information on tax avoidance and its impact on wealth chains (Yin, 2003: 34–35).

The screening revealed that six out of the eleven companies operating the mines failed to generate tax revenues because they were unprofitable during the period and were therefore not interesting cases for in-depth studies16 (see Table 1). Two have filed for bankruptcy since then. Three out of the five profitable mines (Kevitsa, Pyhäjärvi and Suurikuusikko, discussed in Section 5) have generated corporate income tax (CIT) with Kevitsa doing so for the first time in 2014. The Kylylahti mine has been profitable but generated no income tax due to high interest costs and being in the start-up phase. Based on this and the fact that the mine was significantly smaller compared to the other four profitable mines we left it out of the final sample. We assume that the Kylylahti mine will pay income tax in the future. The fifth profitable mine (Kemi) was operated by the loss-making Outokumpu Plc that was able to consolidate its mining profits with the losses of other Finnish group companies. As a result, Outokumpu lacked the motivation for cross-border profit shifting and we excluded the mine from the case studies.

Based on the screening of the financial statements, we could preliminarily identify that the three remaining companies were thinly capitalized due to tax planning (see Table 1) and therefore suitable for closer scrutiny.17 The three mines were

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13 In June 2016, the Council of the EU adopted an anti-avoidance directive (EU/2016/1164) that incorporates rules proposed in the OECD BEPS action plan for the legislation of the EU member states. In addition to the rules discussed above, the directive includes a switch-over clause to prevent double non-taxation of certain income, an exit tax rate rule to prevent companies from avoiding taxation when re-locating assets and a hybrid rule to prevent companies from exploiting national mismatches to avoid taxation. These rules were not previously incorporated in the Finnish legislation, but other rules such as the GAAR might have limited the use of such arrangements in some cases. Adoption of the directive would set a minimum legislation standard that would close a few of the loopholes deliberately offered by some member states.

14 Operating margin positive.

15 High intra-group loans and/or interest costs.

16 The Ovirsu and Jokisivu mines were both operated by a single company.

17 In addition to these three, we considered the Kylylahti mine to be thin capitalized due to tax planning reasons. These four thinly capitalized companies belonged to either a Canadian or Australian MNE. Of the seven other mining companies, five had lost their equity at least partially due to losses and not only because of tax planning. The last two companies that did not appear to be thinly capitalized belonged to a Finnish and Swedish mining enterprise.
operated by two enterprises, Agnico Eagle Mines Ltd (AE) and First Quantum Minerals Ltd (FQM). A further justification for the case study selection was that the mines operated by AE and FQM had been operational for several years before 2014, which enabled the assessment of tax implications over the lifetime of the mines with sufficient data for the research. The mines are the three largest metallic ore mines operated by foreign-based MNEs in Finland in terms of production as well as profits.

In undertaking the case studies, we analyzed the business activities at the three mines and the associated corporate structures from the exploration phases until the end of 2014. We acquired the relevant financial statements and annual reports from 2001 when mining began at the first of the three mines, the Pyhäsalmi mine. Based on this information, we analyzed all acquisitions and restructurings related to the mines from a tax avoidance perspective. Therefore, the case studies also involve enterprises that owned the mining rights earlier. The material revealed a number of foreign holding companies and other subsidiaries related to the structures. We acquired the financial statements of these subsidiaries as well, when they were available. After completing the draft versions of the case studies, we strengthened their reliability by sending the key findings to AE and FQM, which both verified the findings described in the next section.18

We discovered that the case enterprises thrived on tax savings using seven different types of arrangements that erode the Finnish tax base. They were:

1. Using thin capitalization and intra-group loans to finance the local mining business (Sections 5.2–5.4)
2. Setting up a holding company that uses intra-group loans to purchase shares in the mining business in an intra-group restructuring (Sections 5.2 and 5.3)
3. Using intra-group loans to finance separate investments abroad (Section 5.3)
4. Acquiring mining rights in an intra-group arrangement to gain tax-deductible depreciations and amortizations19 (Section 5.2)
5. Using a Swedish holding company to avoid the Finnish dividend tax at source and the transfer tax (Sections 5.2–5.4)
6. Offsetting profits from one mine with losses from another mine or business using the Finnish group contribution system (Sections 5.2–5.4)
7. Avoiding Finnish capital gains tax by entitling Finnish mining concessions to a foreign subsidiary (Section 5.2)

In the next section, we will discuss the case studies and tax avoidance arrangements in detail.

5. The case studies

5.1. How to read the case studies

The following sections discuss each of the case studies in three parts. We begin discussing each case by describing the history of the operations at the mines, treating the MNE as a single unit (Biondi et al., 2007; Biondi, 2013). After this, we discuss those arrangements that had tax effects. Finally, we proceed to analyze how these arrangements impacted tax liabilities. Our main focus is on the CIT losses of the Finnish government as these ores are sourced from Finland. However, we also briefly discuss how the tax arrangements affect subsidiaries in countries where profits are shifted, namely Barbados, Luxembourg, the Netherlands, and Sweden. Unless otherwise stated, all financial information and information on activities are from consolidated annual reports (AR), annual information forms (AIF),20 and public financial statements (FS) of the local subsidiaries at issue. The complete list of the research material and other data used in the screening and research is in Appendix A. Depending on the currency in the original source, the financial figures are presented in either euros (€) or United States dollars ($). The local financial statements including those from Finland have been prepared according to local accounting laws and the consolidated accounts according to the IFRS standard.

5.2. The FQM Kevitsa mine: tax planning by intra-group loans and holdings companies

5.2.1. Description of FQM and the Kevitsa mine

FQM is a Canadian mining and metals enterprise producing copper, nickel, gold, zinc, and platinum group elements. Incorporated in 1983, the enterprise is publicly listed on the Toronto, London, and Lusaka stock exchanges. The parent company, First Quantum Minerals Ltd, is incorporated in the Canadian province of British Columbia and has headquarters in

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18 This was done while preparing a separate report published by a Finnish corporate responsibility research NGO Finnwatch. In the report, we presented some of our factual findings on the tax arrangements. The original responses are available in full as annexes of the report (Finnwatch, 2016: 36–40).
19 Depreciations are regular decreases in tangible asset value, in contrast to amortizations that result in the decrease in value of intangibles. Both are costs that decrease profits and are usually deductible from taxable income. They are usually made schematically in relation to elapsed time in contrast to value adjustments based on the observed value difference between the balance sheet and real asset value. The posterior write downs are also often tax-deductible, but deferred compared to accounting.
20 Canadian publicly listed enterprises are required to submit specific annual information forms in addition to their annual reports.
Vancouver. At the end of 2013, it directly or indirectly owned around 100 subsidiaries (FQM, AIF 2013). FQM operates the Pyhäsalmi and Kevitsa mines in Finland. Its five other mines are located in Zambia, Mauritania, Spain, Australia, and Turkey. In addition, FQM has four mine development projects in South America and Africa (FQM, AR 2015).

Kevitsa is an open-pit mine in northern Finland with large deposits of nickel, copper, cobalt, and platinum group elements. The National Geological Survey of Finland first discovered the deposits in 1987. After a short-lived development attempt by the Finnish-based Outokumpu Plc., the Canadian-based Scandinavian Minerals Ltd. claimed the deposit in July 2000. In June 2008, FQM bought the mine development project by acquiring Scandinavian Minerals for a total purchase price of €278 million (FQM AR, 2008). FQM then launched commercial ore production in August 2012. The mine employed 345 people in December 2014, and the total sales revenue for 2014 was €164 million. The mine is expected to deplete by 2042 (FQM, AR 2014).

5.2.2. Tax planning arrangements

When FQM acquired the mining concessions in 2008, they were held by Kevitsa Mining AB, a Swedish holding company with no employees, directly owned by Scandinavian Minerals Ltd (see Fig. 1). In 2010, FQM transferred the concessions, assets, and loans related to the mining business to a newfound Finnish subsidiary, FQM Kevitsa Mining Oy. Kevitsa Mining AB received shares from FQM Kevitsa Mining Oy in return but paid no income tax in Sweden for the capital gains of €285 million (Kevitsa Mining AB, FS 2010). Around the same time, FQM rearranged the corporate structure of Kevitsa business by adding three holding companies to the group structure. Under the new structure, the Swedish-based FQM Kevitsa Sweden Holdings AB was made the owner of the Finnish-based FQM Kevitsa Holding No. 1 Oy, which owned the shares of FQM Kevitsa Holding No. 2 Oy, which subsequently owned Kevitsa Mining AB. The Finnish exploration company, FQM FinnEx Oy, was also set up (see Fig. 2).

