One More Thought On the Issue of Tax Compliance Cost Burden for Large Enterprises in New Zealand - Application of Rational Choice Theory to Tax Compliance Administration

Abstract

An important limitation of the previous literature on the tax compliance costs of large enterprises is the view that tax compliance costs are determined "exogenously" and, therefore, the magnitude of their burden is affected by the complexity of the tax code only. In fact, as the costs of tax compliance are simply one type of operating expense, it appears to be possible for a large enterprise to achieve a reduction in its tax compliance costs through a costs-efficient tax compliance administration. Hence, the ability of a large enterprise to control, at least at the micro level, the costs associated with its tax compliance activity make it more appropriate to view the costs of tax compliance as "endogenous".

This paper presents an analysis of cost-efficient tax compliance administration, employing an analytical model in the framework of Rational Choice Theory. The purpose of the model is to demonstrate what the optimal mix of resources, which a large enterprise uses to comply with tax obligations, should be, so that the burden from tax compliance costs is minimised. Although, his paper does not provide an empirical test of the model, it nonetheless offers some valuable insights into the costs-efficient tax compliance administration, which "rationally behaving" large enterprises are expected to adopt. Further, several critical comments concerning the limitations of the model's application are also provided.

Key words*: tax compliance costs, large enterprises, Rational Choice Theory, cost-efficient tax compliance administration*

1. Introduction

Tax compliance costs represent an additional burden that a business incurs in order to comply with various tasks and requirements imposed on it by the tax code. Empirical studies conducted in the past indicate that these tasks, also known as "tax compliance", come at a considerable cost for businesses and divert resources that could have been used more productively. From the economic perspective, these costs are no more than "dead weight losses", in other words, pure losses for the business and society, as they only increase the effective tax burden without

increasing tax revenue (Eichfelder and Vaillancourt, 2014). High costs of tax compliance could distort economic decision-making, thereby creating a disincentive to produce and invest. The consequences of high tax compliance costs are a diminished ability to compete in the global economy (Laffer, Winegraden and Childs, 2011) and a negative effect on the general investment climate.

Studies into the area of tax compliance costs have progressed significantly over the last 40 years since the seminal studies by Sandford in the UK (1973) and Slemrod in the US (1984). Despite the use of different research methodologies and data collection strategies, empirical studies have made a number of consistent and important findings (Tran-Nam, 2015 and Evans, 2007). These findings can be summarised as follows.

1) Tax compliance costs are large around the world whether in absolute monetary terms or in relation to collected tax revenue or GDP. According to Evans (2007), tax compliance costs range from 2% to 10% of collected tax revenue and up to 2.5% of GDP

2) Tax compliance costs are regressive, which means that as a business taxpayer's annual turnover becomes smaller, the burden of tax compliance costs increases. By contrast, although tax compliance costs tend to increase with an amount of business turnover, they do so less than proportionally due to the effect of the economies of scale

3) In-house labour costs dominate the composition of tax compliance costs. According to Tran-Nam (2015), the share of in-house labour costs constitutes about two-thirds of the total tax compliance costs

4) Tax compliance costs are not declining over time despite governments' efforts directed at tax simplification

Primarily due to the regressive nature of tax compliance costs and the significant role small and medium enterprises (SMEs) play in many national economies, SMEs have received far

more attention in the literature than the larger business. According to the working paper issued by the European Commission (2013) there have been 35 studies, which focus on SMEs, and only five studies looking at large enterprises (European Commission, 2013). Such a skewed interest from academic researchers toward SMEs has resulted in the tax compliance costs of large enterprises being a largely understudied area, which in turn creates a gap in the literature. Currently very little is known about the composition, size and drivers of tax compliance costs of large enterprises (Evans, 2014). This concerns, in particular, multinational firms and their tax arrangements, as the area of tax laws and regulations applying to them is very complex (Evans, 2014), and the costs of this complexity are yet to be analysed and measured. In the light of the existing gap in the literature, studies into the field of tax compliance costs of large enterprises can provide a useful analysis of the performance of tax compliance administration and help to elucidate main drivers behind the costs of tax compliance in large enterprises.

As has been mentioned earlier, few studies have focused on measurement of tax compliance costs in large enterprises. To the author's knowledge, studies on large enterprises include: Slemrod and Blumenthal (1996) for large US enterprises, Erard (1997) for the largest enterprises in Canada, Chan, Ariff and Loh (1997) with a focus on Hong-Kong public entities, Susila and Pope (2012), which considered large enterprises in Indonesia and Evans, Lignier and Tran-Nam (2016) with a focus on large enterprises in Australia.

Despite application of different data collection methods, the studies above have managed to produce consistent results, which are in line with the main empirical findings mentioned earlier. The costs of tax compliance in each of these studies were found to be relatively large, regressive and not reducing over time. As tax compliance costs are usually seen by economists as a "proxy" for measurements of complexity of a tax system (Eichfelder and Vaillancourt, 2014), most of the previous studies assume that large amounts of tax compliance costs incurred by large enterprises appear to be the result of the complex tax system and that further simplification is

merited on this ground. In this regard, it is possible to say that tax compliance costs are "implicitly" assumed in the previous studies to be of "exogenous" nature and that the magnitude of tax compliance costs depends on the complexity of tax system alone[1].

However, from the perspective of tax compliance administration implemented in large enterprises, tax compliance costs are simply one type of operating expense and thus their minimisation is essential for achieving the main goal of most large businesses – profit maximisation[2]. Therefore, if a large enterprise behaves as a "rational" economic agent and chooses the most cost efficient tax compliance strategy, the burden of tax compliance can be minimised at least at the micro level. Consequently, tax compliance burden of a large enterprise is not only influenced by the complexity of tax system, but also by the compliance strategy of that large enterprise (Eichfelder and Schorn, 2009). If the tax compliance administration of a large enterprise is not cost-efficient, then the complexity of tax system alone cannot be blamed for the relatively high level of tax compliance costs in large enterprises[3].

