THE THEORY OF THE FIRM: A TOOL TO UNDERSTAND COMPANY TAXPAYER COMPLIANCE BEHAVIOUR IN THE MINING SECTOR

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ABSTRACT

This article considers whether the theory of the firm can be used to understand company taxpayer compliance behaviour in the mining sector. The theory of the firm can provide insights into how companies behave and has been used, largely by economists, to address questions such as why companies exist, what strategies they employ and how they grow. The survey method was used to gather data to test whether mining company taxpayer compliance behaviour reflected simple profit maximisation or if it diverged. Aspects of the theory of the firm were used to explain divergence. More than 200 mining executives were asked to consider how a mining company would respond to several tax scenarios. The results indicated that compliance behaviour was not uniformly profit maximising and that understanding a company's strategy, management and individual circumstances were relevant to understanding how different companies would respond to tax changes. This article is significant for its use of the theory of the firm to understanding taxpayer compliance behaviour.

Keywords: theory of the firm, company behaviour, mineral taxation

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I INTRODUCTION

This article considers whether the theory of the firm can be used to understand taxpayer compliance behaviour in the mining sector. The mining sector was selected due to the substantial impact the sector can have on national economies, including Australia and other mineral dependent countries.[1]

The theory of the firm was developed by economists as a way of explaining why much of society's economic activity is organised in companies; understand differences between companies; and to predict company behaviour.[2] The theory of the firm was selected for this research because of its potential to explain why individual mining companies may respond differently when faced with the same mineral taxation changes.

While taxpayer compliance behaviour has sometimes been narrowly framed as the decision not to declare income and pay tax, known as tax evasion,[3] or tax avoidance, covering legal tax minimisation strategies,[4] in this article,[5] taxpayer compliance behaviour follows the broader formulation of Ohms et al: 'tax compliance [is defined as] the actions of a taxpayer in engaging in the set of statutory obligations cast upon them in respect of their annual total tax liability.'[6] The Ohms et al definition focuses on the taxpayer's broader behaviour and provides a wider scope to consider not only tax evasion and avoidance but also other taxpayer responses, including tax mitigation. Tax mitigation includes behaviour that can change income and tax liabilities such as structuring transactions, reducing investment or even closing operations.

In order to answer the research question, data was gathered on mining taxpayer compliance behaviour using the survey method. A questionnaire was constructed and administered to mining executives, and then analysed using the theory of the firm. The survey questions aimed to identify the potential effect of different agendas, assets, organisation structures and availability of information on company behaviour. Each of these areas was drawn from different branches of the literature on the theory of the firm, as explained in the methodology section of this article. The results indicated that mining

1 Ross Garnaut, 'Principles and Practice of Resource Rent Taxation' (2010) 43(4) *Australian Economic Review* 347, 355; For an approach to estimating mineral dependence and the role of mining in dependent economies see International Council on Mining and Metals (ICMM), *The Role of Mining in National Economies: Mining's Contribution to Sustainable Development* (2016) 3–4.

2 David J. Teece, 'Theory of the Firm' in Mie Augier and David J Teece (eds), *The Palgrave Encyclopedia of Strategic Management* (Palgrave Macmillan UK, 2016) 1, 1741–1742.

3 Michael G. Allingham and Agnar Sandmo, 'Income Tax Evasion: A Theoretical Analysis' (1972) 1(3) *Journal of public economics* 323, 323.

4 Valerie Braithwaite and John Braithwaite, 'An Evolving Compliance Model for Tax Enforcement' in Neal Shover and John Paul Wright (eds), *Crimes of Privilege: Readings in White-Collar Crime:* (Oxford University Press, 2001) 406.

5 Richardson and Sawyer set out a starting proposition that all studies in this area 'should clearly set out the definition of tax compliance they have adopted.' Maryann Richardson and Adrian J. Sawyer, 'A Taxonomy of the Tax Compliance Literature: Further Findings, Problems and Prospects' (2001) 16 *Australian Tax Forum* 137, 772.

6 Chris Ohms, Karin Oleson and Natalie Khin-Carter, 'Taxpayer Compliance Models: A Literature Review and Critique' (2015) 21 *New Zealand Journal of Taxation Law and Policy* 427, 428.

company taxpayer compliance behaviour was not uniform and when confronted with the same scenario, mining executives could respond in various ways, depending on the circumstances of their company at the time of the change rather than any compliance variables relevant to the individual.

This article follows a structure over several parts. Part II examines literature on taxpayer compliance behaviour and the theory of the firm. Part III sets out the research methodology. Part IV discusses the results from the survey. Part V uses the theory of the firm as a tool to analyse the survey results. Part VI concludes with the significance of using the theory of the firm to understanding company taxpayer compliance behaviour. The research contributes to the literature on individual taxpayer behaviour by considering companies, rather than individuals, and extends the application of the theory of the firm to taxpayer compliance behaviour.

II LITERATURE ON TAXPAYER COMPLIANCE BEHAVIOUR AND THE THEORY OF THE FIRM

Studies into taxpayer compliance behaviour have mainly focussed on individuals[7] and tax evasion, defined as the decision whether to declare income and pay tax.[8] Although some studies have sought to extend research to include corporate behaviour[9] or expand behaviour beyond tax evasion to tax avoidance or mitigation,[10] there has not been extensive research into theories of company behaviour that might explain and predict tax mitigation behaviour by companies in response to tax changes.[11]

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7 James Alm, 'Measuring, Explaining, and Controlling Tax Evasion: Lessons from Theory, Experiments, and Field Studies' (2012) 19(1) *International Tax and Public Finance* 54, 75.