5.2.3. The impact of the arrangements

The arrangement generated three types of future tax benefits in Finland. First, FQM Kevitsa Mining Oy was entitled to deduct the depreciations and amortizations of transferred assets from its taxable income. These assets amounted to a total of €379 million at the end of 2010, of which €287 million came from mining concessions. However, it is impossible to estimate the total benefit deriving from the depreciation and amortization because the financial statements do not specify their tax-deductible proportion. Second, FQM inserted a Swedish holding company, FQM Kevitsa Sweden Holdings AB, between its Finnish subsidiaries and the Canadian parent. This created tax consequences as well, demonstrating the ability of

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21 Of these, 20 were fully owned subsidiaries incorporated in traditional tax havens (IMF, 2000), such as the British Virgin Islands, where FQM has no significant business activity.

22 Then named Scandinavian Gold Ltd.

23 Named Scandinavian Gold Prospecting AB before the acquisition.

24 The EU Merger Directive (90/434/EEC) may provide a legal basis for this, as it exempts certain intra-group restructurings from tax. However, we were not able confirm this from the public accounts.

25 The mining concession depreciations may not be entirely tax-deductible if the transfer of assets to FQM Kevitsa Mining Oy was performed according to the EU Merger Directive (90/434/EEC). In that case, the appreciation of the assets’ realized worth of approximately €287 would not be deductible as the principle of continuity would be applied on a tax-deductible depreciation basis (The Business Tax Act, §52d).
FQM to exploit the separate entity doctrine of corporate taxation (see Section 6). Had a Canadian company become the direct owner of the Finnish subsidiaries, Finland would have levied a five percent withholding tax on the dividends paid to the Canadian parent company (Finnish Tax Administration, 2014b). However, both Finland and Sweden are members of the EU, and intra-group dividends paid to other EU member states are tax-exempt. The dividends paid from Sweden to Canada could again be free from the Swedish withholding tax if they qualify for the Swedish participation exemption regime (Deloitte, 2014: 6). The use of a Swedish holding company could mean an exemption from the Finnish transfer tax in the event the business is sold to a new owner (Finnish Tax Administration, 2015a).

Third, FQM was able to thin capitalize, or more precisely un-capitalize, the capital structure of its Finnish subsidiaries with intra-group loans. There were two reasons for this. First, FQM Kevitsa Mining Oy received not only assets but also debts in the rearrangement, most of them from intra-group companies. These were worth €87 million at the end of 2010. Since then, the company has financed its mining investments with similar loans, thus increasing the total amount of loans to €547 million in 2014. Second, FQM Kevitsa Holding No. 1 Oy used intra-group loans of €275 million to purchase shares in its subsidiary FQM Kevitsa Holding No. 2 Oy in the intra-group restructuring. The interest costs have increased these debts to €394 million by the end of 2014, with the company assuming a consolidated negative equity of €134 million with its Finnish subsidiaries (see next paragraph). These un-capitalization arrangements exemplify the separation of fictional intra-firm wealth chains from the actual value chains, as well as the ways MNEs can reorganize their property for withholding demands from the governments of the countries where they operate (see Section 6.3).

FQM has had five subsidiaries in Finland, four of which are related to the Kevitsa mine, with the fifth engaged in unprofitable exploration activities. Considering that the Finnish group contribution system allows FQM to consolidate the taxable results of the subsidiaries, we considered them together as a sub-group when analyzing their capital structure and tax implications. Moreover, FQM Kevitsa Holding No. 1 Oy consolidates its sub-group accounts in its financial statements. These consolidated accounts include all the other Finnish subsidiaries with the exception of Kevitsa Mining Oy (see Fig. 2). The consolidated accounts also include the Swedish-based Kevitsa Mining AB, but this has no significant impact on the consolidated figures as it is essentially a sub-group holding company with no significant transactions or assets outside the group. Both the FQM Kevitsa Holding No. 1 Oy sub-group and the Kevitsa Mining Oy have had negative equity in the period 2011–2014. Both of them are also financed entirely by intra-group loans. The loans of the FQM Kevitsa Holding No. 1 Oy sub-group totaled at €924 million at the end of 2014, and €36 million for Kevitsa Mining Oy. In comparison, the FQM group relied much less on debt financing, with a rather high equity ratio between 50 and 71% in the same period.

While it seems evident that the Finnish subsidiaries were un-capitalized, the great annual variation in the intra-group financing costs of FQM Kevitsa Holding No. 1 Oy complicates the assessment of the tax losses (see Table 2). Moreover, some subsidiaries have substantial intra-group financial income with no financial assets. We were unable to find an explanation for this from the financial statements, but the net effect of varying financial costs and income appears to stabilize over time. Acknowledging the limitations, we estimate that Kevitsa’s thin capitalization arrangements has resulted in a CIT loss of €13 million for Finland by the end of 2014 (see Table 2 for calculations). We also maintain that the arrangements have significantly decreased the overall tax costs for FQM. At the time of writing, Kevitsa had not generated any tax income for Finland even though the consolidated accounts show that the business has been profitable from the beginning of commercial production in 2012. In 2014, sales revenue from Kevitsa increased to $271.4 million from $197.6 million the year before. Meanwhile, earnings before interests, taxes, depreciation, and amortization increased from $56 million to $93 million (FQM, AR 2013–2014). Should the Kevitsa operations remain profitable, the total net tax effects of the arrangement could mean dozens or even hundreds of millions of euros over the mine’s lifetime. The future tax decrease is naturally subject to any major changes in the tax legislation.

The mining concessions were initially entitled to a Swedish subsidiary and were classified as intangible rights for tax purposes. Therefore, the Finnish Income Tax Act (§9 & §10) and the Nordic Tax Convention (Art. 6 & 13) would have most likely restrained Finland from taxing the capital gains of roughly €287 million from the immaterial rights even though the gains arose from the mine development in Finland. The conclusion is subject to the condition that the rights did not belong to a permanent establishment in Finland, which seems unlikely in the given situation.

5.2.4. Summary of tax avoidance arrangements

FQM employed four different tax planning techniques at the Kevitsa mine. First, it made two separate arrangements to un-capitalize the Finnish mining business. (1) It used intra-group loans to finance the mining investments; and (2) it set up a

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26 The participation exemption is generally meant to exempt intra-group payments from withholding tax to prevent the economic and judicial double taxation of corporate groups.

27 Finland has limited the deductibility of certain intra-group interests from 2014 onwards (The Business Tax Act, §18a). This might have resulted in a corporate restructuring as four of FQM’s subsidiaries in Finland merged into one at the end of 2014. The economic effects of the limitation are included in the 2014 figures.

28 The ratio was calculated with balance sheet figures by dividing the total shareholder equity with the total liabilities and equity.

29 Shifting profits abroad with interests will consequently lower the effective tax rate for FQM as a whole in case the interests are paid to a lower tax jurisdiction. We were not able to track the recipient company of the intra-group interests. However, the finance company closest in the group structure is incorporated in Barbados, which offers 0.25–2.5% tax rate for some MNEs (Deloitte, 2015).

