

International Diversification, Tax Avoidance, and Chaebol: Evidence from Korea

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Jeong-Yeon Kang

Department of Information Technology Management, Sun Moon University, South Korea

Jin-Soo Kim[†]

Department of Accounting, Jeju National University, South Korea

Abstract

Purpose – Utilizing a large sample of Korean firms, this study examines international diversification impacts on corporate tax avoidance and whether firms affiliated with large business groups (known in Korean as “chaebol”) reinforce the relationship between international diversification and tax avoidance.

Design/methodology – This paper hypothesizes that 1) international diversification is likely to increase tax avoidance, 2) the positive effect of international diversification on tax avoidance is likely to be more pronounced for chaebol firms. We examine the hypotheses by using Korean firms listed in the Korean stock market between 2011 and 2016. We employ the number of foreign subsidiaries and the entropy index as proxies for international diversification and CASH ETR and GAAP ETR as proxies for tax avoidance.

Findings – Our findings are summarized as follows. First, we have found that as firms are more internationally diversified, tax avoidance increases. It means that international diversification can be employed as a method of reducing the tax burden. Second, firms affiliated with chaebol are strengthened by the positive relation between international diversification and tax avoidance. It is interpreted that chaebol firms have more effective opportunities to reduce taxes than other firms. When entering foreign markets, they can share experience and resources to decrease taxation within the large business group.

Originality/value – This study provides empirical evidence regarding the tax effect of international diversification. Unlike prior studies, international diversification is positively related to tax avoidance in Korea. In addition, we present additional evidence on the chaebol effects of international diversification on tax avoidance, in which they have an advantage to reduce taxes using transfer pricing through related party transactions, income shifting to low tax rate countries, and establishing subsidiaries in tax havens.

Keywords: International Diversification, Tax Avoidance, Chaebol, Corporate Governance

JEL Classifications: G31, M14, H26

1. Introduction

For the sustainable growth of a company, it is necessary to continuously discover new businesses and markets to maximize its growth potential. Most companies employ diversification as a means of efficient allocation of resources, continuous market dominance and competitive advantage. Diversification has various advantages, such as economies of scale, experience effect, location advantage, market size growth, and stable profits. However, it is also used as a means to mitigate the risk of CEO turnover and increase management compensation, and excessive diversification strategies could damage corporate value. The

[†] Corresponding author: jskim01@jejunu.ac.kr

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impact of diversification on corporate performance depends on the relative size of costs and benefits for diversification, and empirical results for the impact are mixed (Geringer et al., 1989; Gomes and Ramaswamy, 1999; Grant, 1987; Tallman and Li, 1996).

Corporate diversification strategy is being carried out in a variety of ways. When there is a limit to growth due to a narrow domestic market, like Korean companies, there is no choice but to find opportunities for growth in overseas markets. Therefore, many Korean companies have chosen a diversification strategy through overseas expansion rather than a product or business diversification strategy. This diversification strategy through overseas expansion is called international diversification.¹ International diversification of Korean companies is achieved through exports, foreign investments (financial investment), and establishment of foreign subsidiaries. Although various prior studies have been conducted on international diversification, very few studies have investigated international diversification from the perspective of tax, which is one of the main factors of international diversification.

The difference in tax rates between the home country and the host country of foreign subsidiaries is an important determinant of international diversification. Since 1990, the world has been globally competing to cut the corporate tax rate, according to the trend of neoliberalism. The number of companies relocating production facilities overseas from their home countries has increased due to competition for lowering corporate taxes in countries that are trying to lure companies with low corporate tax rates. Income shifting, transfer pricing, and tax havens are being used as a means to reduce the tax burden by using foreign subsidiaries, as revealed in prior studies (Harris, 1993; Jacob, 1996; Collins et al., 1998). Korean companies provide appropriate conditions to investigate the effect of reducing tax burden on internationally diversified companies during the global corporate tax cut competition period. Korea has cut its highest corporate tax rate from 34% to 24% since the 1990s, but it is relatively high compared to countries with low tax rates such as Singapore, Hong Kong, and Ireland. Therefore, it is important to examine whether Korean companies have achieved the effect of tax avoidance through international diversification in the global corporate tax cut competition.²

A number of studies have been conducted on the determinants and effects of tax avoidance (Hanlon and Heitzman, 2010). Firm value, corporate governance, cost of capital, capital investment, and managerial characteristics are reported to be related to tax avoidance. Many companies extensively utilize various means to lower their tax burden. Management uses primarily international transactions to decrease the tax burden. Complex international transactions are difficult for tax authorities to investigate, and international tax investigation requires significant time and effort as well as international cooperation. In addition, companies tend not to provide sufficient disclosure about international transactions. In this respect, international diversification can provide a favorable environment for lowering corporate tax burdens.

Tax avoidance can have a positive effect on corporate value through retention of internal capital, and a negative effect on corporate value when used as a means for managers to pursue private interests. Corporate governance can play a role of monitoring and controlling tax avoidance. Large business groups (chaebol) can have a significant impact on tax avoidance using international diversification.

¹ International diversification is defined as the expansion of a business activity globally beyond a specific region through entry into countries with different geographic locations or markets, and is used interchangeably with multinationality.

² Tax avoidance is broadly defined as the reduction of explicit taxes (Dyreng et al. 2008). Tax avoidance represents a continuum that ranges from perfectly legal strategies to sheltering or evasion (Hanlon and Heitzman 2010).

This study aims to examine the effect of international diversification on tax avoidance, and whether the Korean large business group (chaebol) companies strengthen the impact of international diversification on tax avoidance more than with other companies.³ Therefore, this study hypothesizes as follows. First, it is expected that international diversification is likely to increase tax avoidance. It could increase tax avoidance as it provides a favorable environment to use income shifting, transfer pricing, and tax havens. Second, firms affiliated with chaebols can strengthen the positive relation between international diversification and tax avoidance. Chaebol firms can share information on overseas expansion, which can reduce trial and error and can adjust tax burdens at the business group level, which will be more advantageous than other companies for international diversification.