8 See, eg, Allingham and Sandmo (n 4) 323; Erich Kirchler, Erik Hoelzl and Ingrid Wahl, 'Enforced versus Voluntary Tax Compliance: The "Slippery Slope" Framework' (2008) 29(2) *Journal of Economic Psychology* 210, 210–211.

9 See, eg, Catriona Lavermicocca and Jenny Buchan, 'Role of Reputational Risk in Tax Decision Making by Large Companies' (2015) 13(1) *eJournal of tax research* 5 that examined reputational effects of tax non-compliance on company behaviour; Jo'Anne Langham, Neil Paulsen, and Charmine E. J. Härtel, 'Improving Tax Compliance Strategies: Can the Theory of Planned Behaviour Predict Business Compliance?' (2012) 10(2) *eJournal of tax research* 364 which looked at mostly small businesses and their income declaration intentions.

10 Braithwaite and Braithwaite (n 5) 406; Elea Wurth and Valerie Braithwaite, *Tax Practitioners and Tax Avoidance: Gaming through Authorities, Cultures and Markets* (No 119, ANU School of Regulation and Global Governance (RegNet), 2016) 3.

11 The conclusion was reached after a year-by-year manual review of 12 of the major taxation journals in Australia, Europe and North America over a 12-year period was undertaken. The 12 years chosen were 2008-2020. The year range covers the majority of the publications where behavioural approaches have been utilised. The review identified 44 articles that looked at behavioural approaches to taxation, mainly individual compliance and only two (Lavermicocca and Buchan; Langham) that considered it from a company perspective separate from individuals or ownership.

A *Taxpayer Compliance Behaviour*

The importance of understanding taxpayer behaviour has been a feature of economic thought from its origin as a discipline.[12] However, it was not until the late 20th Century that models of individual taxpayer compliance behaviour emerged that sought to explain how non-compliance could fit within the assumption of rationality that underpinned the dominant classical and neoclassical economic schools of thought.[13] It was work by economists such as Gary Becker on rational choice and criminality[14] that paved the way for the Allingham and Sandmo model of tax evasion in 1972[15] which framed tax evasion as a decision under uncertainty. The taxpayer's decision whether to evade tax was a function of the probability that under-reporting income would be detected and the likely penalty that would be applied. However, subsequent empirical studies indicated that tax evasion was far less prevalent than the Allingham and Sandmo model might suggest, even where the likelihood of being caught or the penalties were low.[16] Work on the Compliance Pyramid developed by Braithwaite and the Australian Tax Office[17] sought to explain the difference by recognising different attitudes towards compliance held by taxpayers and recognising that many taxpayers are motivated to comply rather than evade tax. Kirchler's Slippery Slope model extended this to explain the motivation to comply as a combination of the power of tax authorities and the trust society has in those tax authorities.[18]

The literature on individual tax compliance behaviour is extensive and has been collated and analysed in several influential papers over the past 35 years.[19] Research into individual tax compliance has considered variables such as: age, gender, education,

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12 See Smith's discussion on precious metal smuggling: Adam Smith, *The Wealth of Nations (1776), Ed. Andrew Skinner* (Penguin, 1999) 274.

13 The works of economists Adam Smith [1723–1790], John Stuart Mill [1806–1873], Thomas Malthus [1766–1834] and David Ricardo [1772–1823] form the basis of classical economics. Classical economists were concerned with how wealth was created, maintained and distributed. See Thomas Sowell, *On Classical Economics* (Yale University Press, 2006) 22–23. The neoclassical school which built on these works included Alfred Marshall [1842–1924] as one of its main contributors. Neoclassical economics focussed on the mechanism by which supply and demand resulted in a market outcome, a concept referred to as equilibrium analysis. The main assumptions underpinning neoclassical economics are that economic participants are rational, that they profit maximise and they are fully informed of all information. See Roy Weintraub, *The Concise Encyclopaedia of Economics* (online at 10 November 2019) 'Neoclassical Economics'.

14 Gary S. Becker, 'Crime and Punishment: An Economic Approach' (1968) 76(2) *The Journal of Political Economy* 169.

15 Allingham and Sandmo (n 4); See also discussion in Simon James, 'Taxation and the Contribution of Behavioral Economics' in *Handbook of Contemporary Behavioral Economics* (Routledge, 2006) 591.

16 Kirchler, Hoelzl and Wahl (n 9) 211.

17 Braithwaite and Braithwaite (n 5) 413; *Improving Tax Compliance in the Cash Economy: Report to Commissioner of Taxation* (Report, Australian Taxation Office and Cash Economy Tax Force, 1998) 53.

18 Kirchler, Hoelzl and Wahl (n 9) 211.

19 Betty R. Jackson and Valerie C. Milliron, 'Tax Compliance Research: Findings, Problems, and Prospects' (1986) 5 *Journal of Accounting Literature* 125; Richardson and Sawyer (n 6); Sue Yong et al, 'Tax Compliance in the New Millennium: Understanding the Variables' (2019) 34(4) *Australian Tax Forum* 766.

income level, income source, occupation, peer influence, ethics, fairness, complexity, revenue authority contact, sanctions, probability of detection, tax rates, compliance costs, tax preparers, framing, positive inducements and tax amnesties.[20] To this list of variables Yong et al added a further 19 concepts and variables, including trust, power, culture and religion among others.[21]

These approaches utilise insights from behavioural economics to explain taxpayer behaviour.[22] Behavioural economics has been described as the 'combination of psychology and economics that investigates what happens in markets in which some of the agents display human limitations and complications.'[23] Behavioural economics can be used to try to explain why some taxpayers do not engage in tax evasion regardless of the likelihood of consequences[24] or why perceptions of fairness can mean 'the difference between a successful tax and a failed one.'[25]

These behavioural economic approaches and techniques have been applied predominantly to individual taxpayers, small individual run businesses or entrepreneurs, rather than companies where ownership and control are separated and decision making delegated to a management team.[26] The behaviour of groups as opposed to individuals is subject to different psychological phenomena and requires the application of different tools from behavioural economics to examine such behaviour.[27] The theory of the firm is one such tool originating from a branch of behavioural economics concerned largely with group behaviour in a company.