The choice of cost-efficient tax compliance administration should be especially relevant in the case of large enterprises, as they usually have sufficient resources for the implementation of various tax administration strategies and often engage in complex business transactions. For example, for complying with its tax obligations a large enterprise might employ in-house

[1] The implication of the exogeneity of tax compliance costs has, in fact, never been mentioned in any of the previous studies. This is entirely drawn upon the conclusion inferred by the author from the each of the studies discussed here.

2 While minimisation of tax compliance costs is one of the ways to maximise firm's profit, it should be noted that firm's profit could also be maximised through reduction of income taxes. This can be achieved by resorting to the tax-planning activity, which in turn leads to the increase in tax compliance costs. In the literature, for example Sandford et al. (1989) and Evans (2007), the costs associated with tax planning are considered "avoidable" costs of tax compliance, while costs related to obligatory tax compliance are deemed as "unavoidable" costs. Therefore, to be more precise, firm's profit maximisation can be achieved through minimisation of "unavoidable" costs of tax compliance and use of tax planning until the point, when the "avoidable costs" of tax compliance start to outweigh the advantageous effect from the income tax reduction. The mathematical model of the tax compliance costs minimisation describing these two approaches will be demonstrated in the Section 3.2 of this paper.

[3] A relatively high level of costs ensuing from tax compliance of large enterprises has been reported in previous studies. See, for example, Slemrod and Blumenthal (1996), Susila and Pope (2012) and Evans, Lignier and Tran-Nam (2016).

accountants or avail itself of an external practitioner's service. If a large enterprise is "rationally behaving" economic agent, its choice of the particular resource (whether in-house accountants or external practitioners) or combination of resources should be most cost efficient and thus minimise the costs of tax compliance.

To answer the question what the cost-efficient tax compliance administration should be in order to minimise tax compliance costs, simple mathematical model is proposed further in this paper. Based on the premise of Rational Choice Theory[4], this model describes the cost–efficient decision, which a rational business taxpayer (large enterprise in this case) makes in relation to the choice of resources, available for complying with tax obligation. To author's knowledge, application of the microeconomic theory for elucidating the factors behind tax compliance costs in large enterprises appears to be a relatively new approach in the literature.

This paper is organized as follows. First, the literature review introduces what has been done in the research on tax compliance costs of large enterprises. The literature section is followed by a succinct outline of the concept of the rational choice in the economic theory. Next, analytical model of the cost-efficient tax administration, based on the assumptions of Rational Choice Theory, is presented. A brief discussion of the limitations of the model and conclusion are given at the end of this paper.

2. Literature Review

Despite the existence of extensive literature on the measurement of tax compliance costs, there have been only few studies, which specifically focus on large enterprises. The majority of them have been undertaken in 1990's (Susila and Pope, 2014). Among the studies, conducted in

[4] Rational Choice Theory, despite the number of limitations, is considered by many economists as a convenient tool for modelling firm's behaviour.

1990's, the contributions by Slemrod and Blumenthal (1996) and Erard (1997) are two most recognizable studies in the literature on tax compliance costs in large enterprises. Both of these studies are concerned with the measurement of tax compliance costs of large enterprises in the North America, namely US (Slemrod and Blumenthal, 1996) and Canada (Erard, 1997). Other significant research dealing with tax compliance costs of large enterprises include Chan, Ariff and Loh (1997), which focuses on publicly listed companies in Hong-Kong.

To the author's knowledge, only two studies on the measurement of tax compliance costs of large enterprises have been undertaken recently. The first study was carried out by Susila and Pope (2012), where the object of study was focused on measurement of tax compliance costs in large enterprises in Indonesia. The second study, undertaken by Evans, Lignier and Tran-Nam (2016), examines tax compliance costs of Australian large enterprises. Each of these studies will be briefly discussed below.

2.1 Studies conducted in 1990's

2.1.1 Slemrod and Blumenthal (1996)

Slemrod and Blumenthal (1996) undertook a mail survey among 1 329 of the largest corporation in US with the response rate of 27.5% (equivalent to 365 completed surveys). The "smallest" large entity in the population of surveyed large corporations, assessed in terms of the number of employees and sales volume had 2 500 employees and USD 268 million (NZD 388 million) of annual sales volume. Further empirical estimation of the survey results revealed that large entities in the US spent on average USD 1.57 million[5] (NZD 2.26 million) per year to comply with the Federal and State corporate income taxes, which translated into USD 2.08

[5] USD 2.4 million (NZD 3.48 million) in 2017 after adjustment for inflation from 1996 to 2017

billion[6] (NZD 2.99 billion) of total tax compliance costs for the population of 1 329 largest US corporations. This amount of tax compliance costs for largest entities in the US constituted approximately 2.6% of the total tax revenue collected by the Internal Revenue Service (IRS) from these largest enterprises at that time.

In addition, the results showed that about 55% of costs related to in-house personnel, about 30% to non-personnel costs and 15% to outside advisers. Within the in-house personnel's share of tax compliance costs the tax department generated 70% of the costs, with the remainder coming from non-tax departments.

This study analysed further the effect on the magnitude of tax compliance costs of the factors such as large entity's size, sector(s) within which it operated and if it had multinational presence. It was established that the 10% increase in a firm's size (expressed either by the value of assets or sales) leads to the increase in the tax compliance costs between 4.1% and 6.1%. This again confirms the effect of economies of scale for large enterprises. The fact that tax compliance costs tend to increase with the firm's size, though less proportionally, is one of the main findings in this study.

The sector effect showed that depending on the type of the industry within which a large enterprise operates tax compliance costs can be higher or lower. For example, for enterprises operating in the mining or oil or gas sectors tax compliance costs were on average 71% higher compared to enterprises operating in other sectors. Similarly, enterprises in the wholesale or retail industries experience tax compliance costs, which were 61% lower relative to enterprises from other sectors[7].

[6] USD 3.19 billion (NZD 4.63 billion) in 2017 after adjustment for inflation from 1996 to 2017

[7] There was no specific explanation in the study as to why US large enterprises operating in the resource explorations sector were experiencing higher tax compliance costs as compared to enterprises in other sectors. This difference in the level of tax compliance costs burden among sectors of economy might be explained by the existence of stricter requirements for record keeping and more complex tax rules, which apply to operations in particular sector

A large enterprise's worldwide presence (measured by the percentage of worldwide employees, worldwide assets value or worldwide sales) also adds to an increase in tax compliance costs though less than proportionally.