Our paper conducted a regression analysis of Korean companies listed in KSE and KOSDAQ from 2011 to 2016. In order to examine the effect of international diversification, it is important to measure international diversification. Foreign sales and foreign assets, which were mainly used in prior studies, have some limitations in the sophisticated measurement of international diversification, so we employed publicly disclosed information on foreign subsidiaries. Korean companies disclose information on their foreign subsidiaries in the footnotes of their consolidated financial statements due to the mandatory introduction of the International Financial Reporting Standards in 2011. We employed the entropy index using information on foreign subsidiaries and the number of countries where the foreign subsidiaries are located as a proxy for international diversification (Kim, 2018b). Also, we measured tax avoidance using cash effective tax rate (CASH ETR) and effective tax rate (GAAP ETR) (Zheng, 2017). These two tax avoidance proxies are widely used and can capture aggressive and conservative types of tax avoidance practices.

We found that as Korean companies internationally diversify, the level of tax avoidance increases, unlike Chun (2013). Specifically, international diversification using foreign subsidiaries can be more easily used for income shifting, transfer pricing, and tax havens, which can be interpreted as increasing the level of tax avoidance. Secondly, we found that firms affiliated with the large business groups strengthen the positive relationship between international diversification and tax avoidance more than other firms. This is interpreted to mean that chaebol firms can have more advantages to enter the foreign markets and share resources, experience and skills to reduce tax within the business group.

For a robustness check, we used alternative international diversification proxies, foreign sales and foreign assets, which have been used in prior studies. Results from additional proxies of international diversification are consistent with the main results. Second, we performed additional tests to control endogeneity using a lag model, wherein dependent variables include future tax avoidance. Our findings are insensitive to alternative proxies and methods.

We provided evidence regarding the effects of international diversification on tax avoidance in a business environment where export-oriented management strategies such as the Korean companies have implemented. There are a few studies regarding the tax effect of international diversification, and the empirical results of previous studies are mixed, depending on the country, sample period, and proxies of international diversification and tax avoidance. This study provides additional empirical results on the relationship between international diversification and tax avoidance by various proxies. In addition, it provides additional information on large business groups by examining the effects of chaebol firms on the relation between international diversification and tax avoidance.

³ The term “chaebol” is not clearly defined, but it is used in a broader sense than a large-scale corporate group under the Korea Fair Trade Act. Typically, a chaebol refers to a single corporate group in which ownership is concentrated in a specific person or their relatives, and has direct control over several affiliates.

The rest of this paper proceeds as follows. Section II provides literature reviews and hypotheses development. Section III describes the research model and the sample selection process. Section IV presents the empirical results, and Section V concludes.

2. Literature Review and Hypothesis Development

2.1. Literature Review

International diversification is a strategy in which a company expands its business to geographical locations or markets different from its home country, and is a management strategy that has an important impact on securing a long-term competitive advantage for a company. International management researchers have explored the implications of international diversification on firm performance. Studies on the relationship between international diversification and corporate performance have been continuously conducted since 1990 (Grant, 1987; Geringer et al., 1989; Tallman and Li, 1996; Gomes and Ramaswamy, 1999). A company with a high degree of international diversification has advantages, such as economies of scale, experience effect, locational advantage, market size growth, and stable profit, but it has the disadvantage that the complexity and uncertainty of the company and the opportunistic behavior of managers could increase. The relationship between international diversification and corporate performance shows a positive or negative relationship, depending on the relative size of the advantages and disadvantages of international diversification, and is linear or non-linear, and the empirical results are mixed in the previous studies.

The determinants and effects of international diversification have been examined in detail. However, very little empirical work has been conducted from a tax perspective. Tax is considered as a major factor of international diversification, and recently much attention has been paid to the tax-related behavior of multinational corporations. Multinational corporations have more advantages in using income shift, transfer pricing, and tax havens through foreign subsidiaries, and have the ability to utilize such means.

Harris (1993) reported that the tax burden of US firms with subsidiaries in tax havens was significantly lower than that of similar US firms that did not from 1984 to 1988. This is the indirect evidence that US firms employ income shift using subsidiaries located in tax havens. Jacob (1996) presented whether a company's corporate income tax and regional net income were related to interregional transaction volume. If multinational corporations want to minimize global income by using transaction prices, the greater the transaction volume between internal companies and the greater the difference in regional corporate tax rates, the greater the incentive to manipulate transaction prices. It was found that income shifting to reduce taxes using transfer pricing occurred both before and after the 1986 tax reform, and the income shifting size was related to the difference in internal transaction volume and regional corporate tax rates.

Collins et al. (1998) examined whether U.S. multinational corporations carry out income shifting for the purpose of reducing corporate tax and whether investors properly evaluate income shifting using information on foreign income and foreign tax paid by multinational corporations. The empirical results show that income is transferred from high-tax countries to the United States, and investors recognize that it is the sum of domestic and foreign income when evaluating the domestic income of the income shifting company. Hines and Rice (1994) suggested that the higher the tax rate, the lower the level of reported income or production input. It was found that multinational corporations not only adjust their reported income according to the tax rate of each country, but also adjust their financial structure and input

level of production factors.

Only a handful of studies explored the relationship between international diversification and tax avoidance. First, there are studies that reported that international diversification and tax avoidance have a negative relation. It is interpreted that as the degree of international diversification increases, tax avoidance decreases. Chun (2013) reported a negative relationship by examining the relationship between international diversification and tax avoidance for Korean companies. It is difficult to optimize the tax burden in accordance with various laws and systems due to the increase in the number of countries entering foreign markets.

Kim (2018a) reported a positive relationship by examining the relationship between whether a Korean company has subsidiaries (foreign subsidiaries), the proportion of subsidiary (foreign subsidiaries) assets, and CASH ETR. It was interpreted that the tax burden increases as the possession of subsidiaries (foreign subsidiaries) and the proportion of subsidiary (foreign subsidiaries) assets increase. These results show no significant relationship with the tax rate and economic growth rate of the country where the foreign subsidiary is located, and are assumed to be caused by the effect of the taxation system on foreign source income. Zheng (2017) investigated the tax avoidance difference between stand-alone firms and business diversified firms in the US. This paper shows that diversified firms engage in fewer tax avoidance practices than stand-alone firms, and it is interpreted that the low level of tax avoidance of diversified firms is because the tax effects are not a priority in corporate diversification.