B *Origins of the Theory of the Firm*

Before the theory of the firm, the focus in economics was on the determination of prices in markets. In the classical and the early neoclassical schools of economic thought, the role attributed to companies was limited to 'a passive conduit'[28] ensuring the efficient

[20] Yong et al (n 20) 789.

[21] Ibid.

[22] Simon James, 'Behavioural Economics and the Risks of Tax Administration' (2012) 10(2) *eJournal of Tax Research* 345, 357.

[23] S. Mullainathan and R.H. Thaler, 'Behavioral Economics' in Neil J. Smelser and Paul B. Baltes (eds), *International Encyclopedia of the Social & Behavioral Sciences* (Pergamon, 2001) 1094, 1094.

[24] James Gordon, 'Individual Morality and Reputation Costs as Deterrents to Tax Evasion' (1989) 33(4) *European Economic Review* 797, 797; J.C. Baldry, 'Tax Evasion Is Not a Gamble: A Report on Two Experiments' (1986) 22(4) *Economics Letters* 333, 333.

[25] James (n 23) 356.

[26] Yong et al, for example, found only 9% of papers dealing with tax compliance concepts mentioned 'business taxpayer': Yong et al (n 20) 793.

[27] Alm (n 8) 62; Irving L. Janis, 'Groupthink' (1971) 5(6) *Psychology Today* 43, 43.

[28] Philip L. Williams, *The Emergence of the Theory of the Firm: From Adam Smith to Alfred Marshall* (Springer, 1978) 11.

allocation of resources, leading Coase, one of the founders of the theory of the firm, [29] to describe the corporation in economics at that point as being left as a 'black box.'[30]

C *The Theory of the Firm*

1 *Differences in Agenda*

Coase wrote his most significant contributions to the theory of the firm in the second half of the 20th Century.[31] His main contribution was the transaction-cost based theory of the firm. The transaction-cost theory provides a basis for a company to have objectives that differ from those that an individual owner, contractor or entrepreneur might have. According to Coase, the rationale for organising activity inside a company, and the ultimate size of a company, relates to the relative efficiency of employing people when compared to the transaction costs of individually contracting for each activity. This led to a distinction between two aspects of a company, its technical production capability and its institutional components managing the employment of others.[32] The transaction-cost theory provided a theoretical foundation to consider what the existence of these different groups and their different agendas could mean for company behaviour.

With Coase's institutional component came the principal and agent problem. Pitelis summarised the problem as:

> Whenever there exists a 'principal–agent' relationship, like for example employer–employee, or shareholder– manager, and when the interests of the two parties are not ex-ante fully aligned, agents may have discretion to pursue their own interests.[33]

These different interests and their degree of alignment have implications for the way decisions are made. Holstrom highlights that 'firm behavior is the result of a complex joint decision process within a network of agency relationships.'[34]Alvarez more poetically describes companies as 'deep pools of conflicting motives and interests—only some of which are purely economic in nature.'[35]

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[29] Frank H. Knight, *Risk, Uncertainty and Profit* (Houghton Mifflin, 1921).

[30] Ronald H. Coase (Lecture to the Memory of Alfred Nobel, December 9 1991).

[31] Oliver Hart, 'An Economist's Perspective on the Theory of the Firm' (1989) 89(7) *Columbia Law Review* 1757, 89–90.

[32] Bengt R. Holmstrom and Jean Tirole, 'The Theory of the Firm' in *Handbook of Industrial Organization* (Elsevier, 1989) 61, 63.

[33] Christos Pitelis, 'Edith Penrose, Organisational Economics and Business Strategy: An Assessment and Extension' (2005) 26(2) *Managerial and Decision Economics* 67, 76 ('Edith Penrose, Organisational Economics and Business Strategy').

[34] Holmstrom and Tirole (n 33) 63.

[35] Alvarez et al, 'Developing a Theory of the Firm for the 21st Century' (2020) 45(4) *Academy of Management Review* 711, 713.

The different motivations of groups within a company could manifest in different corporate strategies. Baumol[36] and Marris,[37] sought to explain strategies that departed from traditional assumptions of profit maximisation, such as sales and growth maximisation, as reflecting management's 'preoccupation'[38] with growth and the benefits a growing, larger company provided management. However, there were limits to how far strategies could diverge from creating profits. According to Dixon, there was a level of 'under-performance that make even the most sedentary manager subject to scrutiny'[39] Dixon described this distance from the optimum as 'epsilon-optimisation' near enough to be good enough but not far enough away to fail a 'survival test' for those involved.[40]

2 *Differences in Assets*

For simplicity, economics has often treated all companies in an industry or sector as having the same assets, without considering the implications of what differences in assets can mean for the company and its response to external changes.[41] The implications of the different assets held by companies has been explored by a branch of the theory of the firm, known as the 'resources-based view of the firm.'[42] According to Barney, company resources are 'all assets, capabilities, organizational processes, firm attributes, information, knowledge etc controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness.'[43] Resources can be used to create a 'sustained competitive advantage'[44] which is linked to the long term success of a company.

In the resource-based view, special attention has been given to knowledge as a resource, particularly a company's ability to generate and retain it. Edith Penrose's work on the 'theory of growth of the firm'[45] was a starting point.[46] Penrose viewed knowledge and its flow on to increased managerial expertise as the main source of long-term growth for

36 William J. Baumol, 'On the Theory of Expansion of the Firm' (1962) 52(5) *The American Economic Review* 1078, 1085.

37 Robin Marris, 'A Model of the "Managerial" Enterprise' (1963) 77(2) *The Quarterly Journal of Economics* 185, 209.

38 W.J. Baumol, 'On the Theory of Expansion of the Firm' in Charles K Rowley (ed), *Readings in Industrial Economics: Volume One: Theoretical Foundations* (Palgrave Macmillan UK, 1972) 34, 34.