2.1.2 Erard (1997)

Erard (1997) study focused on large enterprises in Canada and followed closely the study by Slemrod and Blumenthal (1996) in the research method employed. The survey was mailed to all 250 members of the Canadian Tax Executive Institute, most of whom ranked among the very largest corporation in Canada at that time. Fifty-nine responses were received, which was equivalent to 24% response rate. Fourteen large enterprises out of the 59 respondents were operating in financial sector. The average size of the large enterprises from both non-financial and financial sectors was measured in number of employees, gross receipts and total value of assets. Thus, on average, large enterprises from the non-financial sector had 8 568 employees, CAD 2. 88 billion[8] (NZD 2. 2 billion) of gross receipts and assets, which had a book value of CAD 3.45 billion [9](NZD 3.66 billion). The average number of employees for the large enterprises from the financial sector was 13 041, while the average gross receipts and average book value of assets were accordingly CAD 5.25[10] billion (NZD 5. 60 billion) and CAD 58.4 billion[11] (NZD 62.3 billion).

The estimation results for the largest Canadian enterprises revealed average costs of tax compliance incurred by the large enterprise in the non-financial sector was CAD 507 000[12] (NZD 540 000). This implies that an aggregate amount of tax compliance costs for the whole

[8] CAD 4.171 billion (NZD 4.58 billion) in 2017 after adjusting for inflation from 1996 to 2017
[9] CAD 4.99 billon (NZD 5.48 billion) in 2017 after adjusting for inflation from 1996 to 2017
[10] CAD 7.60 billion (NZD 8.35 billion) in 2017 after adjusting for inflation from 1996 to 2017
[11] CAD 84.58 billion (NZD 92.9 billion) in 2017 after adjusting for inflation from 1996 to 2017
[12] CAD 734 000 (NZD 806 000) in 2017 after adjusting for inflation from 1996 to 2017

group of non-financial large enterprises (the 500 top largest non-financial enterprises) was around CAD 250 million (NZD 266 million). The average tax compliance costs turned out to be even higher if large financial enterprises were included into the estimation. Thus, the average tax compliance costs were CAD 925 000[13] (NZD 986 000) after including large enterprises from the financial sector into the estimation. In relation to the total tax revenue collected from these top non-financial largest enterprises, it suggested a compliance burden of almost 5% of taxes paid. The ratio of tax compliance burden including financial firms to the amount of taxes paid was 2.7%.

The composition of tax compliance costs showed that in-house personnel accounted for 56.9% of the total costs and in-house non-personnel expenditures and assistance of external experts accounted for 20.6% and 22.5 % respectively. Further, the breakdown of in-house personnel costs by their activity function showed that about 46% was expended on record keeping and filing returns. Research and planning accounted for 29% of costs with audit appeals and litigation comprising the balance.

The effect of determinants of the tax compliance costs of the top largest Canadian enterprises was estimated through a regression of a set of variables such as a number of filed T10 tax forms (required for reporting on tax matters associated with overseas transactions), amount of gross receipts and sector dummy. Estimation results revealed that a 10% increase in the number of T10 forms (signifying a 10% increase in the volume of overseas transactions) would increase tax compliance costs by 2.6%, while a 10% increase in gross receipts would produce a 4.1% increase in the tax compliance costs. These results were compatible with Slemrod and Blumenthal (1996) showing that tax compliance costs tend to increase with the business size, however less proportionately.

[13] CAD 1.3 million (NZD 1.4 million) in 2017 after adjustment for inflation from 1996 to 2017

2.1.3 Chan, Ariff and Loh (1997)

Chan, Ariff and Loh (1997) investigated the situation with tax compliance costs in publicly listed companies in Hong-Kong, using data on tax compliance costs incurred by those listed companies during the 1995-1996 tax year. The survey was mailed out to 496 listed companies with 75 companies responding to it. The total response rate was 15.1%. To facilitate the analysis, the received responses were further categorised into three groups based on size. Group One contained listed enterprises with sales volume of less than HKD 100 million[14] (NZD 19 million), Group Two contained listed enterprises whose annual sales were between HKD 100 million and HKD 550 million[15] (NZD 103.4 million) and Group Three included the remaining listed enterprises with sales volumes above HKD 550 million.

The overall tax compliance costs for the listed Hong-Kong enterprises were estimated to be on average HKD 346 483 (NZD 65 000) per company. The average tax compliance costs, calculated separately for each group, were HKD 85 950[16] (NZD 16 000), HKD 272 410[17] (NZD 50 900) and HKD 465 339[18] (NZD 87 000) for enterprises in Group 1, 2 and 3 respectively. The obtained estimates of tax compliance costs for each group of enterprises show that tax compliance costs tend to increase in absolute value as the size of enterprise increases. However, further calculation of the magnitude of tax compliance costs per HKD 1 000 of sales revealed that tax compliance costs tend to fall, in terms of percentage of the sales volume, as sales grow. For example, tax compliance costs per HKD 1 000 of sales were HKD 5.41, HKD 1.17 and HKD 0.21 for enterprises in Group One, Two and Three respectively. This trend is the consequence of the economies of scale.

[14] HKD 125.3 million (NZD 23.4 million) in 2017 after adjustment for inflation from 1996 to 2017
[15] HKD 689 million (NZD 128.8 million) in 2017 after adjustment for inflation from 1996 to 2017
[16] HKD 107 729 (NZD 19 900) in 2017 after adjustment for inflation from 1996 to 2017
[17] HKD 341 000 (NZD 63 400) in 2017 after adjustment for inflation from 1996 to 2017
[18] HKD 583 000 (NZD 108 000) in 2017 after adjustment for inflation from 1996 to 2017

The composition of tax compliance costs revealed that the smaller listed enterprises (Group One) were using the assistance of external advisers more often compared to larger listed enterprises (Group Three).