Second, there are papers that reported that international diversification is positively related to corporate tax avoidance. It means that as the level of international diversification increases, tax avoidance is likely to increase. Vahdani et al. (2019) investigated the impact of diversification on tax avoidance in companies listed on the Tehran Stock Exchange. They presented that the level of tax avoidance increases as diversification increases. Park et al. (2016) reported that there is a positive relationship between whether a multinational corporation has foreign subsidiaries and tax avoidance. It was found that companies with foreign subsidiaries conduct tax avoidance by using transactions to the related party. In summary, the empirical results are mixed according to country, sample period, and proxies of international diversification and tax avoidance. Therefore, additional study on the relationship between international diversification and tax avoidance are needed continuously.

There is a form of large business group in Korea, known as chaebol, similar to the Japanese keiretsu. Korean chaebols have contributed to the growth and development of the national economy since the 1970s (Campbell and Keys, 2002). However, the corporate governance in Korea being controlled by chaebols caused the financial crisis of 1997. The Korean government has taken actions consistently against the chaebol groups through laws and regulations.

In terms of international diversification, firms affiliated with chaebols have a number of advantages over firms unaffiliated with chaebols. First of all, it is possible to share the resources, experience and technology shared at the group level, so the burden of foreign costs is less than that of individual companies (Khanna and Rivkin, 2001). Economies of scale can be realized because they can take charge of tasks such as export management on behalf of other affiliated companies (Gaur et al., 2014). It also has the advantage of relatively easy access to internal or foreign capital or human resources that can be accessed within the business group.

Controlling shareholders of chaebol companies have a high incentive to select high-risk investment options at the cost of minority shareholders or to pursue excessive international diversification. A controlling shareholder may pursue international diversification for the purpose of expanding the scope of control through empire building rather than maximization of corporate value. Jang (2002) suggested that the agency problem between controlling

shareholders and minority shareholders is the cause of excessive international diversification. Also, Bebchuk et al. (1999) observed that excessive diversification occurs when controlling shareholders can have private benefits through international diversification.

2.2. Hypothesis Development

Early studies involving tax havens and foreign subsidiaries, Harris (1993), Hines and Rice (1994), Jacob (1996), and Collins et al. (1998) mainly examined the motives of multinational companies to transfer income and reduce tax burdens by using tax rate differences or tax havens. Empirical research on income shifting to low-tax countries have had mixed results in the United States. Collins et al. (1998) suggest that multinational corporations in the United States do not transfer income to low-tax countries. On the other hand, Klassen and Laplante (2012) suggest that multinational corporations in the United States do transfer their income to low-tax countries.

Desai et al. (2006) examined the characteristics of tax haven firms and found that large firms with large international business and firms with large internal transactions and high R&D concentrations are more likely to use tax havens. And it was found that foreign subsidiaries of large tax havens are mainly used for the transfer of taxable income, whereas foreign subsidiaries of small tax havens are used to defer taxation of foreign income in the country of residence. Dyreng and Lindsey (2009) investigated the tax burden depending on whether a tax haven was used from 1995 to 2007, using data on multinational corporations in the United States. This study shows that the tax burden of U.S. companies operating in tax havens is 1.5% lower than those of U.S. companies that do not operate in tax havens at all. On the other hand, it was found that the corporate tax rate on foreign income of US companies operating in some tax haven countries is higher than that of other companies. An increase in international diversification is likely to increase the level of corporate tax avoidance.

Chun (2013) suggested that managers hardly employ specific tax avoidance because international tax law is complex. However, companies with many foreign subsidiaries can reduce their tax burden by shifting income to foreign subsidiaries in low-tax countries, establishing foreign subsidiaries in tax havens, using transfer pricing through transactions to the related party. Taxation can be deferred by withholding dividends from foreign subsidiaries, and it is difficult to monitor management's pursuit of private interests through tax avoidance due to a lack of disclosure on overseas business. Through international diversification, the opportunistic behavior of managers and the pursuit of private interests could increase, which can negatively affect the corporate performance. When the monitoring function of corporate governance does not work, managers can pursue private interests through tax avoidance (Desai and Dharmapala, 2006). Management can use international diversification and tax avoidance as a means of pursuing private interests. Therefore, it is expected that corporate tax avoidance will increase with the increase of international diversification. To test this, Hypothesis 1 was established as follows.

H1: International diversification is positively associated with tax avoidance, ceteris paribus.

Chaebols exist as corporate governance structures in Korea. Ownership and management are not completely separated, such as US companies are in Korea. They are often under the control of the controlling shareholder and related parties of chaebols. The average equity ratio of the controlling shareholders of listed companies in Korea exceeds about 40%. Therefore, it is different from diversification of US companies, so it is necessary to be careful in interpreting the results of studies that were conducted on US companies. International diversification of Korean companies seems to be mainly made from the perspective of market

expansion, market share growth, and profit maximization, rather than being determined by the manager's incentives.

Chaebols have contributed to the growth and development of the national economy through capital accumulation and technology development by actively participating in the government's economic development policy. They have increased dependence on imports due to globalization, improved labor productivity, and transformed the export industry structure into capital and technology-intensive industries (Kim, 2012). In this process, companies such as Samsung Electronics, Hyundai Motor Group, and LG Chem have achieved great success in the global market. Firms affiliated with chaebols have several advantages over other firms in terms of international diversification. It is possible for them to share resources, experience, and technologies shared within the business group (Khanna and Rivkin, 2001). They can realize economies of scale (Gaur et al., 2014). They also have the advantage of having relatively easy access to capital finance at the group level. Chaebol companies will have relatively little risk of entering overseas markets because they have accumulated more experience in overseas expansion. The increase in international diversification should significantly reduce earnings volatility, reduce earnings management, and hedge against the risk of earnings fluctuations.

It is easy for firms affiliated with chaebols to transfer income through internal transactions to the related party in order to lower their tax burden. Chaebols have many affiliated firms operating in various industries at home and abroad. They can adjust the level of tax payment from the perspective of the business group as a whole rather than individual companies. To examine the relationship between international diversification and tax avoidance of firms with affiliated chaebols, Hypothesis 2 was established as follows.

H2: Firms affiliated with chaebols strengthen the positive effect of international diversification on tax avoidance.