39 Huw Dixon, 'Almost-Maximization as a Behavioral Theory of the Firm: Static, Dynamic and Evolutionary Perspectives' (2019) 56(2) *Review of Industrial Organization* 237, 238.

40 Ibid 239.

41 Jay Barney, 'Firm Resources and Sustained Competitive Advantage' (1991) 17(1) *Journal of Management* 99, 100.

42 Ibid.

43 Ibid 101.

44 Barney (n 42).

45 Edith Penrose, *The Theory of the Growth of the Firm* (Oxford University Press, 3rd ed, 1995).

46 Nicolaï Foss and Nils Stieglitz, 'Modern Resource-Based Theory(Ies)' (Edward Elgar Publishing, 2012) 257.

companies.[47] Liebskind extends this to other intangibles as important 'such as organizational learning, brand equity, and reputation.'[48]

The only limit in the resource-based view on which assets can found a sustainable competitive advantage is that the asset must be 'valuable, rare and costly to imitate and substitute.'[49] The fortunes and strategic options of companies with and without sustainable competitive advantages differ and may change over time. Companies with advantages try to protect them and those without them trying to imitate or acquire them.[50] The assets a company starts with, both physical and intangible, influence the strategies that are open to them and in turn the behaviours they exhibit.

3 *Differences in Organisation*

The theory of the firm has considered not just company assets as relevant to decision making but also how the organisation of the company has evolved and what external forces continue to shape it.[51] The way an organisation has grown, its organisational strengths and its processes and routines create differences in organisation leading to different options and ways companies can respond to change. As Phelan says

> Even if two managers were given identical bundles of resources, they would tend to use them in different ways. The result is that, over time, a firm's…assets will diverge.[52]

The main tool with which a company's management can influence how it uses assets is through planning and the development of strategy. Michael Porter looked at the strategic options available to companies through his Five Forces strategic framework[53] Porter described the five forces as: 'the threat of new entrants, the bargaining power of customers, the bargaining power of suppliers, the threat of substitute products or services (where applicable), and the jockeying among current contestants.'[54] These external forces and their impact on the strategic choices shape company behaviour. To the extent that successful strategy can be replicated over many time periods, Nelson and Winter's evolutionary theory of change provides insight into how the routines, processes and rules

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47 Penrose (n 46) 55.

48 Julia Porter Liebeskind, 'Knowledge, Strategy, and the Theory of the Firm' (1996) 17(S2) *Strategic Management Journal* 93, 93.

49 Barney (n 42) 105–106; as described in Foss and Stieglitz (n 47) 258.

50 Barney (n 42) 107.

51 Ibid 108.

52 Steven E. Phelan and Peter Lewin, 'Arriving at a Strategic Theory of the Firm' (2000) 2(4) *International Journal of Management Reviews* 305, 313.

53 Michael E. Porter, 'How Competitive Forces Shape Strategy' (1979) 57(2) *Harvard Business Review* 137, 137.

54 Ibid.

within companies can transmit success from one time period to the next through the 'replication of existing routines.'[55]

4 *Differences in Information*

The theory of the firm has also been used to consider the implications of recognising that companies do not all have the same information, there is a cost in acquiring information and that companies may stop short of seeking perfect information before making a decision. Herbert Simon is credited for introducing the concepts of bounded rationality and 'satisficing.'[56] Bounded rationality concerns decision making by using enough information and not pursuing all available information before making a decision. Simon's work influenced many, including Cyert and March's The Behavioral Theory of the Firm[57] which looked at the mechanics of company decision making and the factors that lead to non-profit maximising outcomes, introducing concepts such as 'organisational slack', 'satisficing behaviour' and 'external information search'[58] 'to open up the 'black box' of the internal workings of organizations [and see] decisions … as produced by collections of individuals with different interests, information, and identities.'[59]

As can be seen by the preceding discussion, the theory of the firm provides insights into company behaviour that may explain company taxpayer compliance behaviour in response to mineral taxation changes. Young describes the role the theory of the firm can play as follows:

> If institutions are the rules of the game, and firms and individuals are the teams and players, then a theory of the firm provides the basic 'playbook' that shows the strategic choices available and provides theoretical explanations of how different plays can score a goal and win the game. Thus, the theory of the firm can be used to see how strategic choices are framed for managers.[60]

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55 R. Nelson and S. Winter, 'An Evolutionary Theory of Economic Change (1982) Cambridge' *MA: Belknap Press of Harvard University* 99.

56 H.A. Simon, *Models of Bounded Rationality* (MIT Press, 1982); Herbert A. Simon, 'Bounded Rationality' in John Eatwell, Murray Milgate and Peter Newman (eds), *Utility and Probability* (Palgrave Macmillan UK, 1990) 15; Matteo Cristofaro, 'Herbert Simon's Bounded Rationality' (2017) 23(2) *Journal of Management History (2006)* 170, 172.

57 James G. March and Richard M. Cyert, *A Behavioral Theory of the Firm*, vol 43 (Prentice-Hall, 1963). See also Liu et al, 'The First 50 Years and the Next 50 Years of *A Behavioral Theory of the Firm*: An Interview With James G. March' (2015) 24(2) *Journal of Management Inquiry* 149. Linda Argote and Henrich Greve, 'A Behavioral Theory of the Firm – 40 Years and Counting: Introduction and Impact' (2007) 18(3) *Organization Science* 337.