30 See footnote 24 on the merger directive.
Table 2

<table>
<thead>
<tr>
<th>FQM subsidiary</th>
<th>Revenue (€ million)</th>
<th>Mining rights depreciation</th>
<th>Operating profit/loss</th>
<th>Intra-gr. financial income</th>
<th>Intra-group financial costs</th>
<th>Other financial costs</th>
<th>Group contribution</th>
<th>CIT costs</th>
<th>Profit/loss</th>
<th>Financial liabilities</th>
<th>Intra-group financial liabilities</th>
<th>Total equity</th>
<th>Total liabilities</th>
<th>Finnish tax loss estimate</th>
<th>FQM Group equity ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kevitsa Mining Oy</td>
<td>3.7</td>
<td>0.0</td>
<td>2.0</td>
<td>1.7</td>
<td>2.3</td>
<td>0.0</td>
<td>0.0</td>
<td>1.3</td>
<td>34.3</td>
<td>34.3</td>
<td>−1.4</td>
<td>34.6</td>
<td>0.1</td>
<td>69%</td>
<td></td>
</tr>
</tbody>
</table>
| FQM Kevitsa Holding No 1 Oy (consolidated)
                                      | 0.0                 | 0.0                         | −13.8                | 37.1                      | 60.9                        | 35.0                     | 0.0                  | 0.0       | −56.1       | 653.9                | 653.9                         | −59.7        | 696.8           | 3.3                    |                      |
| Kevitsa Mining Oy                     | 1.3                 | 0.0                         | 0.9                  | 0.4                       | 0.0                         | 0.0                      | 0.0                  | 1.3       | 34.7        | 34.7                 | −0.2                         | 34.8         | −0.1            | 71%                    |                      |
| FQM Kevitsa Holding No 1 Oy (consolidated)
                                      | 84.3                | 4.5                         | 6.6                  | 13.5                      | 30.9                        | 1.5                      | 0.0                  | 0.0       | −16.8       | 837.2                | 837.2                         | −76.5        | 867.9           | 2.5                    |                      |
| Kevitsa Mining Oy                     | 1.2                 | 0.0                         | 0.5                  | 0.8                       | 0.7                         | 0.0                      | −0.8                 | 0.0       | −0.2       | 33.5                 | 33.5                          | −0.3         | 33.8            | 0.0                    | 52%                   |
| FQM Kevitsa Holding No 1 Oy (consolidated)
                                      | 130.6               | 9.3                         | 2.5                  | 50.6                      | 38.8                        | 5.7                      | 0.8                  | 2.1       | 865.7       | 865.7                | −74.5                         | 897.7        | −1.2            |                      |                      |
| Kevitsa Mining Oy                     | 1.2                 | 0.0                         | 0.5                  | 0.0                       | 2.6                         | 0.0                      | 2.2                  | 0.1       | 30.1        | 30.1                 | −0.3                         | 36.2         | 0.3             | 50%                    |                      |
| FQM Kevitsa Holding No 1 Oy (consolidated)
                                      | 164.4               | 11.7                        | 37.7                 | 67.7                      | 148.8                       | 2.1                      | −2.2                 | 0.0       | −59.4       | 924.1                | 924.1                         | −133.9       | 954.3           | 8.1                    |                      |
| Total                                 | 386.8               | 36.8                        | 171.7                | 284.9                     | 44.3                        | 0.0                      | 0.0                  | −127.7    | 12.9        |                      |                               |              |                 |                        |                      |

The figures are based on the Finnish financial accounts prepared according to the Finnish GAAP (but see “d”). The Finnish CIT is calculated according to the Finnish GAAP:

a. Mining rights depreciation not included, since it is not necessarily tax deductible (see Section 5.2.2).
b. The source of the financial income is not specified on the accounts. There are no financial assets in Finland, which indicates the income should not be interest. Nearly all of the financial income is intra-group since 2012. FQM Kevitsa Holding No 1 Oy other financial income €16.5 million in 2011.
c. Includes only estimated tax losses due to thin capitalization due to the difficulties in the estimation of other tax effects (see Section 5.2.2). The estimate is based on net intra-group finance costs, Finnish 20% tax rate in 2014 and the difference between equity ratio (negative each year −0%) in Finland and the FQM’s consolidated equity ratio. The 2014 tax rate is used for all years since FQM was not liable for tax before 2014. Formula: intra-group financial costs less financial income x equity ratio difference (%) x Finnish CIT rate 2014 (20%).
d. The ratio was calculated based on the FQM’s consolidated annual reports’ figures by dividing the total shareholder’s equity with total liabilities and equity.
e. FQM Kevitsa Holding No 1 Oy figures are based on consolidated sub-group accounts (see Fig. 2). They include Finnish FQM Kevitsa Holding No 1 Oy, FQM Kevitsa Mining Oy, FQM FinnEX Oy and a Swedish Kevitsa Mining AB. The Swedish subsidiary has no significant effect on the consolidated figures as it is a sub-group holding company with no significant transactions or assets outside the group. The revenue represents ore sales of Kevitsa. Commercial production began only in August 2012. FQM Kevitsa Holding No 1 Oy income tax €2.6 million according to the Finnish Tax Administration data base. No income tax costs on financial statements.
holding company that used intra-group loans to purchase shares in the mining business in an intra-group restructuring. The latter structure was made possible by the Finnish group contribution regime, which allowed FQM to offset the losses of the holding company with the profits of mining business. (3) In addition, FQM acquired mining rights to Finnish subsidiary in an intra-group arrangement where it gained tax-deductible depreciations and amortizations. The Swedish subsidiary that sold the rights also avoided capital gains tax in Finland. (4) Finally, FQM used a Swedish holding company to avoid the Finnish dividend tax at source and the transfer tax if the mine is sold.

5.3. The FQM (Inmet) Pyhäsalmi mine: tax planning by structuring foreign investments

5.3.1. Description of the Pyhäsalmi mine

Located in central Finland, Pyhäsalmi is a copper and zinc mine originally founded by Outokumpu Plc, which had exploited the upper part of the deposit from 1962 until its depletion in 2001. In 1996, Outokumpu discovered another deeper deposit and began mining operations there in July 2001. The lower part is expected to deplete by 2019. In March 2002, Outokumpu sold the mine to the Canadian Inmet Mining Corporation (Inmet) for €63 million. Out of this sum, €45 million was paid in cash, €14 million with a promissory note, and €4 million in Inmet shares (Inmet, AR 2002). Finally, FQM acquired Inmet in a hostile takeover in March 2013. With a total purchase price of $4818 million, FQM also gained ownership of two other mines in Spain and Turkey and a mine development project in Panama (FQM, AR 2013). After the acquisition, FQM is able to offset losses in Kevitsa against the profits in Pyhäsalmi. The Pyhäsalmi mine employed 232 people in 2014, and the total sales revenue for the year was €148 million. The operating profit varied between €56 and €98 million, with an operating margin of 38–57% in 2011–2014. The annual ore production and sales have remained relatively stable (see Table 3).

5.3.2. Tax planning arrangements

In July 2001, when Outokumpu began exploiting the lower deposit, the operations started under a newly established subsidiary, Pyhäsalmi Mine Oy. When Inmet acquired the mine in March 2002, the shares of Pyhäsalmi Mine Oy were entitled to FQM’s new Finnish subsidiary, Inmet Finland Oy, directly owned by the Canadian parent company (see Fig. 3). Pyhäsalmi Mine Oy’s shares were valued at €33 million on the 2002 balance sheet of Inmet Finland Oy. Initially, most of the financing needs of Inmet Finland Oy were served by an intra-group loan worth €46 million. The annual intra-group interest costs were €3–6 million until 2005 (see Table 3). Moreover, in August 2005, FQM acquired a 70% interest in the Spanish Cobre las Cruces mining project from MK Resources Company (Inmet Finland, FS 2006). From a business perspective, the acquisition was separate from the Pyhäsalmi project. However, the way in which Inmet structured the acquisitions had significant effects on the Finnish CIT paid for the Pyhäsalmi’s mining profits (see Fig. 4).

5.3.3. The impact of arrangements

First, Inmet incorporated a Swedish holding company, Inmet Sweden Holdings AB, which then acquired Inmet Finland Oy’s shares from its Canadian parent in 2006. The Swedish participation exemption regime allows Inmet to repatriate the Finnish mining profits to Canada with no withholding tax (see Section 5.2). Second, the Finnish interest costs rose dramatically as the shares of the Cobre las Cruces project were transferred to Inmet Finland Oy. This was done indirectly through two Dutch subsidiaries in 2005 and 2006, respectively (Inmet Finland Oy, AR 2006). Again, the acquisitions were funded primarily with intra-group loans. As a result, the total amount of Inmet Finland Oy’s loans increased to €116 million in 2006, which generated yearly tax-deductible intra-group interest costs in Finland up to €10–15 million between 2006 and 2010 (see Table 3).

In the meantime, the mining operations at Pyhäsalmi remained extremely profitable, and Pyhäsalmi Mine Oy transferred these profits to Inmet Finland Oy as group contributions (see Table 3). However, the profits were not used for investments or loan repayments. Instead, each year, Inmet Finland Oy paid out nearly all profits as dividends, thus maintaining its poor solvency and high tax-deductible interest costs. Between 2006 and 2010, the total amount of dividends was €204 million, almost twice as much as the value of the intra-group loans (see Table 3). The Inmet group as a whole was mostly funded with equity instead of loans. The group’s year-end equity ratio was between 56 and 90% in 2002–2012. In December 2010, Inmet acquired the remaining 30% of shares in the Cobre las Cruces project from MK Resources. The shares were initially assets of Inmet Sweden Holdings AB through a Dutch holding company. In early 2011, the shares were again sold to a newly established Finnish subsidiary, CLC Holdings Oy. The restructuring doubled Inmet Finland Oy’s intra-group loans to €268 million (Inmet Finland Oy, AR 2011).