3. Research Design

3.1. Variable Measurement

International diversification is usually measured by foreign sales, foreign assets, number of foreign subsidiaries, and number of countries where foreign subsidiaries are located, but due to the limitation of data access, foreign sales and foreign assets were mainly used in the previous studies. International diversification can be determined through sophisticated measuring based on information on foreign subsidiaries. Grant (1987) measured the ratio of sales of foreign subsidiaries divided by total sales as international diversification, and Geringer et al. (1989) also used sales of foreign subsidiaries. However, the sales of foreign subsidiaries may have measurement errors including the export amount of the parent company. Duru and Reeb (2002) pointed out that foreign sales are a mixture of sales of foreign subsidiaries and exports of domestic companies, and do not reflect structural differences between international regions. In addition, there is a limitation in that it is difficult to measure the extent to which overseas business activities are spread to various countries around the world (Vachani, 1991).

Gomes and Ramaswamy (1999) found that the number of countries with foreign subsidiaries could indicate the extent to which multinational corporations are widely distributed overseas. Tallman and Li (1996) showed that the number of countries in which foreign subsidiaries are located rather than simply the number of foreign subsidiaries is an objective measure that captures issues related to international diversification more effectively. There is

a limit in that the number of countries where foreign subsidiaries are located does not reflect the scale of business activities in each foreign country.

Entropy is used to measure international diversification by reflecting the scale of business activities in each foreign country. The entropy index is continuously used in international diversification studies (Errunza and Senbet, 1984; Miller and Pras, 1980; Hitt et al., 1997; Wiersema and Bowen, 2011). In order to measure the entropy index, it is necessary to have detailed information about foreign subsidiaries. As detailed information on foreign subsidiaries was not disclosed before 2010 in Korea, there was a limit to effectively measuring international diversification. Since 2011, detailed information on foreign subsidiaries has been disclosed in the footnotes of the consolidated financial statements, so that the international management strategies of multinational corporations can be accurately captured.

We employed two variables using information on foreign subsidiaries to measure international diversification. First, we used the entropy index, which reflects the size of foreign subsidiaries by country (Miller and Pras, 1980; Wiersema and Bowen, 2011; Wu et al., 2016; Kim, 2018b). We estimate the entropy index, as follows:

$$ID_Ent_t = \sum RA_{Country_i} \times \ln \left(\frac{1}{RA_{Country_i}} \right) \quad (1)$$

Where $RA_Country$ is the proportion of the assets of companies belonging to a specific country among the global business entities to the total global assets of that company. Even if the total amount of foreign assets is the same, ID_Ent has a larger value for a company with foreign assets dispersed in various countries than for a company with foreign assets concentrated in a specific country.

Second, we used the number of countries (ID_Num) in which foreign subsidiaries are located (Gomes and Ramaswamy 1999; Tallman and Li 1996). Although international diversification can be intuitively understood and measured, it does not reflect the size of overseas subsidiaries. Kim (2018b) showed that the entropy index and the number of countries with foreign subsidiaries are superior to the ratio of foreign sales and foreign assets used in previous studies as a measure of international diversification in Korea.

We used CASH ETR and GAAP ETR to measure tax avoidance.⁴ According to Hanlon and Heitzman (2010), it is very important to select a tax avoidance measure relevant to the research question. The first proxy of tax avoidance, CASH ETR is measured as the ratio of cash taxes paid to pretax income. A firm's CASH ETR is a direct measure of a firm's cash tax burden, tax avoidance that decreases cash tax burden will directly relate to a firm's CASH ETR. The second proxy, GAAP ETR is measured as the ratio of tax expense to pretax income adjusted for special items. GAAP ETR utilizes accounting income instead of cash tax paid. The higher tax avoidance, the smaller GAAP ETR and CASH ETR.

3.2. Research Model

To test our hypothesis, we estimated the following regression:

$$\begin{aligned} TaxAvoid_{i,t} = & \beta_0 + \beta_1 INTDIV_{i,t} + \beta_2 BG_{i,t} + \beta_3 INTDIV_{i,t} \times BG_{i,t} + \beta_4 SIZE_{i,t} \\ & + \beta_5 LEV_{i,t} + \beta_6 PTROA_{i,t} + \beta_7 PPE_{i,t} + \beta_8 R\&D_{i,t} + \beta_9 CFO_{i,t} \\ & + \beta_{10} REL_{i,t} + \beta_{11} CS_{i,t} + \beta_{12} FOR_{i,t} + \beta_{13} MTB_{i,t} + \beta_{14} DA_{i,t} \\ & + \beta_{15} NOL_{i,t} + \sum IND + \sum YEAR + \varepsilon_{i,t} \end{aligned} \quad (2)$$

⁴ CASH ETR and GAAP ETR above 1 (below -1) are reset to 1 (-1) following prior literature.

TaxAvoid1 = GAAP ETR (tax expense divided by pre-tax income) * (-1)
 TaxAvoid2 = CASH ETR (cash taxes paid divided by pre-tax income) * (-1)
 ID_Ent = entropy index, which represents the degree of diversification of the firm's business presences all over the world, based on the equation (1)
 ID_Num = number of countries where a sample firm's foreign subsidiary resides
 BG = 1 if it is a corporation belonging to a large corporate group, and 0 otherwise.
 SIZE = log of total assets
 LEV = ratio of total liability to total assets
 PTROA = ratio of pretax income to total assets
 PPE = property, plant and equipment excluding land divided by total assets
 R&D = research and development expenditure divided by total revenues
 CFO = operating cash flow divided by total assets
 REL = total transactions to the related-party sales divided by total revenues
 CS = ratio of major shareholders including the largest shareholder and its related parties
 FOR = ratio of foreign shareholders
 MTB = market to book ratio
 DA = discretionary accruals by modified Jones model
 NOL = indicator variable equal to 1 if net operating loss carryforwards is positive; 0 otherwise
 YEAR = year dummy
 IND = industry dummy

Our dependent variable, Tax Avoid, is measured by CASH ETR and GAAP ETR. We multiplied GAAP ETR and CASH ETR by (-1) to adjust the direction of tax avoidance proxy to be higher as GAAP ETR and CASH ETR increases in the regression analysis. This adjustment can make for easy interpretation of test results. The variable of interest in Equation (2), the entropy index (ID_Ent) and the number of countries where foreign subsidiaries are located (ID_Num) as proxies of international diversification are utilized. Detailed international diversification and tax avoidance variable are presented in the previous section, 3.1. BG is whether they belong to a large corporate group announced annually by the Korea Fair Trade Commission (KFTC). BG is a dummy variable, with 1 if it is a corporation belonging to a large corporate group, and 0 otherwise.