58 External search is the way in which firms seek to acquire solutions to problems in the absence of perfect information. Nelson and Winter describe search 'search as a rubric for the variety of processes, mostly intentional but some not, by which rule changes take place.' Nelson and Winter (n 56) 171. Organisational slack refers to the spare resources captured by the firm and distributed to coalition members that increases in good times and vice versa above a certain satisficing level of return. See Argote and Greve (n 57) 340.

59 Argote and Greve (n 57) 344.

60 Young et al, 'Strategy in Emerging Economies and the Theory of the Firm' (2014) 31(2) *Asia Pacific Journal of Management* 331, 336.

III RESEARCH METHODOLOGY

The survey method was used to gather data around the question of whether the theory of the firm could be used to understand taxpayer compliance behaviour in the mining sector. The mining sector was chosen due to its economic importance in some countries, the application of sector specific taxation arrangements and the level of industry concentration making data availability and its quantum manageable. The survey involved several tax change scenarios and questions regarding variables that the theory of the firm indicated could be relevant to explaining and predicting company behaviour. The theory of the firm was then used to analyse the results.

Survey research is defined as 'the collection of information from a sample of individuals through their responses to questions.[61]' Surveys have the advantage of being an efficient and flexible means of gathering information from a large group of people.[62] There are some limitations to using surveys as a research method. For example, when interpreting survey results it can be difficult to determine 'causality[63]' from a participant's response without greater context. Causality or causation refers to whether the dependent variable changed because of the other variable changing, or whether the change was due to some other factor. Participant's may also find questions difficult to answer; may have poor recall of historical events; or they may be deceptive, for example, where tax minimisation or avoidance may be at issue.[64] Despite its limitations, surveys have consistently been used to study mining companies' and their executives' perceptions of mining jurisdictions, including mineral taxation. For example, surveys were developed by Johnson for the East West Centre in 1990[65] and have been used annually by the Fraser Institute to understand mining executives' perceptions of investment attractiveness.[66]

Questions were included that asked about company strategy, management objectives, impact of uncertainty and the importance of external factors on decision making as it related to a company's response to the different tax scenarios. The literature review highlighted how the theory of the firm can provide four areas to explain company behaviour through differences in: agenda, assets, organisational structure and information, as follows.

61 Joseph Check and Russell K. Schutt, *Research Methods in Education* (SAGE Publications Inc., 2012) 160 <http://methods.sagepub.com/book/research-methods-in-education>.

62 Priscilla Glasow, *Fundamentals of Survey Research Methodology* (No MP 05W0000077, Mitre, 2005) 28, 1–2.

63 Pamela L. Alreck, *The Survey Research Handbook* (McGraw-Hill/Irwin, 3rd ed, 2004) 6.

64 Ibid 102.

65 Charles J. Johnson, 'Ranking Countries for Minerals Exploration' (1990) 14(3) *Natural Resources Forum* 178.

66 Fraser Institute, 'Fraser Institute Annual Survey of Mining Companies', *Fraser Institute* <https://www.fraserinstitute.org/categories/mining>.

A *Differences in Agenda*

Drawing on transaction-cost theory of the firm and the behavioural theory of the firm, questions were developed to test whether there was evidence to suggest different agendas might exist between shareholders and management, reflecting the principal and agent problem. The survey asked about the respondent's perception of their employer's company strategy and whether it was focused on profit, sales, growth, costs or other measures such as employment. The survey also asked about whether performance-based remuneration was practiced by the company and whether this was tied back to corporate, group or individual goals to test the level of alignment of goals.

B *Differences in Assets*

Drawing on the resources-based view of the firm and the strategic theory of the firm, respondents were asked whether their responses to tax scenarios would change based on asset specific information, such as whether the mine was new or old, had a long or short mine-life or whether the mine was pivotal to the achievement of goals held by one or more internal stakeholder group. In the context of individual taxpayer compliance behaviour, the characteristics of the source of income have been identified as a variable that effects behaviour,[67] in the company context the nature of the asset from which income is derived is of potential interest. The questions focussed on whether the different assets of firms could explain any non-uniformity in survey responses.

C *Differences in Organisational Structure*

Drawing on the theory of growth of the firm and evolutionary theory of the firm, the survey included questions on whether different institutional arrangements, learning processes and managerial expertise, built up over a company's history, could lead to different responses in the survey. Respondents were asked about their company's approach to learning from other organisations, or competitors, and whether they engaged in benchmarking. Respondents were asked about the degree of internationalisation of the company in general and the executive, in particular, to see whether exposure to different business climates and multi-national presence could explain differences in a company's response to tax scenarios. Respondents were also asked how important company culture was in decision making in order to examine whether any parallels exist with the importance of ethics in the individual taxpayer context.[68]

D *Differences in Information*

Drawing on the behavioural theory of the firm, the survey included questions on whether information asymmetry, external volatility or the degree of uncertainty present could explain different outcomes. The tax scenarios embedded uncertainty in the form of introducing commodity price increases and investment incentives alongside tax changes to compare how this effected the survey results.

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[67] Richardson and Sawyer (n 6) 47.

[68] Ibid 148.

E *Survey Participants and Administration*

The survey questionnaire was developed in early 2020 and pilot tested in May 2020. Pilot or 'pre-testing' was needed to identify ambiguous, difficult of multiple interpretations of questions.[69] A formal ethics approval process was initiated and approval granted. The surveys were sent by email to more than 600 senior executives and mining industry bodies in Australia and a selection of mineral dependent countries in the Asia-Pacific (Laos, Indonesia and Papua New Guinea). Participants were recruited via email or social media from executives that had work history with major mining operations in target countries. The survey was translated into Lao and Indonesian. Some participants and industry organisations provided contact details of other potential participants or distributed through their networks. Professional industry bodies were used to increase coverage.