Further, simple regression analysis was employed in the study in order to ascertain the effect of sales volume on the costs of tax compliance activities. The regression results showed that on average a 10% increase in sales would translate into 0.363% increase in tax compliance costs. The fact that the value of the slope parameter (0.363) was less than one pointed to the presence of the effect of economies of scales, and was consistent with the results obtained by Slemrod and Blumenthal (1996) and Erard (1997).

2.2 Recent studies

2.2.1 Susila and Pope (2012)

The study by Susila and Pope (2012) examined the tax compliance costs among the population of 28 681 large Indonesian enterprises registered in Large and Medium Taxpayer Offices. The sample consisting of 3 000 enterprises was taken by the way of random stratified sampling, using business sector as a strata. Following the creation of the sample, the questionnaires were mailed out to potential respondents with 246 responses received (8.2% response rate). The composition of the large enterprises in the sample as measured by the amount of turnover was as follows: below the lowest established threshold of IDR 3 billion (NZD 435 000) 6 enterprises (2%), over the highest established threshold of IDR 100 billion (NZD 14.5 million) 97 enterprises (39%). The rest of the enterprises were between these two thresholds.

The estimation of the tax compliance costs, based on the results of the survey, showed that in 2010 weighted average of tax compliance cost per an enterprise was IDR 420.9 million[19] (NZD 64 402). The largest tax compliance costs per an enterprise were found in retail and wholesale sector (IDR 506 million[20] (NZD 77 421)), followed by manufacture sector with the overall tax compliance burden per manufacturing enterprise of IDR 488.8 million[21] (NZD 74 795). The sector featuring the smallest tax compliance costs according to the authors' estimation was a mining and extraction sector, where costs of tax compliance per an enterprise were found to be on average IRD 51.4 million[22] (NZD 7 860)

Overall tax compliance costs were further broken down by the components. The largest component of tax compliance costs in Indonesian large enterprises was routine tax compliance activity performed by staff (47.9%) followed by the cost of time spent by management on routine operations (16.93%) and costs related to tax audit (10.33%). External tax compliance costs accounted for 26.85% of the total amount of tax compliance costs, where the largest component of the external costs was associated with tax audit (9.66%).

In addition, it was established that tax compliance costs were increasing with the size of an enterprise measured in terms of turnover amount, though less proportionally due to the well-documented effect of economies of scale. Thus, total tax compliance per one IRD were IDR 0.112 for enterprises with annual turnover less than IRD 3 billion (NZD 435 000) and IDR 0.004 for enterprises with an annual turnover above IRD 100 billion (NZD 14.5 million).

Further, the authors performed a calculation in order to demonstrate the percentage share of overall tax compliance costs relative to indicators such as GDP and National Tax Revenue from large enterprises. To this end, the mean tax compliance costs that had been estimated for

[19] IDR 523.6 million (NZD 57 000) in 2017 after adjustment for inflation from 2010 to 2017
[20] IDR 629.4 million (NZD 67 979) in 2017 after adjustment for inflation from 2010 to 2017
[21] IDR 608 million (NZD 65 674) in 2017 after adjustment for inflation from 2010 to 2017
[22] IDR 63.9 million (NZD 6 901) in2017 after adjustment for inflation from 2010 to 2017

each sector were multiplied by the number of large entities in the population of each sector. The result was that overall tax compliance costs for the whole population of the registered large enterprises turned out to be equal to IRD 12.3 trillion (NZD 1.88 billion), which in percentage terms was equivalent to 0.19% of Indonesian GDP in 2010 and 3.6 % of the total tax revenue collected from large enterprises in 2010.

2.2.2. Evans, Lignier and Tran-Nam (2016)

Finally, in the study by Evans, Lignier and Tran-Nam (2016) the costs of tax compliance incurred by large enterprises in Australia were analysed and measured. The study revealed several distinguishing features of the compliance costs profile of large enterprises in Australia. First, large enterprises in Australia show a propensity to rely more heavily on assistance of law firms (and less on accounting firms) for their external service in comparison with SMEs (Evans, Lignier and Tran-Nam, 2016). Second, by the type of external tax service, "record keeping and tax filing" was only 37% of the total external expenditure by large enterprises (whereas this service accounted for 80% of the total external costs incurred by SMEs in Australia). External services related to "tax planning" and "audit and litigation" make up 27% and 23% respectfully of the total external expenses by large Australian enterprises. According to Evans, Lignier and Tran-Nam (2016) such a cost profile of large enterprises suggests that external services for large enterprises have a fundamentally different character (Evans, Lignier and Tran-Nam, 2016) than in case of SMEs. It is obvious that large enterprises have to spend more on "tax planning, audit and litigation" due to the complexity of their operations. Third, an analysis of the costs related to the internal staff tax activities indicates that, although 56% of the total internal staff costs are dedicated to "record keeping and tax filing" (which is very close in pattern to that of SMEs), almost 19% of them are related to "tax planning" and 14% to the "audit and litigation".

This result once again confirms the fact that the large enterprises' tax compliance costs profile can be significantly different from that of SMEs.

The tax compliance costs structure of large Australian enterprises was also compared to the results obtained in previous studies for the US and Canada. The comparison indicates that Australian large enterprises had a greater exposure in 2012 to the external services (34.2% of Australian large enterprises) than their US and Canadian counterparts (19.8% and 24.6% respectively). In relation to internal costs of tax compliance, Australian large enterprises, by the way of contrast, spend less on this category of costs as compared to US and Canadian cases (45.7% in the case of Australia, 60.7%, and 55.1% in the case of the US and Canada respectively). According to the authors, greater reliance of Australian large enterprises on external services rather than on internal, might be indicating to the pattern of international shift toward outsourcing tax compliance exhibited by large enterprises globally. Perhaps, US and Canadian large enterprises would show the similar trend, if the studies were undertaken today (Evans, Lignier and Tran-Nam, 2016).