To test H1, the coefficient of interest is β_1 , which captures the incremental effect of international diversification on tax avoidance. We predicted $\beta_1 > 0$ (i.e., the more international diversification the firm has, the greater the tax avoidance). The coefficient to test H2 is β_3 , which captures the incremental effect of a company in large business groups on the relationship between international diversification and tax avoidance. We predict $\beta_3 > 0$. The business group affiliated firms strengthen the positive effect of international diversification on tax avoidance.

We included a battery of control variables by the prior literature in our regression model. We controlled firm size (SIZE), leverage ratio (LEV), operating cash flow (CFO), pretax return on assets (PTROA) as variables related to firm characteristics. Firm size (SIZE) can have two effects on tax avoidance. Large firms are more sophisticated and use more complex transactions for tax reduction, so they could have a positive relation between firm size and tax avoidance. On the other hand, large firms have fewer implements as investment slows down, so the negative relation between firm size and tax avoidance can be presented. Debt provides an important tax shield through interest expense deduction (Graham 1996), so the leverage ratio (LEV) is negatively associated with tax avoidance. Pretax return on assets (PTROA) controls for the effect of firm profitability and has a positive relation between tax avoidance. Also, operating cash flow (CFO) controls for the effect of economic activity.

We included the ratio of property, plant, and equipment to total assets (PPE) to control tax

avoidance opportunities that arise from capital investment and the ratio of research and development (R&D) to control R&D tax credit. We expected a positive association between PPE (R&D) and tax avoidance. We included transactions in related-party sales (REL) to control whether internal transactions with a related-party can employ tax avoidance (Dyreg and Lindsey 2009). We included the controlling shareholder's ratio (CS) and the foreign shareholder's ratio (FOR) to control the firm's ownership structure. We also included market to book (MTB) to capture a firm's expected economic growth. We included discretionary accruals (DA) to control financial reporting practices. Frank, Lynch, and Rego (2009) found that firms exhibit more aggressive financial reporting practice as they are more tax aggressive. We included net operating loss carry-forwards (NOL) control for utilization of the loss carry-forwards. We included industry dummy and year dummy to control fixed effects to vary across industries and year.

3.3. Sample Selection

This study examines for KOSPI and KOSDAQ listed companies in Korea from 2011 to 2016. Sample are restricted to firms that make settlements in December, excluding the finance-related companies, because these firms have different tax avoidance incentives. The reason to begin in 2011 is that the status of subsidiaries is disclosed in the notes to the consolidated financial statements after the introduction of IFRS in Korea.

We used TS2000 of Korea Listed Companies Association for corporate financial data and adjusted the data of subsidiaries subject to consolidation from TS2000. Data on firms with affiliated large business groups were obtained from the Korea Fair Trade Commission (<https://www.egroup.go.kr>). Companies with insufficient financial data, capital erosion and deficit companies were excluded because there may be different incentives for tax avoidance. In order to minimize the influence of extreme values of variables, continuous variables were winsorized at the upper and lower 1%. The final sample is 5,810 firm-year observations.

4. Results

4.1. Descriptive statistics

Table 1 presents descriptive statistics for the variables in our sample. The mean (median) values of CASH ETR and GAAP ETR were 0.226 (0.201) and 0.203 (0.203), respectively. It shows that the ratio of CASH ETR is higher than GAAP ETR and CASH ETR is more volatile than GAAP ETR. The mean (median) value of ID_Ent is 0.235 (0.046), and ID_Num is 1.982 (1.000). The mean (median) of BG is 0.149 (0), and the proportion of corporations in chaebol groups is about 15%. The mean (median) of the foreign ownership ratio is 0.075 (0.025), and the mean (median) of the controlling shareholder equity ratio is 0.423 (0.421).

Table 1. Descriptive statistics

Variables	N	Mean	Std. Dev.	25th	Median	75th
<i>CASH ETR</i>	5,810	0.226	0.213	0.080	0.201	0.282
<i>GAAP ETR</i>	5,810	0.203	0.166	0.106	0.203	0.248
<i>ID_Ent</i>	5,810	0.235	0.331	0	0.046	0.392
<i>ID_Num</i>	5,810	1.982	3.317	0	1	2
<i>BG</i>	5,810	0.149	0.356	0	0	0

Table 1. (Continued)

Variables	N	Mean	Std. Dev.	25th	Median	75th
SIZE	5,810	19.184	1.364	18.251	18.913	19.835
LEV	5,810	0.363	0.187	0.21	0.357	0.506
PTROA	5,810	0.069	0.062	0.025	0.052	0.095
PPE	5,810	0.181	0.148	0.066	0.149	0.263
R&D	5,810	0.027	0.044	0	0.009	0.034
CFO	5,810	0.013	0.021	0	0	0.019
REL	5,810	0.237	0.341	0.003	0.089	0.337
CS	5,810	0.423	0.158	0.304	0.421	0.532
FOR	5,810	0.075	0.114	0.006	0.025	0.094
MTB	5,810	1.467	1.283	0.69	1.071	1.741
DA	5,810	0.031	0.065	-0.007	0.024	0.062
NOL	5,810	0.105	0.307	0	0	0

Notes: Refer to Eq (2) for variable definitions.

4.2. Correlation

Table 2 presents the correlation among the variables in the sample. The table shows that GAAP ETR, CASH ETR, and international diversification (ID_Ent, ID_Num) appear as positive relationships. Inconsistent with H1, as the firm's international diversification increases, corporate tax avoidance decreases. Chaebol firms (BG) are positively related with CASH (GAAP) ETR and international diversification. It shows that firms with affiliated chaebols might be less tax aggressive and more internationally diversified. We examined the hypothesis through regression analysis in the following section. GAAP ETR and CASH ETR have a positive relationship with SIZE, LEV, CFO, CS, FOR except related party transaction ratio (REL). GAAP ETR, CASH ETR are negatively related to PTROA, PPE, R&D, MTB, DA, and NOL.