The survey comprised 29 closed questions and two open questions, where participants could provide extended or free form responses. A copy of the survey questions can be found in Appendix A. The survey received more than 200 responses and a response rate of 33% from those contacted, slightly higher than average for studies on taxpayer compliance behaviour.[70] Alreck recommends that the minimum number of responses required in a survey of this nature is between 100 and 300.[71] The response rate achieved is considered to meet the quantum requirements for a representative sample.

TABLE 1: CHARACTERISTICS AND EXPERIENCE OF RESPONDENTS

	RESPONDENTS	PERCENTAGE (%)
GENDER		
Male	182	85
Female	32	15
Total	214	100
EDUCATION		
Secondary	12	6
Undergraduate	72	34
Postgraduate	129	61
Total	214	100
INTERNATIONAL EXPERIENCE		
None	17	8
1-3 Years	12	6
3-5 Years	9	4
5+ Years	176	82
Total	214	100
CURRENTLY EMPLOYED AS AN EXPATRIATE/DOMESTIC		
Expatriate	82	38
Domestic	103	48
Not in Role	29	14
Total	214	100

69 P. Visser, J. Krosnick and P. Lavrakas, 'Survey Research' in *Handbook of Research Methods in Social and Personality Psychology* (Cambridge University Press, 2000) 223, 241.

70 Richardson and Sawyer (n 6) 225.

71 Alreck (n 64) 63.

CURRENTLY WORKING FOR MULTINATIONAL/DOMESTIC		
Multinational	170	81
Domestic	39	19
Total	209	100

The background of the respondents was also examined to see whether they met the target seniority and experience levels usually associated with senior mining roles involved in decision making. Table 1 shows respondents were highly educated with 129 holding postgraduate qualifications and a further 72 undergraduate degrees. Respondents also had significant international experience, with 82% having more than five years outside their home jurisdiction and experience in multiple countries. Data was also collected on the respondent's occupation and current role. Most respondents described their role as being as an executive or manager (54%). A number of respondents described their current role as a consultant or advisor (22%) to resources companies. Other technical leads, such as lawyers, senior engineers and principal geologists, that may not directly manage others but are involved in strategic decision making, were also strongly represented.

The responses of domestic and international respondents were analysed using multivariate regression analysis to examine whether there were any statistically significant differences. No statistically significant relationship was established. The high level of international mobility and interchange of the executive cohort between countries may explain the lack of differentiation between domestic and international respondents. The lack of significant differences between these groups supports treating domestic and international responses as drawn from a similar mining executive population. Overall, the respondents exhibited many of the qualitative traits that would be expected of an executive cohort.

5 *Analysis*

Survey data was analysed using IBM SPSS software. The data was analysed using descriptive statistics and multivariate stepwise regression.[72] Open question responses were analysed through a coding process using Nvivo software to identify patterns within the responses.

[72] Multivariate step wise regression analysis refers to statistical techniques that measure the degree to which the change in one or more variables is linearly related to the change in another variable. Regression analysis was used to test whether variable information such as gender, education, profession or other variables gathered from survey participants were explanatory of the mining executives' responses. The variables were chosen because of their value in the individual taxpayer compliance literature. A finding that one of these variables was significant in the way executives viewed company behaviour would have been valuable. However, no statistically significant variables resulted from the regression analysis. Importantly for this study, company behaviour appears from these results to follow factors other than those that may have a bearing on how individual executives approach taxation.

IV Results

In the main tax scenario, participants were asked: 'How would your company respond to an increase in mineral taxation rates?' While there was a trend towards reducing investment and exploration, the response was not uniform and the largest number of responses said they would only do so 'about half of the time'.

Table 2: Percentage of Respondents Reducing Investment and/or Exploration

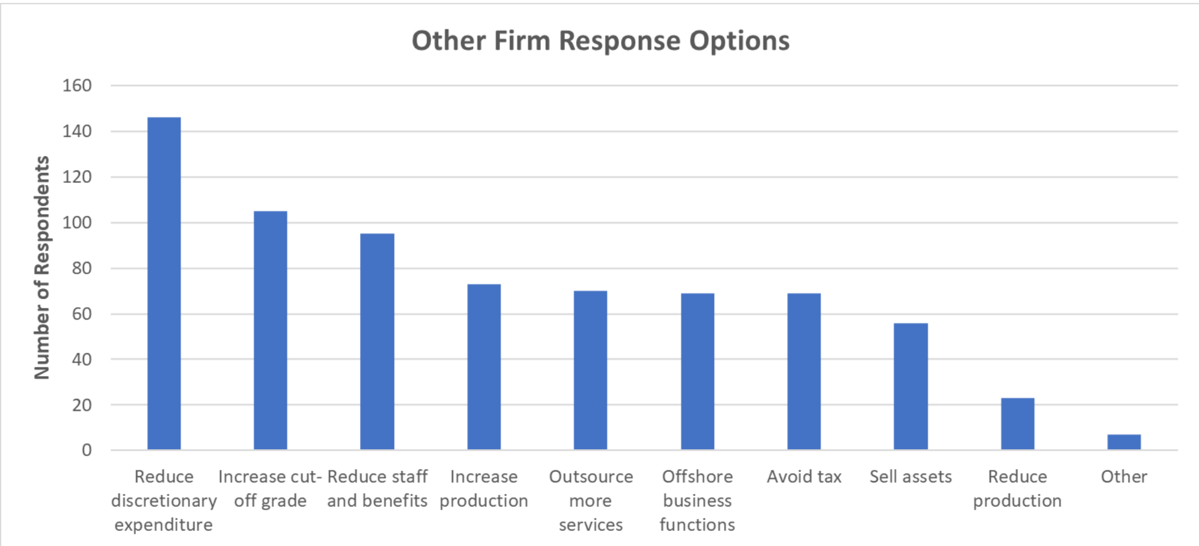
	Never	Almost Never	About Half the Time	Most of the Time	Always
Reduce Investment	6%	18%	40%	33%	3%
Reduce Exploration	6%	22%	34%	33%	5%
Total					**100%**

Table 2 shows that in response to a tax increase only 36% said they would mostly or always reduce investment and 38% responded that they would reduce exploration.