All intra-group loans after 2011 were issued by a Luxembourgian finance company, Inmet Finance Company S.à.r.l., which received a total of €37 million in interest income from Inmet Finland Oy in 2011–2014. The interest costs have been declining because of partial loan repayments and decreasing interest rates.31 Inmet Finance Company S.à.r.l. was also used to finance the Cobre las Cruces project in Spain with loans arranged through two Dutch holding companies. The interest income helped the company generate a total profit of €116 million in 2010–2013, and it paid no income tax for these profits. Inmet Finance Company S.à.r.l. is in fiscal unity with a Luxembourgian branch of Inmet called Inmet Luxembourg, which has no significant business activity. Its total corporate income tax expenses were below €1 million in 2010–2013. Therefore, Inmet paid less

31 The interest rate was fixed to Euribor for 3 months.
than one percent income tax for the profits it generated in Luxembourg. What is more, Inmet managed to gain these tax benefits with no employees in the country (Inmet Finance Company S.à.r.l., FS 2010–2013; Inmet Luxembourg, FS 2010–2013).

The acquisition of the Pyhäsalmi mine turned out to be a major success. In 2002–2014, its sales were €1554 million, with an operating profit of €764 million, which can be compared to the acquisition cost of less than €70 million (see Table 3). During the same period, Inmet Finland Oy paid out €594 million in dividends and €116 million in intra-group interests that reduced the CIT. The interest costs reduced Finland’s tax income by roughly €20 million, which accounted for 12% of the €170 million total CIT paid in Finland (see Table 3). Moreover, Finland received no withholding tax income from the dividends since these were paid through the Swedish holding company. Had the dividends been paid directly to the Canadian parent instead, Finland would have received a withholding tax income of €30 million according to the five percent rate in the tax convention (Art. 10) between the two countries (see Table 3).

We maintain that the majority of the tax losses resulted from artificial arrangements since Inmet had no employees in Sweden and the cash flow from mineral sales would have sufficed to finance the Pyhäsalmi mining operations. Because of the interest expenses, the aggregated effective tax rate from the Pyhäsalmi operations was just 22% in 2002–2014, a period during which the Finnish tax rate was gradually lowered from 29% to 20% in 2014 (see Table 3). Inmet’s 2011 Annual Report (p. 31) supports this observation by stating that in Pyhäsalmi, ‘tax recovery from intergroup loans’ has lowered its effective tax rate to three percent below the Finnish statutory rate in 2010 and 2011. Similar arrangements at the Cobre las Cruces mine have resulted in even more dramatic results as the effective tax rate in Spain decreased by 15% in 2011 and by 22% in the previous year. Out of the variety of tax arrangements employed by FQM, the thin capitalization structure at the Pyhäsalmi mine is the closest to a textbook example on how large enterprises are able to differentiate their value chains from their wealth chains, not least because the questionable tax incentives granted by Luxembourg (European Commission, 2015a; Marian, 2016b).

### 5.3.4. Summary of the tax avoidance arrangements

Inmet employed five tax planning techniques at the Pyhäsalmi mine. First, it made three separate arrangements to thin capitalize the Finnish mining business. (1) It used intra-group loans to finance the mining investments; (2) it set up a holding company, which used intra-group loans to purchase shares in the mining business in an intra-group restructuring; and (3) it used intra-group loans to finance separate investment in the mining business. The Finnish group contribution regime allowed it to offset the losses of the holding company with the profits of the mining business. (4) Moreover, Inmet acquired the mining rights to Finnish subsidiary in an intra-group arrangement where it gained tax-deductible depreciations and amortizations. The
Swedish subsidiary that sold the rights also avoided capital gains tax in Finland. Related to this, (5) Inmet used a Swedish holding company to avoid the Finnish dividend tax at source and the transfer tax, which is payable if the mine is sold.

5.4. The AE Suurikuusikko mine: tax planning by thin capitalization and a Swedish holding company

5.4.1. Description of AE and the Suurikuusikko mine

Agnico Eagle Mines Ltd. (AE) is a Canadian gold and silver company listed in the Toronto and New York stock exchanges. It operates eight mines in Canada, Finland, and Mexico. The Suurikuusikko gold deposit was discovered in 1986 by the National Geological Survey of Finland, which began developing the project. In 1997, the Finnish government held an auction for the mining rights. Riddarhyttan Resources AB, a newly established exploration company listed in the Stockholm stock exchange, won the auction and continued developing the project. The sale price was €0.2 million, and Riddarhyttan Resources AB agreed to pay a two percent royalty based on the revenue less processing costs (AE, AR 2013). The royalty agreement also binds Riddarhyttan Resources AB’s successors in Suurikuusikko after the first year of production. Suurikuusikko was the only significant asset of Riddarhyttan Resources AB when AE purchased a 14% minority share in the company in 2004. In 2005 and 2006, AE completed its first foreign acquisition by acquiring the remainder of the Riddarhyttan Resources AB shares with 10,023,882 of its own shares and $5 million in cash. AE finalized the development and began commercial production at Suurikuusikko in 2009. The mine is expected to operate until 2036.

5.4.2. The tax planning arrangements

The Canadian parent company initially owned the shares in Riddarhyttan Resources. However, in November 2005, AE set up a Swedish holding company, Agnico-Eagle Sweden AB, which purchased the shares from its parent for SEK 1335 million (€145 million). Simultaneously, Riddarhyttan was delisted from the Stockholm stock exchange. At the time of the acquisition, Riddarhyttan Resources AB’s Swedish subsidiary Agnico-Eagle AB owned the Suurikuusikko mining rights, and its permanent establishment in Finland began the mining activities in 2009. In early 2010, AE transferred the mining business to a new Finnish subsidiary called Agnico-Eagle Finland Oy. Moreover, the corporate and finance structures went through a major reorganization (see Fig. 5). Agnico-Eagle Sweden AB’s shares were transferred to a Dutch cooperative, Agnico–Eagle Mines Sweden Coöperatie U.A., which was founded in late 2009. Since then, the cooperative has granted intra-group loans to fund mining investments in Finland. In addition, AE established a finance subsidiary in Barbados, which lends the cooperative funds for financing business in Finland (Agnico–Eagle Mines Sweden Coöperatie U.A., FS 2011–2013). These restructurings created two tax consequences.

5.4.3. The impact of the arrangements

The Swedish participation exemption regime enables AE to repatriate profits from Finland to Canada without paying any withholding tax (see Section 5.2). Because of this, AE was able to avoid €3 million of dividend withholding tax in Finland. Since 2010, Agnico–Eagle Finland Oy has been financed primarily with loans from the Dutch cooperative. The loans totaled €224 million at the end of 2010 and increased to €318 million by 2014. In the same year, Agnico–Eagle Finland Oy paid out €46 million in dividends. In the period 2011–2014, the yearly intra-group interest costs amounted to €18–22 million (Agnico–Eagle Finland Oy, FS 2011–2014).32 According to Dutch law, cooperatives are not entitled to pay taxes on interest income (Blom & Viitio, 2009). The equity ratio of Agnico–Eagle Finland Oy was 32% at the end of 2014. In comparison, the AE group relied on equity financing with a rather high consolidated equity ratio of 59% at the end of 2014 (AE, AR 2013). The situation has remained similar since 2009 (see Table 4). Therefore, we maintain that the arrangement aimed to lower AE’s tax burden. We estimate that the thin capitalization-related tax savings totaled €10 million in the period 2009–2014. Without financial records from Barbados, we could not assess whether AE paid taxes there. However, in the case it has paid any taxes in Barbados, the tax rate has likely been low due to tax incentives.30

Since the beginning of 2009, Agnico–Eagle Finland Oy’s operations in Suurikuusikko have been highly profitable. The total sales revenue was at its peak, €190 million, in 2013, decreasing to €138 million a year later. In 2011–2014, the operating profit varied between €14–96 million while the operating margin was 10–42%. However, loan arrangements, depreciations and amortizations from initial investments exempted the company from paying taxes in Finland until 2012. Altogether, AE has paid a CIT of €18 million in Finland out of an operating profit of €265 million in the period 2010–2014 (see Table 4).