Table 2. Pearson Correlation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
CASH ETR																
GAAP ETR	0.55															
ID_Ent	0.03	0.03														
ID_Num	0.05	0.04	0.67													
BG	0.06	0.07	0.14	0.41												
SIZE	0.15	0.17	0.29	0.59	0.61											
LEV	0.06	0.10	0.10	0.07	0.13	0.22										
PTROA	-0.13	-0.05	-0.01	-0.01	-0.05	-0.03	-0.24									
PPE	-0.05	-0.05	-0.04	-0.06	0.06	0.15	0.28	0.02								
R&D	-0.11	-0.15	-0.03	-0.03	-0.13	-0.19	-0.19	0.08	-0.04							
CFO	0.04	0.08	-0.02	0.03	0.06	0.18	0.02	-0.12	0.01	-0.20						
REL	-0.01	0.00	0.32	0.27	0.15	0.19	-0.09	-0.04	-0.12	-0.04	0.00					
CS	0.06	0.06	-0.07	-0.08	0.05	0.06	-0.07	-0.05	0.01	-0.23	0.23	0.10				
FOR	0.05	0.06	0.21	0.39	0.29	0.50	-0.09	0.20	0.05	-0.03	-0.02	0.10	-0.10			
MTB	-0.06	-0.04	0.01	0.08	0.01	-0.07	0.01	0.31	0.00	0.24	-0.21	0.02	-0.18	0.15		
DA	-0.16	-0.14	-0.01	-0.03	-0.09	-0.12	-0.27	0.70	-0.10	0.14	-0.42	0.04	-0.10	0.13	0.24	
NOL	-0.15	-0.10	-0.06	-0.07	-0.03	-0.15	0.15	-0.09	-0.07	0.04	-0.09	0.03	-0.16	-0.12	0.15	0.01

Notes: 1. Coefficients shown in bold are significant at $p < 0.05$ (two-tailed test).

2. For the variable definitions, refer to Eq (2).

4.3. Multivariate Analysis

Table 3 shows regression results for the effect of international diversification on tax avoidance in relation to Hypothesis 1. Column (1) and Column (2) present results separately for the entropy index (*ID_Ent*) and the number of countries where foreign subsidiaries are located were used (*ID_Num*) on CASH ETR respectively. In Model 1, the coefficient on

Table 3. The effect of international diversification on tax avoidance

Dep. Variable	<i>CASH ETR</i>		<i>GAAP ETR</i>	
	(1)	(2)	(3)	(4)
<i>Intercept</i>	0.187 *** (3.18)	0.26 *** (4.16)	0.115 *** (2.5)	0.188 *** (3.82)
<i>ID_Ent</i>	0.004 (0.39)		0.005 (0.70)	
<i>ID_Num</i>		0.004 *** (3.31)		0.004 *** (4.23)
<i>BG</i>	0.033 *** (3.35)	0.03 *** (3.07)	0.024 *** (3.08)	0.021 *** (2.73)
<i>SIZE</i>	-0.025 *** (-8.10)	-0.029 *** (-8.80)	-0.018 *** (-7.54)	-0.023 *** (-8.61)
<i>LEV</i>	-0.026 (-1.48)	-0.025 (-1.45)	-0.069 *** (-4.99)	-0.068 *** (-4.95)
<i>PTROA</i>	0.171 ** (2.48)	0.18 *** (2.61)	-0.273 *** (-5.06)	-0.265 *** (-4.91)
<i>PPE</i>	0.167 *** (7.89)	0.177 *** (8.36)	0.135 *** (8.13)	0.145 *** (8.72)
<i>R&D</i>	0.363 *** (5.33)	0.355 *** (5.22)	0.354 *** (6.63)	0.346 *** (6.49)
<i>CFO</i>	0.794 *** (4.98)	0.811 *** (5.10)	0.371 *** (2.97)	0.388 *** (3.10)
<i>REL</i>	0.032 *** (3.51)	0.029 *** (3.21)	0.011 (1.57)	0.008 (1.16)
<i>CS</i>	-0.031 * (-1.65)	-0.025 (-1.33)	-0.011 (-0.74)	-0.005 (-0.34)
<i>FOR</i>	0.005 (0.18)	-0.003 (-0.10)	-0.011 (-0.49)	-0.019 (-0.84)
<i>MTB</i>	-0.004 (-1.62)	-0.005 ** (-1.96)	0.000 (0.16)	-0.001 (-0.28)
<i>DA</i>	0.459 *** (6.68)	0.458 *** (6.68)	0.509 *** (9.45)	0.508 *** (9.45)
<i>NOL</i>	0.105 ** (11.23)	0.105 *** (11.30)	0.05 *** (6.82)	0.05 *** (6.88)
Σ YEAR	Yes	Yes	Yes	Yes
Σ IND	Yes	Yes	Yes	Yes
Adj R ²	0.089	0.091	0.085	0.088
N	5,810	5,810	5,810	5,810

Notes: 1. Refer to Eq (2) for variable definitions.

2. The t value in brackets, ***, ** and * refer to significance at 1%, 5% and 10% levels or better, respectively.

ID_Ent is in the hypothesized direction, but not significant. The coefficient of ID_Num of Model2 is positive and significant at the 1% level. Column (3) and Column (4) present results separately for ID_Ent and ID_Num on GAAP ETR respectively. In Model 3, the coefficient on ID_Ent is in the hypothesized direction, but not significant. The coefficient of ID_Num of Model 4 is positive and significant at the 1% level. These results support that higher international diversification is significantly associated with higher tax avoidance, consistent with our Hypothesis 1. In terms of control variables, BG, PTROA, PPE, R&D, CFO, REL, DA, and NOL showed a significant positive coefficient to tax avoidance proxies. Chaebol firms, profitability, investment, and transactions with related-parties are positively related to tax avoidance. On the other hand, SIZE indicates significant negative coefficients.

The regression results show that as international diversification increases, tax avoidance increases. As the number of foreign subsidiaries and entry countries increases, internationally diversified firms have more opportunities to transfer prices across different regions, and engage in more tax avoidance practices. Firms with many diversified foreign subsidiaries may reduce their tax burden by shifting income to some foreign subsidiaries in tax havens, and foreign income taxation can be deferred by withholding dividends from foreign subsidiaries. On the contrary to our results, Chun (2013) reported that international diversification is negatively related to tax avoidance. The difference in these results could appear due to the proxies of tax avoidance and international diversification.