All the five studies outlined above deal specifically with the measurement of tax compliance costs of large enterprises. Overall, they all find that tax compliance costs of large enterprises are large, not diminishing over time and regressive. Furthermore, the study by (Evans, Lignier and Tran-Nam, 2016) revealed different nature of tax compliance costs of large enterprises in comparison to the tax compliance costs profile of SMEs. Large enterprises spend more on such services as "tax planning", "audit and litigation" in terms of their percentage share in the total amount of tax compliance costs. Such composition of costs is true for both external and internal tax compliance services. In addition, shift toward outsourcing of tax compliance activities, evidenced by (Evans, Lignier and Tran-Nam, 2016), has apparently become a global trend among large enterprises , however due to the scarcity of recent studies this cannot be verified.

The studies also have some limitations. For example, more analysis of determinants of tax compliance costs of large enterprises is required, particularly concerning the overseas business operations. Given that most of the studies on large enterprises (except for Susila and Pope 2012) were conducted 20 years ago, the expansion of large enterprises beyond the border of a single jurisdiction and increased complexity of the cross-border transactions merit a more thorough investigation into effect of cross-border transactions on tax compliance costs of large enterprises.

One more limitation of the previous studies, which has motivated this research, relates to the following aspect. While empirical analysis of the tax compliance costs faced by large enterprises allows an estimate of the magnitude of the overall tax compliance costs to be made along with their composition and determinants), it nonetheless provides little insight into the rationale behind the choice of the resources mix, which large enterprises expend in complying with their tax obligations. Ideally, according to the theory of rational choice, which will be elaborated in the third section, firms are expected to choose the optimal mix of their resources so that their profit is maximised. Applying this assumption to the issue of tax compliance costs burden, large enterprises should act rationally when deciding how to distribute their resources among tax compliance activities in order to minimize their onerous burden. For example, the choice made by a large enterprise to use an external tax advisor's service might help to avoid the possible large penalties. The decision of a large enterprise to outsource tax compliance function to an outside tax specialist can be viewed as the manifestation of the rational behaviour in this kind of situation. Therefore, a further analysis whether large enterprises make a choice of their resources in a rational manner when complying with their tax obligations, could promote a better understanding of the sources of tax compliance costs (whether it is complexity of the tax code or simply failure to properly optimize the use of resources).

3. Tax Compliance Costs Burden from the Perspective of Rational Choice Theory

The issue of tax compliance costs, as an additional burden imposed on business by tax regulations, has been classified in the literature to be "unavoidable" costs, in case of operational tax compliance activities, or "avoidable" costs in the case of tax planning. In other words, it has been tacitly assumed that the size of the burden of tax compliance activity has been solely determined by the design, implementation and complexity of the tax system alone, and that large enterprises have been passively carrying the burden of tax compliance costs[23].

In reality, as has already been mentioned earlier, from a business administration perspective the tax compliance costs burden is not determined by the tax system alone, but also by the compliance strategy of the business taxpayer (Eichfelder and Schorn, 2009). Therefore, the adoption of an optimal strategy for choosing the greatest cost-minimizing vector of inputs under the condition of the available information on market price of inputs should assist in minimising the costs of tax compliance. Speaking in terms of the theory of rational choice, every large enterprise is assumed to pursue an optimal choice, which in this context is seen as a cost minimising tax compliance strategy.

Next, a brief outline of Rational Choice Theory, which appears to be one of the cornerstones of the neo-classical economics, will be provided. The familiarity with basic tenets of this theory will help us to understand the behaviour of large enterprises as a cost-optimizing economic agent.

[23] Being considered to be "avoidable", tax planning costs are apparently within the control of the firm and thus, unlike "unavoidable" costs associated with tax compliance activities, can be readily adjusted by firm's decision

3.1 Rational Choice Theory

The Theory of Rational Choice lies in the heart of the neo-classical economics (Ulen, 1994) and other disciplines contiguous to economics, such as history and law, which have adopted this theory for their models of decision-making. An informal definition of the rational choice states, "a choice is said to be rational when it is deliberative and consistent" (Ulen, 1999). According to this definition the decision maker has determined what he/she is going to do and his/her actions based on choices he/she makes exhibit consistency. In other words, there should be no unexpected and inexplicable swings in his/her choices over time and that the means he/she chooses are well suited for attainment of his goals (Nozick, 1993). This informal definition lacks precision and does not seem to allow us to separate rational behaviour from irrational as almost every action would seem to be "deliberative" and "consistent" (Ulen, 1999).

The formal definition of rational choice is better explained by referring to the example of consumers who have transitive preferences and who strive to maximize their utility subject to various constraints. Transitive preferences are those preferences, for which the following statement is true: if a consumer prefers good A over good B and B is preferred to good C, then for that consumer good A is preferable over good C (Ulen, 1999). Similarly, economists assume that utility maximization by a consumer is an obvious thing and they are puzzled if someone does not do so (Ulen, 1999).

Economists have found Rational Choice Theory to be a very useful and strong tool for modelling firms' behaviour. As an example, economic theory predicts that when wages increase, the demand for labour decreases while the supply increases. Similarly, when the price of good or services rises, all other things kept equal, the production will shift toward the supply of that good or service. When the price of input increases relative to its substitute, a rational producer will use more of substitute and less of that input which has become more expensive.

Deviations from the results predicted by Rational Choice Theory are largely attributed to market failures, such as monopoly or monopsony, asymmetry of information, public goods, which prevent rational economic agent from making rational and optimal decision (Ulen, 1999). Even if a consumer exhibits behaviour that is thought to be anomalous to the predictions of the theory, economists still can explain this behaviour by making a slight amendment to the theory (Ulen, 1999). For example, if consumers react to the increase in a price of a good by increasing a demand for that good, the economist might describe such seemingly irrational phenomenon, when consumer responds to the increased price by increasing the consumption of this good instead of switching to the relatively cheap substitutes, as a "snob" effect (Ulen, 1999).

There is a presumption among economists that rational consumer will prosper, while irrational consumer will waste their resources. Rational profit-maximizing business will outperform those businesses that do not operate according to the rational plan (Ulen, 1999).

Nobel Prize winner Garry Becker has shown that even if there are a large number of consumers with intransitive preferences and who behave irrationally due to this fact, their irrational behaviour does not affect much the prediction of the theory of rational choice (Becker 1962). In addition, it is not an issue for the market aggregate behaviour and thus the presence of "irrational" consumers can be ignored.