The separate entity doctrine grants MNEs much freedom to design the capital structure of their individual investments. They can do this regardless of their external funding needs and consolidated group capital structure by using internal finance companies to channel the funding (Feld, Heckemeyer, & Overesch, 2013). Instead of using external debt funding AE used a low tax Dutch cooperative and a Barbadian finance company to fund the Finnish operations. Nevertheless, the AE group companies were in joint liability for the group’s external funding (e.g., Agnico–Eagle Finland Oy, FS 2011–2013), but the equity ratio in Finland was approximately half compared to the ratio of the AE group in the period 2009–2014.

32 The interest rate of the loans has been fixed at 7.42%, which can be compared to the rates of 4.87–6.67% in unsecured bonds that the AE group has offered to third parties.
5.4.4. Summary of the tax avoidance arrangements

AE employed two different tax planning techniques at the Suurikuusikko mine. First, it used intra-group loans to finance the mining investments. Second, AE used a Swedish holding company to avoid the Finnish dividend tax at source and the transfer tax, which is payable if the mine is sold.

6. Discussion and implications for further research

6.1. Tax avoidance strategies

Having introduced the three case studies, in this section we discuss their significance. By combining financial data from various sources, we have answered calls to overcome the lack of information on tax shelters (Graham & Tucker, 2006: 565) and to incorporate a creative use of data sources (Hanlon & Heitzman, 2010: 157) in order to examine how accounting techniques re-allocate wealth (Sikka & Willmott, 2010: 353). Our article presents the first multiple case study on corporate tax planning that draws from a systematic industry-wide screening to select specific MNEs for closer examination. Moreover, we believe the findings open up new avenues for further research. The initial screening of financial statements of all mining companies operating in Finland gave us a clear indication for choosing the mines for closer examination.

The analysis of the three Finnish mines operated by First Quantum Minerals Ltd and Aenic Eagle Ltd revealed seven different tax arrangements that the Canadian MNEs utilized to lower their taxes in Finland (see Sections 4 and 5). Both of the enterprises resorted to thin capitalization with different techniques. AE financed its investments in the Suurikuusikko mine with a rather typical intra-group debt arrangement from a low-tax jurisdiction. FQM employed a similar structure in its Kevitsa mine but was also able to un-capitalize its Finnish subsidiaries with a holding company that used intra-group debts to purchase shares in the mining business. In the Pyhäsalmi mine, Inmet and FQM were able to shift profits abroad by using a Finnish holding company for a separate mine investment in Spain.

Buettner, Overesch, Schreiber, and Wamser (2012: 930) maintain that the lack of studies on the effectiveness of thin capitalization rules is surprising. We share this sentiment and believe that our case studies can help steer future research on thin capitalization.33 Analyzing the nuances of thin capitalization arrangements is important from a tax policy perspective, as tackling different types of arrangements call for different types of legal measures. Traditional thin capitalization rules limiting the tax-deductible share of interest are generally sufficient to intervene with the traditional thin capitalization that AE used, which purely resorts to the excess use of debt funding for local investments (Blouin, Huizinga, Laeven, & Nicodème, 2014). However, FQM used also two different techniques to artificially create debt and consequently tax-deductible interests by (1) intra-group acquisitions and (2) shifting debts that financed separate investments in Spain to Finland. In these cases, the whole interest cost could be considered excess, since the debt was not used to finance the investment in Finland even though the interest costs reduced taxable profit there. Therefore, traditional thin capitalization rules that usually allow a deductible share of interest should be complemented with specific legislation to tackle these arrangements. One option for this would be disallowing the use of group relief in situations where it is used to exploit artificially created interest costs.

The importance of understanding the nuances also applies to intellectual property rights, which have been discussed in the context of ‘research and development activity’ (Dharmapala, 2008: 667) in the form of patents (Graham & Tucker, 2006: 573), trademarks (Rixen, 2010: 18), and other R&D related rights (Grubert, 2003) – but to the best of our knowledge not in relation to extractive industries. We were able to identify how mining concessions can be used to shift profits away from the location country of a mine (see Section 5.2.3). We also showed how the EU Parent-Subsidiary directive, which is meant to prevent economic double taxation within EU, in fact facilitates tax avoidance as it can also be used to channel profits outside the EU without paying a withholding tax by using Swedish holding companies.34 Both of the Canadian enterprises used this technique.

Another striking feature regarding the tax avoidance arrangements in our case studies was the unimportance of low statutory corporate income tax rates in profit shifting destinations. Specific tax incentives in both Luxembourg and Sweden were used to minimize taxes as the statutory tax rates in these countries were close to the global average or even higher.35 This finding is particularly important given that the dominant quantitative research tradition has largely relied on the presumption that differences in statutory corporate income tax rates are the driving force of tax avoidance. In next subsection we discuss how this brings into question the reliability of the empirical data in the quantitative tax avoidance research (see also Section 2.1).

The territorial tax system in Canada allowed AE and FQM to benefit from their tax avoidance abroad. If they had been based instead in the United States, the benefit would have diminished when the profits had been repatriated since the lower

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33 As for example, we believe that Finland would be an interesting case for quantitative studies as it introduced limitations on the deductibility of intra-group interests in 2014 (Business Tax Act, §18a).
34 Similar ‘participation exemption shopping’ has been previously discussed in relation to the German tax regime (Broemel, 2016).
35 The statutory rate in Luxembourg was 29.22% in 2014 and 22% in Sweden (KPMG, 2016). According to KPMG, the global average was 23.87%.
taxes abroad would mutually result in a lower tax credit from the taxes paid out from the dividends in the United States.\textsuperscript{36} In a territorial system, such as that in Canada and all other developed countries, the profits of foreign subsidiaries and dividends paid out from them would be generally tax exempt. Previous quantitative tax research has not paid enough attention to the impact of the differences between the U.S. worldwide tax regime and the territorial tax regimes elsewhere.

6.2. Methodological issues

For the most part, the impact of tax avoidance has been studied quantitatively, using econometric methods. Our cases studies highlight several problems related to data and to the presumptions of these studies, bringing into question the reliability of the approach (see Section 2.1).\textsuperscript{37} Much of this research makes presumptions about the role of statutory tax rates in tax avoidance, but we show that this is not the only consideration that matters within the field. We also suggest that the reliability of the data used in the studies is often questionable. Due to the lack of public data, qualitative research has tended to rely on databases that do not include information from many of the countries used in tax avoidance. In our case studies, we discovered that subsidiaries registered in countries such as Barbados and Luxembourg were used as profit shifting destinations. The financial statements of these subsidiaries were not included in the Orbis database, as is generally the case for any financial statements of local subsidiaries in these countries. The lack of data in this most widely used database for quantitative corporate tax research is not limited to secrecy jurisdictions, as financial statements of separate entities are usually not available anywhere outside Europe.\textsuperscript{38} We could not retrieve the accounts of parent entities in Canada even when the enterprises were listed on the stock exchange there, because Canada only requires the publication of consolidated accounts. This lack of data was just one of the issues we discussed in Section 2.1, which reduces the reliability of research based on Orbis and other databases widely used in tax avoidance research.

In order to conduct generalizable research on tax avoidance, systematic selection of the research material and questions is of paramount importance. Previous qualitative case studies that have only covered individual enterprises and have drawn from sporadic datasets based on court cases or exposures in the media give very little grounds for generalization. We believe our approach helps to form a new methodological terrain, as this is the first qualitative case study on corporate tax avoidance that has been based on a systematic, industry-wide analysis of financial accounts. As such, we hope that the article paves way for further similar studies, and that it also helps to develop quantitative methodological approaches as we argued in the previous subsection.

6.3. Global wealth chains

Our qualitative research method provided detailed information on tax avoidance arrangements and allowed us to research tax avoidance it in the context of the broader global political economy. Mine exploration is often conducted by separate enterprises that sell the rights to mining enterprises for further development, as demonstrated by our case studies. The location country of the mine might not tax the capital gain if the ownership of the mining rights has been entitled to a foreign company.\textsuperscript{39} However, for example in Finland the purchasing enterprise is usually able to deduct the amortizations of the rights, if they are entitled to a Finnish subsidiary (\textit{OECD, 2014}; Model Tax Convention, Art. 9; Business Tax Act, §24). This was evident in the Kevitsa case study, where we demonstrated how FQM could avoid Finnish capital gains tax by entitling the immaterial mining rights to a foreign subsidiary. This issue has not received sufficient attention in the legislation or tax treaties. Effectively, mining rights allowing mining companies to separate their production chains (i.e., the mining and processing activities) from their wealth chains (i.e., where the concessions are booked).