Table 4 provides the results from regression for the effect of international diversification on tax avoidance depending on whether the firm is affiliated with chaebols. The purpose of this set of models is to test for differences in the relation between international diversification and tax avoidance depending on chaebol affiliation.

In Table 4, the coefficients of international diversification are insignificant for all tax avoidance measuring. Chaebol firm's (BG) coefficients are marginally significant for CASH ETR and marginally insignificant for GAAP ETR. Column (1) and Column (2) present results separately for ID_Ent and ID_Num on CASH ETR respectively. In Model 1, the coefficient on interaction between ID_Ent and BG is positive and significant at the 5% level. The coefficient of interaction between ID_Num and BG of Model2 is also positive and significant at the 10% level. Column (3) and Column (4) present results separately for ID_Ent and ID_Num on GAAP ETR respectively. In Model 3, the coefficient on interaction between ID_Ent and BG is in the hypothesized direction and is significant at the 5% level. The coefficient of interaction ID_Num and BG of Model 4 is in the hypothesized direction and is significant at the 5% level. In testing of H2, the business group companies strengthened the positive effect of international diversification on tax avoidance consistent with our Hypothesis 2.

These results suggest that firms in chaebol groups have more advantages to extend business abroad than firms unaffiliated with the chaebols because they can share experience and resources within the group when entering overseas markets. Chaebol firms might be easy to transfer foreign income through internal transactions to the related party.

4.4. Robustness check

In previous studies, the proxies of international diversification have been used for several different measures. In order to reduce concerns that they are driven by the choice of international diversification proxies and to test the robustness of the results, we conducted additional tests with different measures of international diversification. In particular, we estimated Equation (2) using foreign sales and foreign assets.

Table 4. The effect of chaebol affiliation on association between international diversification and tax avoidance

Dep. Variable	<i>CASHETR</i>		<i>GAAPETR</i>	
	(1)	(2)	(3)	(4)
<i>Intercept</i>	0.204 *** (3.44)	0.257 *** (4.11)	0.128 *** (2.76)	0.185 *** (3.77)
<i>ID_Ent</i>	-0.006 (-0.56)		-0.002 (-0.27)	
<i>ID_Num</i>		0.002 (0.97)		0.002 (1.33)
<i>BG</i>	0.021 † (1.85)	0.02 † (1.74)	0.014 (1.62)	0.011 (1.26)
<i>ID×BG</i>	0.044 ** (2.21)	0.003 † (1.82)	0.034 ** (2.20)	0.003 ** (2.20)
<i>SIZE</i>	-0.026 *** (-8.32)	-0.029 *** (-8.75)	-0.019 *** (-7.77)	-0.022 *** (-8.55)
<i>LEV</i>	-0.024 (-1.35)	-0.023 (-1.32)	-0.068 *** (-4.86)	-0.066 *** (-4.79)
<i>PTROA</i>	0.173 *** (2.51)	0.181 *** (2.63)	-0.272 *** (-5.04)	-0.263 *** (-4.87)
<i>PPE</i>	0.167 *** (7.89)	0.176 *** (8.28)	0.135 *** (8.13)	0.144 *** (8.63)
<i>R&D</i>	0.36 *** (5.29)	0.356 *** (5.24)	0.352 *** (6.60)	0.348 *** (6.52)
<i>CFO</i>	0.80 *** (5.02)	0.807 *** (5.07)	0.376 *** (3.01)	0.383 *** (3.07)
<i>REL</i>	0.033 *** (3.60)	0.03 *** (3.39)	0.012 † (1.65)	0.01 (1.39)
<i>CS</i>	-0.027 (-1.47)	-0.022 (-1.18)	-0.008 (-0.55)	-0.002 (-0.16)
<i>FOR</i>	0.004 (0.15)	-0.005 (-0.16)	-0.012 (-0.53)	-0.021 (-0.90)
<i>MTB</i>	-0.004 (-1.61)	-0.005 † (-1.82)	0.000 (0.17)	0.000 (-0.11)
<i>DA</i>	0.459 *** (6.68)	0.457 *** (6.66)	0.509 *** (9.45)	0.507 *** (9.42)
<i>NOL</i>	0.104 *** (11.2)	0.105 *** (11.23)	0.05 *** (6.77)	0.05 *** (6.81)
<i>ΣYEAR</i>	Yes	Yes	Yes	Yes
<i>ΣIND</i>	Yes	Yes	Yes	Yes
Adj R ²	0.089	0.091	0.085	0.088
N	5,810	5,810	5,810	5,810

Notes: 1. Refer to Eq (2) for variable definitions.

2. The t value in brackets, ***, ** and * refer to significance at 1%, 5% and 10% levels or better, respectively.

Table 5 presents the results of estimating equation (2) using alternative measures of international diversification. The regression includes the same control variables as in Table 4, but for parsimony, we present only the coefficients and t-statistics for the interest variables, export sales (EXP), foreign assets (FA), and interaction between international diversification and chaebol affiliation. Similar to Table 4 and Table 5, the export sales ratio is positively and significantly related to tax avoidance. The coefficient of foreign assets is in the hypothesized direction, but is not significant. We continued to find that internationally diversified firms are higher in tax avoidance than other firms. However, the effect of chaebol affiliation on association between international diversification and tax avoidance is in the hypothesized direction, but is not significant.

Table 5. Alternative measures of international diversification

Dep. Variable	<i>CASH ETR</i>				<i>GAAP ETR</i>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Intercept</i>	0.19*** (3.18)	0.18*** (3.14)	0.19*** (3.2)	0.19*** (3.19)	0.11** (2.45)	0.11** (2.42)	0.12*** (2.60)	0.11** (2.48)
<i>EXP</i>	0.02* (1.87)		0.02 (1.59)		0.01* (1.82)		0.01 (1.11)	
<i>FA</i>		0.03 (1.01)		0.02 (0.63)		0.01 (0.28)		0.00 (0.12)
<i>BG</i>			0.03*** (2.77)	0.03*** (2.85)			0.02* (1.96)	0.02** (2.50)
<i>ID×BG</i>			0.01 (0.41)	0.08 (0.97)			0.03 (1.63)	0.08 (1.20)
<i>Other Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year and Ind Effects</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R ²	0.089	0.089	0.089	0.089	0.085	0.085	0.086	0.085
N	5,810	5,810	5,810	5,810	5,810	5,810	5,810	5,810

Notes: 1. Refer to Eq (2) for variable definitions. EXP = ratio of export to domestic sales, FA = ratio of foreign assets to total assets.