The point of the foregoing discussion is to suggest that the theory of rational choice is extremely useful and powerful. It can serve as a valuable guide for the public policy development and it is quite flexible in explaining anomalous phenomena without the necessity of abandoning the theory (Ulen, 1999).

In the next section, we will introduce mathematical model of the tax compliance strategy undertaken by a rationally behaving business entity.

3.2 Tax Compliance Costs Minimisation Model

The following model, which demonstrates how a rational decision making taxpayer adopts a tax compliance costs minimising strategy, has been taken from Eichfelder and Schorn (2009). In line with Rational Choice Theory and Slemrod (2001), rational decision making taxpayer (large enterprise in this case) strives to maximise net income, for which they have to take into account taxes as well as tax compliance costs. For the reason of simplicity this model does not consider such exceptions to the theory of rational choice as "bounded" rationality[24] or "limited information" (Eichfelder and Schorn, 2009).

We can denote the net income that rational business taxpayer strives to maximize with Y, which is obtained by reducing gross earnings E by tax payments T , as well as by the costs of tax compliance C (Eichfelder and Schorn, 2009). These costs of tax compliance C also include costs of tax planning as suggested in the research literature (Sandford et al. 1989; Evans 2007).

Tax burden T rises with gross earnings E and is reduced by the deductibility of tax compliance costs C. For simplicity, it is assumed that all tax compliance costs are deducted at the same tax rate. A business taxpayer also resorts to some specific tax planning options, denoted with O_k, as income shifting or use of a more advantageous for tax purposes depreciation method (for example diminishing value method). This tax planning option usually results in a lower tax payment, but higher costs of tax compliance as tax-planning costs are considered as a part of tax compliance costs C. Taking into consideration the above assumptions, the net income of the business taxpayer can be written as:

$$Y = E - T(E,C,O_k) - C \qquad (1)$$

[24] The assumption that when individuals make decision their rationality is "bounded" by the amount of only available information, meaning that individual cannot be fully rational in his/her choice due to the limited information. In addition, not only information appears to be limited, but also the time, required to make decision, is limited as well. Consequently, a decision-maker seeks rather "satisfactory" solution, then optimal solution. The term "bounded rationality" was first coined by Herbert Simon (1957).

Three different types of compliance costs are considered in this model. These types of costs are:

- Personnel costs (Cp) that result from using efforts of in-house personnel Rp. In-house personnel are assumed to perform functions such as recordkeeping, tax-filing, tax-planning and other tax related activities
- Capital costs (C_c) that result from using capital R_c , by which a business taxpayer can substitute personnel resources
- Costs of outsourcing tax activities to an external tax adviser (C_e), where the usage of external resources (external tax adviser) is denoted by R_e.

For simplicity reasons, it is postulated in the model that the marginal cost of external tax activities $C_e'(R_e)$ is constant and equal to the market price p_e, i.e. $C_e'(R_e) = p_e$[25]. Furthermore, it is assumed that simple tax activities are executed by the in-house personnel, while more complex and sophisticated tax activities are outsourced to an external adviser. Hence, we can presume that the marginal costs of in-house tax compliance activities increase as the range of tax compliance activities grows. This relationship can be shown as:

$$C_p''(R_p) > 0\,, \qquad C_c''(R_c) > 0$$

These assumptions allow us to obtain an interior solution (a point where isocost[26] line is tangent to isoquant[27] curve. This point of tangency determines the most optimal combination of resources used for fulfilling tax compliance obligation). The total tax compliance burden is therefore defined as:

[25] As explained in Eichfelder and Schorn (2012), the assumption that the market price for the services of external tax advisors remains constant is necessary to avoid so-called "clientele" effect, when a subsample of taxpayers can enjoy a cheaper support from external tax advisors than other taxpayers can.
[26] A line, which represents all the combinations of firm's inputs that have the same total costs.
[27] A contour line drawn through all the possible combinations of input factors' amounts, which generate the same level of output.

$$C = C_p + C_c + C_e \quad (2)$$

Since the sum of resources expended on tax compliance should be enough to fulfil the quantity of tax compliance obligation, business taxpayer faces the following constraint:

$$A\ (E, O_k) \leq \Theta \bullet R_p + \omega \bullet R_c + R_e \quad (3)$$

Here $A\ (E, O_k)$ is the quantity of the necessary compliance activity, which in turn depends on the size of earnings E and tax planning option O_k . Θ is the efficiency parameter of the personnel-intensive tax compliance strategy and ω is the capital-intensive tax compliance strategy. For simplicity, the production efficiency of external tax advisers is postulated to be equal to one[28].

According to the empirical literature (Tran-Nam et. al, 2000) the quantity of the tax compliance activity $A\ (E, O_k)$, which we can consider as the burden of tax compliance, is positively correlated with the size of a business. This in turn implies the positive correlation between A and pre-tax earnings E, which can be expressed mathematically as $(\frac{\partial A}{\partial E} > 0)$. Due to the economies of scale tax compliance costs burden, as a proportion of pre-tax earnings, decreases as pre-tax earnings increases, i.e. $(\frac{\partial A^2}{\partial^2 E} < 0)$.

Therefore, the tax compliance costs burden can be interpreted in this model as some kind of additional and regressive tax payment, which is deductible from the assessable income

[28] This assumption does not appear to be unreasonable, as due to the experience and high level of responsibility of the external tax advisor, it is unlikely that tax returns and financial statements, prepared by an external tax specialist, would be of a lower quality than if they were prepared by in-house personnel (Eichfelder and Schorn, 2012). However, if the assumption that an external tax advisor's efficiency is equal to one does not hold, which might be possible in the case of "human-specific" transaction cost, then taking cost-optimal decision would be predicated upon firm's evaluation of what resource (in-house personnel or external tax specialist) appears to be more efficient for implementing particular type of compliance activity. The model presented here does not consider this kind of complex situation.

(Eichfelder and Schorn, 2009). Furthermore, planning option O_k (for example income shifting) entails more tax compliance activity, which implies a positive derivative $(\frac{\partial A}{\partial O_k} > 0)$.