This finding questions the traditional commodity-chain approaches where the ‘relative distribution of wealth within a commodity chain often has been portrayed in the social sciences as reflective of levels in a hierarchy of production’ (Gereffi & Korzeniewicz, 1994: 4). According to the commodity- and value-chain research tradition, production hierarchies became outdated with the rise of the new export-oriented and technology-intensive forms of production (Gereffi & Korzeniewicz, 1994: 4). However, our case studies illustrate a very traditional extractive industry operation where the ‘value’ seemingly produced in Finland was transferred artificially to Barbados, Luxembourg, the Netherlands and Sweden. This had little or do with the production process or other value creation which was illustrated by the fact that in some cases the

\textsuperscript{36} However, the U.S. multinationals might receive a final tax benefit from tax avoidance abroad if the repatriated dividends would be temporarily exempted from U.S. income tax as Donald Trump promised during his presidential campaign. A similar 'repatriation holiday' was last enacted in 2004 during the George W. Bush administration (Gravelle, 2015).

\textsuperscript{37} The reliability could also be questioned by the exceptional range of average semi-elasticities between tax rates and profits in individual countries. According to an extensive review by Heckemeyer and Overesch (2013: 29) this range of average semi-elasticities in previous studies has been 0.31–12.29. This means that a one percentage increase in the (statutory) tax rate difference between a subsidiary and its parent would increase the pretax profit of the subsidiary by 0.31–12.29%. Despite the huge range the sign of semi-elasticities has remained the same in dozens of studies, which denotes that lower tax rate increases pretax profits.

\textsuperscript{38} E.g., Australia, India, Singapore and some others being exception to the rule.

\textsuperscript{39} See Section 5.2 concerning Finland and the Nordic Tax Convention. However, a tax convention based on the OECD Model Tax Convention (Art. 6 & 13) could grant the taxing right to the location country, assuming that its national legislation permits this (Du Toit, 1999: 37).
case study enterprises did not have any employees in these countries.\textsuperscript{40} As such, our case studies support the nascent research agenda around wealth chains within the ‘decentralized corporations’ (Desai, 2008) that can have separate ‘homes’ for their talent, financial operations and legal headquarters.

While value chains and production networks are characterized by relative transparency and coordination, actors in wealth chains thrive by the secrecy of the arrangements (Seabrooke & Wigan, 2014a: 257). Seabrooke and Wigan (2014a: 261) have called for ‘a clearer picture of how wealth chains have an impact on developed and developing countries’ and have similarly pressed for investigations into how far financial innovations characterize transfers through wealth chains. Noting how value chain research has focused on the disaggregation of production processes across countries, Seabrooke and Wigan (2014b) have called for more attention to the legal and financial disaggregation of enterprises. Our case studies are a prime example of this. A traditional value chain analysis of the Finnish mining industry would fail to highlight the important role played by Barbados, the Netherlands, Luxembourg and Sweden in channeling profits.

Seabrooke and Wigan have noted how tax avoidance ‘occurs at the intersection between variegated national tax systems’ (2014a: 258). While agreeing on the importance of these intersections, we propose more attention should be paid to the general principles behind international tax legislation, namely the arm’s length principle and the separate entity doctrine. These principles play key roles as the underlying structure enabling multinational enterprises to benefit from commercialized sovereignty, which allows tax havens to facilitate tax avoidance (Avi-Yonah, 1995; Durst & Culbertson, 2003; Eden, 2016; Fichtner, 2016; Palan, 2002; Picciotto, 1992; Rixen, 2010).

Many of the tax-avoidance related distortions in the global wealth chains can be traced back to the conflict between the separate entity doctrine on the one hand and the unitary nature of the business operations of MNEs on the other (Picciotto, 2016a). We argue that the power to apply the doctrine enables corporate tax avoidance. Indeed, all of the tax arrangements we described in our case studies were made possible by the separate entity doctrine that allows a MNE to use its individual subsidiaries as tax avoidance vehicles (Ting, 2014: 71; see also Avi-Yonah & Benhalom, 2011; Cockfield, 2004). However, we also highlighted how enterprises can offset one subsidiary’s profits with losses from another by using group reliefs, thus effectively overriding the separate entity principle for their own purposes.\textsuperscript{41} These different applications result in very different divisions in tax revenues. In other words, the enterprises have excessive powers to operate as separate entities when it suits them for tax purposes, while planning their operational supply chains as an integrated entity.

Separate entities within an MNE are fictional, underlined by the fact that professional investors or analysts view a corporate group under one parent company as a single enterprise (Commons, 1957; Graham, 2003).\textsuperscript{42} To illustrate this, all Finnish subsidiaries analyzed in the case studies were in joint liability for debts that foreign group companies had taken from outside lenders (see, e.g., FQM Kevitsa Holding No. 1 Oy, FS 2013; Agnico-Eagle Finland Oy, FS 2013; Pyhäsalmi Mine Oy, FS 2013). We argue that the main reason for this was that these arrangements reduced the MNE’s overall financial costs. Many of these group companies were holding companies with no real business activity.

The role of holding companies has mostly been discussed in the context of tax havens (e.g., Desai et al., 2005). However, we illustrated how Sweden is used as a hub for repatriating profits to avoid dividend tax at source. This also illustrates how global wealth chains often differ significantly from global value chains or production networks. The key discrepancy that gives MNEs this power is that whereas a legal corporation exists only in formally, ‘an economic going concerning existing wherever it does business’ (Commons, 1934: 55).

In the introduction, we noted how the separate entity principle is closely connected to another key principle of international tax governance, namely the arm’s length principle. The concept is highly ideological (Ylönen & Teivainen, 2015), because of the false impression it conveys on the possibilities of finding ‘markets’ inside large enterprises. Our case studies highlight how the application of the arm’s length principle in the pricing of finance and intangible mining rights can result in substantially different portioning of profits even in an industry where the business itself is highly tangible.

The case studies also allowed us to analyze ways corporations exert power over states in the global economy (Dillard & Vinnari, in press: 14). This growth of corporate power can be conceptualized using the distinction between voluntary and volitional freedom. Originally developed by the evolutionary economist and legal scholar John Lee Hale in the early 20th century (Fried, 1998; Hale, 1935; Hale, 1952; Samuels, 1972: 277), the voluntary-volitional continuum distinguishes between the circumstantially limited exercise of choice between alternatives or behavior (i.e., voluntary freedom) and complete autonomy with the absence of constrained choice or limits to choice or behavior (i.e., volitional freedom). While volitional freedom is commonly associated with governmental use of power, Hale noted already in the 1920s how private enterprises could also enjoy this kind of freedom. Our case studies are illustrative examples of this. Viewed from this angle, property can be conceptualized as something that ‘provides the capacity to exercise coercive\textsuperscript{43} impact upon others and the correlative

\textsuperscript{40} These findings also undermine the simplistic ideas of efficient international allocation of resources by reducing national and international regulation (Dorn, 1993). While this sort of ‘trickle-down economics’ is no longer in the academic mainstream, it still has a considerable influence in public discussion.

\textsuperscript{41} An obverse example is the ‘ring fencing’ legislation adopted in some other jurisdictions that restricts offsetting the profits and losses of separate mines even within an entity. Essentially, this legislation extends the state’s capability to tax separate businesses separately.

\textsuperscript{42} Another factor behind the failure of the separate entity doctrine is more methodological. There are no methods to determine equivocal transfer prices because there are no decent benchmarks available. Business-to-business transactions are dealt in confidence and are not usually available for benchmark purposes. Intra-group transactions are also often performed in conditions that do not occur between independent enterprises, and therefore, benchmarks could not exist even theoretically (see also Avi-Yonah & Benhalom, 2011: 378–380; Ylönen & Teivainen, 2015).

\textsuperscript{43} Hale and Samuels use the word ‘coercive’ in a non-pejorative sense.
ability to withstand the coercive capacity of others’ (Hale, 1935: 150; Samuels, 1972: 305). This can be illustrated, for instance, with the case where FQM was able to treat the mining concessions in Finland as immaterial rights and transfer them to Sweden, effectively withstanding the capacity of Finland to tax its future income.