2. The t value in brackets, ***, ** and * refer to significance at 1%, 5% and 10% levels or better, respectively.

Table 6 shows the results using future tax avoidance as a dependent variable. International diversification is likely to be an endogenous variable. Companies with a high level of tax avoidance may utilize more internationally diversified methods. To reduce this concern, we test with the dependent variable in the future.

Similar to Table 3, most of the international diversification measures show positive and significant coefficients. It is unlikely that the results for Hypothesis 1 are driven by the effect of endogeneity. The interaction between international diversification and chaebol affiliation (ID×BG) shows a significant positive coefficient overall, so the results for Hypothesis 2 do not seem to have a significant effect on endogeneity.

Table 6. International diversification and future tax avoidance

Panel A. CASH ETR								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Intercept</i>	0.23*** (3.71)	0.29*** (4.48)	0.23*** (3.7)	0.22*** (3.66)	0.25*** (3.96)	0.29*** (4.44)	0.22*** (3.63)	0.23*** (3.7)
<i>ID_Ent</i>	0.01 (0.64)				0.00 (0.29)			
<i>ID_Num</i>		0.00*** (2.93)				0.00 (1.1)		
<i>EXP</i>			0.02** (2.18)				0.03** (2.19)	
<i>FA</i>				0.00 (0.13)				-0.01 (-0.18)
<i>BG</i>					0.02* (1.85)	0.02** (1.98)	0.04*** (3.08)	0.03*** (2.75)
<i>ID×BG</i>					0.04** (2.1)	0.00 (1.27)	-0.01 (-0.44)	0.08 (0.92)
<i>Other Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year and Ind Effects</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R ²	0.071	0.073	0.072	0.071	0.072	0.073	0.072	0.071
N	4,868	4,868	4,868	4,868	4,868	4,868	4,868	4,868
Panel B. GAAP ETR								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Intercept</i>	0.14*** (3.03)	0.21*** (4.12)	0.13*** (2.83)	0.13*** (2.78)	0.16*** (3.35)	0.20*** (4.03)	0.14*** (2.92)	0.13*** (2.85)
<i>ID_Ent</i>	0.01* (1.71)				0.00 (0.46)			
<i>ID_Num</i>		0.00*** (4.14)				0.00 (0.56)		
<i>EXP</i>			0.02** (2.02)				0.01 (1.56)	
<i>FA</i>				0.02 (0.71)				0.01 (0.24)
<i>BG</i>					0.01 (1.32)	0.01 (0.63)	0.02** (2.14)	0.02** (2.28)
<i>ID×BG</i>					0.04*** (2.61)	0.00*** (3.17)	0.02 (0.88)	0.09 (1.32)
<i>Other Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year and Ind Effects</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R ²	0.077	0.080	0.077	0.077	0.078	0.082	0.077	0.077
N	4,868	4,868	4,868	4,868	4,868	4,868	4,868	4,868

Notes: 1. Refer to Eq (2) for variable definitions. EXP = ratio of export sales to domestic sales, FA = ratio of foreign assets to total assets.

2. The t value in brackets, ***, ** and * refer to significance at 1%, 5% and 10% levels or better, respectively.

5. Conclusions

Korea has an export-oriented industrial structure, and most Korean companies have achieved continuous growth through international diversification. International diversification is widely used as a means to achieve corporate continuous growth, and tax is an important determinant of international diversification and is a significant result of that. Many companies extensively use various international transactions to decrease their tax burdens. It is difficult for tax authorities to investigate complex and skillful international transactions. Furthermore, most companies tend not to provide sufficient disclosure about foreign business dealings. In this sense, international diversification can provide a favorable environment for reducing corporate tax burdens.

We examined the effect international diversification has on tax avoidance of Korean companies. In addition, we provided evidence regarding the differential effects of chaebol affiliation on the relationship between international diversification and tax avoidance. Although prior studies on international diversification have been conducted, there are few studies on the tax effects of international diversification. As firms are internationally diversified, it is expected that tax avoidance will increase as it provides an environment in which it is easy to use international transactions. It is also expected that the impact of international diversification on tax evasion can be strengthened as chaebol companies can share the resources and experiences of business groups.

Unlike previous studies, we employed the footnote data of foreign subsidiaries, which began to be disclosed due to the International Financial Accounting Standards adoption, for a sophisticated measurement of international diversification. In our results, unlike in previous studies in Korea, as international diversification increases, the tax burden decreases. It was found that the tax burden of firms affiliated with chaebols are significantly reduced compared to that of other firms in the case of international diversification. In the robustness check, the proxies used in previous studies were utilized for tests, and the results were insensitive.

We provided empirical evidence regarding the effect of international diversification on tax avoidance. We can expand international diversification research in that there are few empirical studies examining international diversification from a tax perspective. It was interpreted that international diversification provides a favorable environment for tax avoidance in a situation where tax avoidance through international transactions is increasing, and companies are using it in various ways. Continuous research on international diversification and taxes is needed.

The chaebols, as corporate governance structures of Korea, have an important influence on the Korean economy and corporate management, and are pursuing growth through international diversification. It is difficult to find any reported results on the effect of international diversification of chaebol companies on tax avoidance. Evidence for the additional effect of international diversification of chaebol-affiliated companies is presented. Compared to other companies, chaebol companies have an advantage in tax reduction using international diversification and can reserve significant resources through tax reduction. The use of these reserved resources can have various effects on the corporate value, and additional research on this is expected to be interesting.

Unlike previous studies that measured international diversification by the proportion of foreign sales or foreign assets, this study uses the entropy index and the number of countries. The alternative international diversification measure is expected to be useful in various fields. However, in the case of international diversification and tax avoidance, it is necessary to pay attention to the interpretation of the results because measurement errors may affect the empirical results.

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