Equipped with all these assumptions and having determined target function (1) and administration constraint (3), we can now move to obtaining the optimum solution by using the following Lagrangian function:

$$L = E - T(E,C,O_k) - C_p - C_c - C_e - \lambda \bullet (A(E, O_k) - \Theta \bullet R_p - \omega \bullet R_c - R_e) \qquad (4)$$

Here λ denotes the Lagrange multiplier[29].

The first order conditions[30] with respect to resources R_p, R_c and R_e as well as to specific tax option O_k will be as follows:

$$\partial L/\partial R_p = -C'_p \bullet (1 + \frac{\partial T}{\partial C}) + \lambda \bullet \Theta = 0 \qquad (5)$$

$$\partial L/\partial R_c = -C'_c \bullet (1 + \frac{\partial T}{\partial C}) + \lambda \bullet \omega = 0 \qquad (6)$$

$$\partial L/\partial R_e = -p_e \bullet (1 + \frac{\partial T}{\partial C}) + \lambda = 0 \qquad (7)$$

$$\partial L/\partial O_k = -\partial L/\partial O_k - \lambda \bullet \partial A/\partial O_k \geq 0 \qquad (8)$$

Obtaining first order conditions allows us to make the following conclusions regarding the optimal mix of resources used for compliance with tax rules:

[29] Lagrange multiplier (named after Joseph Langrage) is the mathematical method of finding local maxima and minima of function (points where function is "locally" maximum or minimum) subject to equality constraint. For example: maximize $f(x,y)$
subject to $g(x,y) = 0$
λ is Lagrange multiplier
Therefore, Lagrange function or Lagrangian can be written as:
$L(x,y,\lambda) = f(x,y) - \lambda * g(x,y)$
We need to find such (x_0,y_0,λ_0), where this Lagrangian is maximized or minimized (partial derivatives of L on x_0,y_0,λ_0 are equal 0)

[30] In mathematics first-order conditions (FOC) denote that first-order derivative of a function is equal to zero. Thus, FOC allow locating points of extremum of a function under consideration. In our example, FOC allow us to find such points on the profit function, where this profit function attains its maximum

1. The optimal resource mix will be attained where the gross marginal cost of in-house resource unit will be equal market price of the external tax adviser:

$$\frac{C_c'}{\omega} = \frac{c_p'}{\theta} = p_e$$

Therefore, under the assumption of rational choice a business taxpayer will choose the cost-optimal mix of resources according to this condition

2. Using (7) and (8) we can obtain the following relationship between tax compliance A, tax option O_k and the size of tax payment T

$$p_e \bullet (1 + \frac{\partial T}{\partial C}) \bullet \partial A/\partial O_k + \partial T/\partial O_k \leq 0$$

Hence this relationship implies that cost minimizing business taxpayer will use tax option until the moment when marginal increase in tax compliance burden (∂A) will be greater than the marginal decrease in tax payment (∂T) caused by this tax option strategy.

The model outlined above demonstrates the optimal tax compliance administration, which the rationally behaving business entity is expected to adopt. This administration ensures the optimal resource mix for compliance with tax obligations, thereby minimising overall tax compliance costs. Testing this model empirically, using data from large enterprises in New Zealand, would reveal if New Zealand large enterprises indeed behave rationally, as the model predicts, by choosing the optimal mix of resources, which are available to them for compliance with their tax duties. Therefore, if New Zealand large enterprises are indeed acting rationally, then regressing various factors, for example external costs of outsourcing tax compliance activities, on the total costs of tax compliance should have no effect on the latter. Thus, empirical analysis performed in New Zealand context would provide a useful insight into tax compliance administration, that large New Zealand enterprises implement and how optimizing

they are in minimising the costs of tax compliance. This in turn would help to understand better the origin of the tax compliance costs in large enterprises in New Zealand: whether they are triggered by the complexity of the tax system alone or they can also be attributed to the failure to use the resources efficiently.

4. Limitations of the Model and Conclusion

4.1 Limitations of the Model

As we have seen above, the idea that a rationally behaving taxpayer is assumed to pursue cost-minimising tax administration strategy originates from the basic tenets of Rational Choice Theory. Furthermore, as the model, presented in the section three, demonstrates this cost-minimising strategy involves the process of making a rational choice of resources available to a taxpayer for complying with tax obligations. The optimality conditions derived from the model indicate that outsourcing tax compliance activities to an external professional can assist in a reduction of costs associated with these tax compliance activities. According to the model, outsourcing of tax compliance functions appears to be particularly relevant for the firms with a relatively low productivity of in-house tax compliance or in the case of highly complex tax rules (Eichfelder and Schorn, 2012). Therefore, if a taxpayer behaves cost-efficiently, he/she would opt for the outsourcing of tax compliance activities to an external tax advisor.

Since the model implies, that outsourcing of tax compliance functions could be a rational choice for a firm in order to minimize its tax compliance costs, a rational firm would normally follow this strategy. However, this implication should be treated with a certain degree of caution. The model itself and the caveats made in the beginning of the section 3.2 fail to take account of the imperfections of the real world, such as “transaction costs” and “limited information”. Indeed, according to Dunbar and Phillips (2001) in the absence of transaction

costs, firms would be better off, if they outsource all activities, except those where they have "core competencies"[31]. The existence of transaction costs, particularly those related to human-asset specificity issue[32], might encourage firms to rely more on their internal tax professionals. Other transaction costs of outsourcing the tax activities might include failure of paid external tax professionals to adhere fully to the content of an agreement or simply their opportunistic behaviour, thereby exposing an outsourcing firm to the market uncertainties.

Contrary to the assumption of Rational Choice Theory, that economic agents possess perfect information for making decisions, real world firms have only limited information available to them, which in turn gives a rise to additional transaction costs[33]. Therefore, even when outsourcing of tax compliance activities appears to be a costs-minimising choice for a firm, the presence of transaction costs might deter that firm from taking up this option. Accordingly, the future research of the efficiency of tax compliance administration in large enterprises should consider the effect of transaction costs on large enterprises' decision in relation to a cost-minimising choice of resources for their tax compliance functions.