6.4. Other issues

Our case studies point to the institutional factors behind tax avoidance. The aggregated data collected from the 12 Finnish metallic ore mines showed that the mines generated only €92 million of tax income for Finland in the period 2011–2014, all of which was paid by the Kevitsa, Pyhäsalmi and Suurikuusikko mines, the focus of the case studies (see Table 1). This amounted to 0.5 of the total CIT revenue of €18.5 billion (Finnish Tax Administration, 2015b). Alternatively, the taxes accounted for 2.4% of the companies’ total mineral ore sales of €3861 million in 2011–2014. Conversely, the direct state support to the mining enterprises was €22 million in the period 2000–2011. In the same period, government agencies also invested roughly €300 million in the mining business (Ministry of Employment and the Economy, 2012: 34–35). 44

As a conclusion of these figures, subsidizing the mining industry with a favorable legislation has generated only negligible revenues for Finland despite the substantial ore volumes worth billions of euros. While it is difficult to pinpoint the exact reasons for this failure, it is evident that Finland failed to ensure contributions to local communities when it amended its mining laws in 2011. Tax avoidance concerns were not discussed during the legislative process. Moreover, we noted how the Ministry of Employment and the Economy commissioned a consultancy study that was favorable toward introducing a mining royalty legislation, but the study was curiously never published. As a result of these factors, the decision to abstain from establishing mining royalties likened Finland to developing countries that aim to compensate for their unstable business environment by lowering their mining taxes (Ericsson & Farooki, 2012). We find three possible, but not necessarily mutually exclusive, reasons for this failure. First, the new Mining Act clearly favored the mining industry (Frazer Institute, 2015), and even the minister responsible for the drafting process admitted the strong impact of corporate lobbying on the final wordings of the law (Yle, 2009). This factor calls for additional interdisciplinary research on the politics of tax planning (Sikka & Willmott, 2010: 353).

Second, the corporate sector attracts some of the best tax professionals, giving the lobbyists an upper hand over civil servants and politicians. Specifically, the ‘complexity of the calculative practices that institutions undertake to enable transformative action’ enables mining enterprises to influence the tax system, especially when the parliamentarians generally have limited knowledge on accounting details and the fundamentals of an individual industry (Stoianoff & Kaidonis, 2005: 50). This factor requires more research on the role of professionals in facilitating tax-driven wealth chains (Seabrooke & Wigan, 2014a). The accounting and tax systems should serve society, but in practice some tend to benefit over others (Johnston, 2015: 99). Third, the general lack of research on best practices in mining tax policy also hinders fact-based discussions on how to design mining sector taxes. As Clausing and Durst (2015: 13) have noted, ‘there appears to be no literature comparing the administrative success of different kinds of fiscal regimes in practice’ (see also Laporte & De Quatrebarbes, 2015: 11–12).

All of these factors highlight the need to question straightforward comparisons between governments resources and capabilities when it comes to taxing multinationals. They illustrate how the low mining sector taxes resulted from legislative deficiencies and not from inadequate administrative resources. This challenges the idea that adequate resources would ensure the appropriate collection of taxes and hints that there is much potential in the recent turn from the Washington Consensus policies toward a renewed ‘resource nationalism’ in many developing countries (Bakir, 2015; Haslam & Heidrich, 2016). Indeed, Finland was ranked as the most attractive jurisdiction for mining investment in the world in 2014 precisely because of its mineral policy and political climate, which placed it ahead of more mineral-rich nations (Frazer Institute, 2015: 8–13).

Turning to more policy-related recommendations, we argue that the main tax attraction of Finland for mining enterprises is not a low corporate tax rate but the opportunities for avoiding taxes. This avoidance is facilitated not only by the interplay between the legislation of Finland and the MNEs host countries, but also by third countries that offer incentives for holding and finance subsidiaries. 45 Introducing a mining royalty regime would be the most straightforward option since individual countries have to secure their rents when ores are being mined (Guj, 2012). Ad valorem mining royalties are generally regarded as effective to administer as they are based on sales prices, and there is no need to calculate and attribute costs (Guj, 2012: 14). A royalty legislation would also encourage companies to favor potentially more profitable projects, thus decreasing the risk of loss-making projects where ores are mined without any CIT left in the country (for further discussion, see, e.g., Guj, 2012).

6.5. Limitations and pathways for future research

This article is not without limitations. Much of the details about corporate tax practices are outside of the public domain, both because of commonly accepted business secrecy as well as the fact that much of tax planning thrives from additional

44 Since then, the troubles of the now bankrupt Talvivaara mine have accounted for a few hundred million euros owing to the government (Kankare, 2015).

45 E.g., Altshuler and Grubert (2003) and Killian (2006) have discussed the interplay between the laws of home and host governments.
layers of secrecy granted by tax havens. For an example, we were not able to obtain financial accounts from Barbados. Moreover, the gap between taxable and financial income is not explicitly expressed in Finnish financial statements, which made assessing the exact tax implications impossible. This limitation mainly involved depreciations and amortizations that are often calculated differently in taxation and accounting in Finland (Business Tax Act, Section 3). Furthermore, the mines were at different stages of production, which limited possibilities to assess tax planning. Estimating the impact of tax planning for the Kevitsa mine was particularly difficult as it had not generated any CIT before 2014. In contrast, Pyhäsalmen was already in a stable phase of production, which made it relatively easy to calculate the impact of tax planning.46

While we were able to create a rather reliable picture of the tax structures employed at Finnish mines, we could not assess the division of risk between the related companies and other contractual provisions. These factors affect the arm’s length transfer prices that could have been used in profit-shifting since there were substantial intra-group ore sales and interest costs (OECD, 2010). However, information of this kind is confidential and was therefore out of the scope of this study. There are also two broader issues that weaken the reliability of the research data, thus potentially affecting the conclusions made. First, we do not know for sure whether the Finnish Tax Administration has challenged the legality of the arrangements.47 However, we found no evidence of this, and major disputes would have been reported in the financial accounts (See for example FQM, AIF 2014: 117–119). Second, a third country could have taxed the income discussed in the case studies when resident or source countries failed at this, based for example on the parent company’s resident country’s controlled foreign company regime (see, e.g., Lang, Scheuerle & Stefaner, 2004). Alternatively, a subsidiary registered in Luxembourg or some other country could be deemed a resident in another country for CIT purposes (OECD, 2014; Model Tax Convention, Art. 4). However, there was not sufficient financial information available to assess this because only consolidated accounts of listed companies were available from Canada.

These limitations highlight the need for more transparent and comprehensive financial information. One solution for this would be requiring enterprises to publish their key financial items on country-by-country basis (Australia Senate Economics References Committee, 2015: 80; Murphy, 2016). Moreover, considering the considerable freedoms that large enterprises enjoy in designing their wealth chains, there is a need for a wider discussion on the role of corporate secrecy in 21st century capitalism. Corporations exert financial power over states with their tax planning arrangements, and both governments and large enterprises should be transparent on the details of these arrangements. Despite the recent policy-level interest toward tackling corporate tax avoidance, these considerations have not received sufficient attention.

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46 With Pyhäsalmen and Suurikuusikko, we were also able to double-check our calculations as the total amount of taxable income and tax are public information in Finland. This does not reflect the tax losses.

47 The tax administration could challenge arrangements within six years after the financial year, if it is considered that they were not conducted on an arm’s length basis or that they should be classified as tax avoidance as defined in the Finnish general anti-avoidance rule (Act on Assessment Procedure, 18.12.1995/1558, §§28, 31 and 55–56).
7. Concluding remarks

Our article has made a step in analyzing wealth chains and their underlying principles ‘in the real world’, thus addressing gaps in the existing body of literature on mining taxation, corporate tax avoidance and its societal impact. Regarding further research along these lines, we maintain that information leaks, such as the ‘Lux Leaks’, could provide useful material for tax and accounting research (e.g. Marian, 2016a). Another option might be to turn to enterprises or tax authorities and ask them to provide confidential, anonymized data (see, e.g., Ali-Yrkkö & Rouvinen, 2015). The separate entity principle based on arm’s length transfer pricing is broken and needs to be fixed. We doubt that the ongoing policy efforts by the OECD will be able to fix the underlying problems as they continue to rely on the arm’s length principle and the separate entity doctrine (OECD, 2015b). A well-designed formulary approach could help remedy these problems (Avi-Yonah & Benshalom, 2011; Picciotto, 2016b; Siu, Picciotto, Mintz & Sawyerr, 2015), as the European Commission (EC) has suggested in its Common Consolidated Corporate Tax Base directive proposals (COM(2016) 685 final; Cerioni, 2016).48