The data supports the view that while some executives would reduce investment and exploration, the decision-making process is complex and it provides space for the factors highlighted by the theory of the firm to explain points of departure.

A follow-up question was asked of respondents in relation to this tax increase scenario where they were also asked 'How else would you expect mining companies to respond to an increase in mineral taxation?' Figure 1 shows that, 65% of respondents indicated their company would reduce discretionary expenditure in response to a mineral taxation increase. If cutting costs was an available option prior to the tax change, an economically rational assumption would be that cost cutting should occur regardless of intervening factors. The responses potentially reveal the existence of unrealised potential or spare capacity in the companies, possible evidence of enduring non-optimising behaviour.

Figure 1: Frequency Range of Company Responses to Mineral Taxation Increases



In the next tax scenario, the aim was to test the effect of changes in commodity prices on mining company behaviour. Survey respondents were asked 'If commodity prices were increasing, how would you expect mining companies to respond to an increase in taxation rates?'

TABLE 3: PERCENTAGE OF RESPONDENTS REDUCING INVESTMENT AND/OR EXPLORATION AFTER TAX AND COMMODITY PRICE INCREASES

	NEVER	ALMOST NEVER	ABOUT HALF THE TIME	MOST OF THE TIME	ALWAYS
REDUCE INVESTMENT	10%	48%	32%	10%	1%
REDUCE EXPLORATION	11%	46%	29%	13%	1%
TOTAL					**100%**

Table 3 shows only 11% of respondents said they would reduce investment and 14% would reduce exploration, either most of the time or always. This means that for the respondents to the survey, any negative effects on investment or exploration from tax increases are almost completely offset by a rising commodity price environment, even when the quantum of such a rise is not specified.

After commodity price, respondents were asked about a range of other factors that could impact the way an executive would respond to a mineral taxation increase. Respondents were asked to rate 'What factors may change the way you would expect a mining [company] to respond to an increase in mineral taxation?' Respondents were asked to rate whether a factor would be material from 'never' to 'always' with the middle outcome being 'about half the time.' The middle outcome had a score of three on the Likert scale used.

TABLE 4: FACTORS THAT MAY AFFECT COMPANY RESPONSE

FACTOR	RANK	MEAN
Mine is a core asset	1	4.07
Mine newly commissioned	2	3.87
Mine nearing closure	3	3.52
Shareholding structure	4	3.38
Executive Remuneration	5	3.33
Mine is a non-core asset	6	2.95

The responses in Table 4 indicate that if the mine was a core asset or newly commissioned, this may also lead to a change in the way the executive would respond. The responses imply that core assets are not as likely to see reductions in investment and exploration from a mineral taxation increase than other assets. A mine nearing closure was also seen as a potential factor for changing the way a respondent answered the question. Reducing investment and exploration for a mine nearing closure could bring forward substantial closure costs.

Respondents were then asked to consider a scenario where a tax decrease or incentives were offered in the mining sector.

TABLE 5: PERCENTAGE OF RESPONDENTS INCREASING INVESTMENT AND/OR EXPLORATION AFTER TAX DECREASE

	NEVER	ALMOST NEVER	ABOUT HALF THE TIME	MOST OF THE TIME	ALWAYS
INCREASE INVESTMENT	4%	6%	22%	58%	12%
INCREASE EXPLORATION	2%	5%	21%	60%	13%
TOTAL					**100%**

Table 5 shows respondents were far more certain of what they would do in response to tax incentives or a tax decrease rather than a tax increase, 69% or respondents said they would increase investment; and 72% said they would increase exploration 'most of the time' or 'always.' Potentially, this differing approach to positive and negative changes supports similar findings from earlier research, which suggests people approach outcomes differently when they are framed as losses or windfalls.[73]

Respondents were also asked an open question: 'In a hypothetical country, the government announces that it will be increasing taxes on the mining sector. If you were the executive responsible for responding to the proposed changes, what would you do?' The open question allowed respondents to highlight other aspects of the decision-making process surrounding company response to tax changes. The open responses were coded using Nvivo software and the results are shown in Table 6.

TABLE 6: SURVEY QUESTION ON HYPOTHETICAL SCENARIO

CODE	SUB-CODE	RESPONSES	EXAMPLE
1. Lobby	1.1 Lobby (general)	117	'Regardless, argue against change'
	1.2 Emphasise impacts	40	'Document the long-term investment, employment and broader economic impacts of the tax increases.'
	1.3 Build coalitions	33	'Look for multiple mining operators & band together to provide a general front against increases.'
	1.4 Seek exemption	30	'Review the mining lease agreement and determine a course of action to mitigate potential losses.'
	1.5 Outline benefits	8	'Outline the significant benefits already received'
2. Minimise impact	2.1 Minimise impact (general)	56	'Restructure finances and operations to minimise the additional tax'
3. Reduce Investment	3.1 Reduce investment (general)	16	'Consider reducing activity levels (exploration, investment)'
	3.2 Exit jurisdiction	9	'If the increase is substantial, reconsider jurisdiction to move elsewhere.'
4. Reduce Exploration	4.1 Reduce exploration (general)	5	'Very likely to impact on exploration investment'

[73] Daniel Kahneman and Amos Tversky, 'Prospect Theory: An Analysis of Decision under Risk' (1979) 47(2) *Econometrica* 263; In the individual taxpayer compliance literature, Prospect Theory has been used to examine possible differences in behaviour between taxpayers who expect to receive a refund or are required to pay: Richardson and Sawyer (n 6) 214.