4.2 Conclusion

In this paper, the author has attempted to look at the tax compliance burden in large enterprises from the perspective of their rational behaviour. The main idea underlying the prior discussion is that tax compliance burden in large enterprises is affected not only by the complexity of tax

[31]According to Dunbar and Phillips (2001), core competencies can be defined as skills, knowledge and practices, which can generate value-added benefits for firms, if performed internally.

[32] As an example of human-asset specificity in the corporate tax administration setting, can be well-established relationships between internal tax professionals and top management. In this situation, internal tax professionals tend to have more knowledge about firm's business activity compared to outside tax advisors. Therefore, outsourcing tax functions to the outside advisors, who have little understanding of the firm's business, can lead to human-assets specificity transaction costs.

[33] As such may be the costs associated with research of market information on prices, range and level of services offered by external tax experts

system alone, but also by the action of a large enterprise. Due to the complexity of transactions and the availability of various resources to comply with tax obligations, large enterprises need to take a decision regarding which resource to employ for dealing with tax compliance. Therefore, if large enterprise acts according to the prediction of the rational choice model and therefore strives to use the most cost-efficient strategy, tax compliance burden would be minimised at least on the micro level.

The view on the issue of the tax compliance burden, taken from the perspective of microeconomic theory, appears to be a relatively new approach to investigating and measuring tax compliance costs in large enterprises. Prior studies of the tax compliance costs of large enterprises implicitly assumed that tax compliance costs were exogenous and thus high compliance costs, being taken as the proxy for complexity of the tax system, were indicative of the complex tax system that required further simplification in order to alleviate the tax compliance costs burden. However, without empirical analysis of the optimality of tax compliance costs strategy, which large enterprises are expected to adopt, attributing the burden of tax compliance costs to the design of tax system alone is not the complete answer.

Considering, that the studies on large enterprises in New Zealand similar to the ones in the US, Canada, Indonesia and Australia, have yet to be undertaken, measurement of tax compliance costs borne by large enterprises in New Zealand could be a promising research. Furthermore, applying micro-economic model and testing empirically, if large enterprises in New Zealand adopt cost-minimising tax compliance administration would provide insight into the scope and sources of the tax compliance costs burden. However, future analysis should also consider limitations of Rational Choice Theory, highlighted in the previous section, for designing a more realistic model, so that more accurate estimation results could be achieved.

5 References

Chan, S., Cheung, D., Ariff, M. and Loh, A. (1999), "Compliance Costs of Corporate Taxation in Hong Kong", International Tax Journal, 25(4): 42-68.

Dunbar, A. and Phillips, J. (2001), "The Outsourcing of Corporate Tax Function Activities", The Journal of the American Taxation Association, 23(2): 35-49

Eichfelder, S. and Schorn, M. (2009), Tax Compliance Costs: A Business Administration Perspective, Freien Universität, Berlin

Eichfelder, S. and Schorn, M. (2012), "Tax Compliance Costs: A Business-Administration Perspective", Public Finance Analysis, 68(2): 191-230

Eichfelder, S. and Vaillancourt, F. (2014), "Tax Compliance Costs: A Review of Costs Burdens and Cost Structures", Arqus Discussion Papers (178): 1-41

Erard, B. (1997), "The Income Tax Compliance Burden on Canadian Big Business", Working Paper 97-2, prepared for the Technical Committee on Business Taxation, Department of Finance, Ottawa.

European Commission (2013). A Review and Evaluation of Methodologies to Calculate Tax Compliance Costs. Taxation Papers (40). Retrieved from: https://ec.europa.eu/taxation_customs/sites/taxation/files/docs/body/taxation_paper_40.pdf

Evans, C. (2001), "The Operating Costs of Taxation: A Review of the Research", Journal of the Institute of Economic Affairs, 21(2): 5-10.

Evans, C. (2003), "Studying the Studies: An overview of recent research into taxation operating costs", eJournal of Tax Research 1 (1): 64-92

Evans, C. (2007). Taxation Compliance and Administrative Costs: An Overview. In M.Lang, C.Obermair, J.Schuch, C.Staringer & P.Weineger (Eds.), Tax Compliance Costs for Companies in an Evans, C. and Tran-Nam, B. (2014). Tax Compliance Costs in New Zealand: An International Comparative Evaluation. The Tax Administration for the 21st Century Working Paper. University of Victoria. Wellington.

Evans, C., Lignier, P. and Tran-Nam, B. (2016),"The Tax Compliance Costs of Large Corporations: An Empirical Enquiry and Comparative Analysis", Canadian Tax Journal, 64 (4), 751 - 93

Laffer, A, Winegarden, W. and Childs, J. (2011), The Economic Burden Caused by Tax Code Complexity. The Laffer Centre for Supply Side Economics. Retrieved from: http://www.laffercenter.com/wp-content/uploads/2011/06/2011-Laffer-TaxCodeComplexity.pdf

Sandford, C. (1973), Hidden Costs of Taxation, Institute for Fiscal Studies, London

Sandford, C., Godwin, M. and Hardwick, P. (1989), Administrative and Compliance Costs of Taxation, Fiscal Publications, Bath.

Slemrod, J. and Blumenthal, M. (1996), "The Income Tax Compliance Cost of Big Business", Public Finance Quarterly, 24(4): 411-438.

Slemrod, J. (2001). "A general model of behavioural response to taxation", International Tax and Public Finance, 8: 119-128.

Susila, B and Pope, J. (2012), "The Tax Compliance Costs of Large Corporate Taxpayer in Indonesia", Australian Tax Forum, 27(4): 719-772

Tran-Nam, B. (2015), "Tax Compliance as a Red Tape to Business: Conceptual Issues and Empirical Evidence from Australia", Journal of Business and Economic Policy, 2(4): 76-87

Ulen, T. (1999), Rational Choice Theory in Law & Economics. In Bouckaert, Boudewijn and De Geest, Gerrit (eds.), Encyclopedia of Law and Economics, Volume I. The History and Methodology of Law and Economics, (pp. 790-818), Cheltenham, Edward Elgar.