We want to underline that the division of potential tax incomes is one of the most fundamental questions in contemporary capitalism. The governments of countries where value creation actually takes place should be in the position

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48 According to the EC proposal, the consolidated taxable profits of a corporate group would be split between countries based on the location of its assets, labor and sales.
49 FQM had over 50 other subsidiaries related to mines in other countries in 2011. The above structure of Kevitsa was again amended at the end of 2014 when the number of subsidiaries in Sweden and Finland was reduced to three due to mergers (FQM, AIF 2014).
to decide how much taxes corporations pay for the business conducted there. The adoption of a common formula would subordinate much of the power currently enjoyed by MNEs to intergovernmental negotiations whose results would necessarily be some kind of a political compromise. Moreover, it should be noted that all the existing models of international corporate taxation already rely more or less on the use of formulas (Avi-Yonah, 1995; Ylönen & Teivainen, 2015). As John Commons noted in the opening quote of this article, the ‘system of prices is like the system of words or the system of numbers’, and just like words, ‘prices and numbers are nominal and not real’. Therefore, the rules that dictate these prices

50 The structure remained unchanged for two years after FQM's acquisition (FQM, AIF 2014). Inmet Sweden Holdings AB also held shares in the Çayeli mine in Turkey through a Spanish holding company. Inmet’s consolidated accounts did not provide information on the total number of subsidiaries in 2011.
and their geographical division in corporate wealth chains are of utmost importance to any scholar of accounting, international political economy or tax law.

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51 Oijärvi Resources Oy was an exploration company half owned by Australian Troy Resources. Later, AE acquired 100% ownership, which enabled it to exploit its tax losses of €4.3 million in 2012, using the Finnish group contribution system, before deregistering the company. AE had 13 other subsidiaries related to mines in other countries in 2011. That number increased to 35 by March 2015. There have been only minor changes in the group structure since 2010 with no major tax implications (AE, FORM 40-F 2014).
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Appendix A. List of financial data used in the research

**Kevitsa case study**
First Quantum Minerals Limited (consolidated), Canada
FQM Finnex Oy (2345662-5), Finland
*Orbis financial data*, 2010–2014
FQM Kevitsa Holding No 1 Oy (2345699-1), Finland
*Orbis financial data*, 2010–2014
FQM Kevitsa Holding No 2 Oy (2345706-2), Finland
*Orbis financial data*, 2010–2014
FQM Kevitsa Mining Oy (2345703-8), Finland
*Orbis financial data*, 2010–2014
FQM Kevitsa Sweden Holdings AB (556814-4041), Sweden
*Financial statements (EBR)*, 2011, 2013
*Orbis financial data*, 2010–2014
Kevitsa Mining AB (556530-2717), Sweden
*Orbis financial data*, 2004–2014
Kevitsa Mining Oy (2062575-3), Finland

**Pyhäsalmi case study**
Inmet Mining Corporation (consolidated), Canada
*Orbis financial data*, 2003–2012
CLC Copper I B.V. (34241191), the Netherlands
*Financial statements (EBR)*, 2011, 2012
*Orbis financial data*, 2004–2013
CLC Copper II B.V. (34129494), the Netherlands
*Financial statements (EBR)*, 2011, 2012
*Orbis financial data*, 2004–2013
CLC Holdings Oy (2389092-3), Finland
Cobre las Cruces SA (ESA28814135)
*Orbis financial data*, 2004–2013
Inmet Finance Company S.à.r.l. (155174), Luxembourg
Inmet Finland Oy (1635992-3), Finland
*Orbis financial data*, 2004–2014
Inmet Luxembourg (155271), Luxembourg (branch of Inmet Mining Corporation)
Inmet Mining Sweden AB (556588-3179), Sweden
*Orbis financial data*, 2004–2013
Inmet Sweden Holdings AB (556693-7131), Sweden
*Orbis financial data*, 2006–2013
Pyhäsalmi Mine Oy (1712341-0), Finland
*Orbis financial data*, 2004–2014
Scandinavian Minerals Limited
Annual information form (CSA), 2007  
Annual report (CSA), 2007  
**Suurikuusikko case study**  
Agnico-Eagle Mines Limited, Canada  
Form 40-F (SEC), 2014  
Agnico-Eagle AB (556599-9751), Sweden  
Financial statements (EBR), 2005, 2009  
Orbis financial data, 2004–2011  
Agnico-Eagle Finland Oy (2311020-2), Finland  
Orbis financial data, 2010–2014  
Agnico Eagle Mines Sweden Coöperatie U.A. (34361868), the Netherlands  
Agnico-Eagle Sweden AB (226690-6185), Sweden  
Oijärvi Resources Oy (1648603-3), Finland  
Riddarhyttan Resources AB (556534-7639), Sweden  
Orbis financial data, 2005–2011  
**Other Finnish mines**  
Altona Mining Limited, Australia  
Annual report (ASIC), 2014  
Belvedere Mining Oy (2312246-5), Finland  
Orbis financial data, 2010–2014  
Belvedere Resources B.V. (34161550), the Netherlands  
Financial statements (EBR), 2013  
Belvedere Resources Finland Oy (1044963-7), Finland  
Orbis financial data, 2010–2013  
Belvedere Resources Limited, Canada  
Annual report (CSA), 2013  
Boliden AB, Sweden  
Annual report (FI), 2014  
Boliden B.V. (3418048775), the Netherlands  
Financial statements (EBR), 2011  
Boliden Harjavalta Oy, Finland  
Orbis financial data, 2005–2014  
Boliden Kokkola Oy, Finland  
Orbis financial data, 2005–2014  
BR Gold Mining Oy (2414435-9), Finland  
Orbis financial data, 2011–2013  
Dragon Mining Limited, Australia  
Annual report (ASIC), 2014  
Orbis financial data, 2005–2013  
Dragon Mining Oy (1509120-8), Finland  
Orbis financial data, 2004–2014  
Dragon Mining (Sweden) AB (556465-5339), Sweden  
Orbis financial data, 2005–2013  
Endomines AB, Sweden  
Annual Report (FI), 2012, 2013  
Orbis financial data, 2003–2013  
Endomines Oy (1061211-5), Finland  
Orbis financial data, 2003–2014  
Hyena Holding AB (556708-2994), Sweden
Financial statements (EBR), 2011
Orbis financial data, 2007–2013
Kalvinit Oy (1005935-6), Finland
Orbis financial data, 2004–2013
Kuhmo Metals Oy (1925450-2), Finland
Financial statements (PRH), 2012, 2014
Orbis financial data, 2005–2013
Kuhmo Nickel Limited (05311516), United Kingdom
Financial statements (EBR), 2012, 2014
Orbis financial data, 2006–2014
Kylylahti Copper Oy (Bolden Kylylahti Oy), Finland
Financial statements (PRH), 2010, 2013, 2014
Orbis financial data, 2005–2014
Lapland Goldminers AB, Sweden
Annual Report (FI), 2011
Orbis financial data, 2005–2014
Lapland Goldminers Oy (1907114-0), Finland
Orbis financial data, 2005–2013
Nordic Mines AB, Sweden
Annual Report (FI), 2013–2014
Orbis financial data, 2009–2013
Nordic Mines Marknad AB (556767-4980), Sweden
Financial statements (EBR), 2012
Orbis financial data, 2009–2013
Nordic Mines Oy (2296579-4), Finland
Financial statements (PRH), 2012
Orbis financial data, 2010–2014
Outokumpu Chrome Oy (0772768-3), Finland
Financial statements (PRH), 2013
Orbis financial data, 2005–2014
Outokumpu Oyj (0215254-2), Finland
Annual Report (FIN-FSA), 2014
Orbis financial data, 2005–2013
Talvivaaran Kaivososakeyhtiö Oyj (1847894-2), Finland
Annual Report (FIN-FSA), 2013
Orbis financial data, 2006–2014
Talvivaara Sotkamo Oy (1852002-0), Finland
Orbis financial data, 2004–2014
Vulcan Exploration B.V. (34639562), the Netherlands
Financial statements (EBR), 2012
Orbis financial data, 2010–2014
Vulcan Hautalampi Oy (2300988-4), Finland
Orbis financial data, 2010–2014
Vulcan Kotalahti Oy (2300990-5), Finland
Orbis financial data, 2010–2014
Vulcan SW Finland (2300986-8), Finland
Orbis financial data, 2010–2014

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