5. Comply	5.1 Comply (general)	8	'Increasing taxes doesn't equate to a negative as long as it is reasonable.'

Notes: # denotes number of references in open coded responses.

The free-form responses broadly confirmed the quantitative data gathered in the response to the scenarios. There was a strong hierarchy of response favouring lobbying as the immediate action, followed by impact mitigation measures and then consideration of reduction in investment and exploration, including in severe cases divestment and a company exiting the jurisdiction. However, the strength of response diminished substantially from initial actions to longer term actions, involving more substantial decisions, such as exiting the jurisdiction. The wording also became less certain with the increased frequency of qualifiers such as 'review' and 'consider.'

The second open question focused on the most important considerations for the company in shaping its response to a mineral taxation change. The coding is shown in Table 7.

TABLE 7: CONSIDERATIONS SHAPING COMPANY RESPONSE CODED IN NVIVO

CODE	SUB-CODE	RESPONSES	EXAMPLE
1. Strategic asset/country	1.1 Strategic asset or country (general	19	'Importance of country to its portfolio'
	1.2 Life-of-mine	23	'Life of mine'
	1.3 Country risk	12	'Country stability and track record regarding the minerals sector compared to other countries with similar mineral potential'
	1.4 International Competitiveness	25	'Comparison with competing jurisdictions'
2. Stakeholder relations	2.1 Stakeholder relations (general)	43	'Relationships with government and community'
	2.2 Share price/investor relations	8	'Investor reaction to increases'
	2.3 How tax will be used	15	'Fairness and longevity. Is the deal and tax paid fundamentally fair or not?'
3. Impact	3.1 Financial performance	71	'Significance of the impact it will have on revenue and cash flow for the business as a whole.'
	3.2 Magnitude of change	11	'Exit strategies if the change is material enough that proves reward is too close to risk.'
	3.3 Ability to walk back	12	'Can we offset this tax with seeking reductions in costs in other areas?'
4. Future prospects	4.1 Views on the company's future prospects	22	'Investment, production and exploration outlook'

Notes: # denotes number of references in open coded responses.

The responses Table 7 highlight the complexity of the task on executives and companies in determining the long-term response to a mineral taxation change. The responses show the interaction of company strategy, international competitiveness and calculations about the economic future. The responses go some way to explaining factors that may change how companies respond and why there is only weak support in the survey for the proposition that mining companies respond to a tax increase by reducing investment and exploration.

V ANALYSIS

The survey results show that a company's response to mineral taxation changes is complex and cannot be reduced to a binary profit maximising outcome such that if taxes increase company investment and exploration will fall. The results suggest that the theory of the firm can provide insights into why one company may respond quite differently in the same situation based on the different agendas, assets, organisation and information available to the company and its decision makers.

A *Differences in Agenda*

The survey responses reveal potential differences in agenda that may explain the varied responses from executives to tax changes. The evidence for differences in agenda derives from the reluctance of respondents to reduce investment and exploration, the potential existence of spare capacity to absorb changes and concern by executives about how their actions will be perceived by others. The theory of the firm suggests executives are preoccupied by growth and expansion due to the increase in opportunities this provides executives.[74] This may explain the reluctance to reduce growth by cutting investment. Respondents to the survey also appear to be concerned about how their actions will be perceived, by investors, stakeholders and governments.[75] Concern for reputation may affect an executive's performance based remuneration, future employability and promotion prospects.[76] The theory of the firm also suggests management can engage in satisficing rather than optimisation behaviour and the use of spare capacity can contribute to a more comfortable existence for managers where the pressure to perform at the margin is reduced.[77]

B *Differences in Assets*

The survey responses show that the differences in assets that a mining company has may influence how the company responds to tax changes. Strategic assets that provide or contribute to a company's sustainable competitive advantage are less susceptible to tax increases because their value to the company is greater than viewing the asset in isolation. Strategic assets may be new mines with long time horizons, a mine with large margins that have an ability to remain profitable after changes, or a mine that generates knowledge or training opportunities that provides benefits beyond the asset itself. The

[74] Olivier Weinstein, 'Managerial Theories: Baumol and Marris' (Edward Elgar Publishing, 2012) 92.

[75] Brian J. Loasby, 'Management Economics and the Theory of the Firm' (1967) 15(3) *The Journal of Industrial Economics* 165, 170.

[76] Robin Marris, *The Economic Theory of Managerial Capitalism* (Macmillan, 1967) 47.

[77] Loasby (n 76) 176.

theory of the firm recognises companies as having asset heterogeneity[78] and the conditions for recognising when an asset may be strategic[79] and company response may change as a result.[80]

C *Differences in Organisational Structure*

The survey results indicate that companies have different abilities to influence their external environment and face different levels of competition and other forces that may limit or expand the ways in which a company can respond to tax changes. The theory of the firm divides the company into its technical and institutional components. The institutional capability of an organisation can differ in the same way one company's assets can differ to another.[81] The theory of the firm can explain the strategic options available to a company, how the options differ to others in the same sector and how these forces influence the development of a company.[82] For example, the theory of the firm can explain survey respondents focus on lobbying to remove the tax in the open question responses perhaps to achieve an 'easier life' and avoid the impact.[83] Companies with large operations, significant impact on the national economy and ability to lobby senior government members may have different responses to tax changes than others.

D *Differences in Information*

The theory of the firm can explain the reluctance of executives to reduce investment and exploration in response to tax increases in terms of the complexity and uncertainty of the decision facing executives.[84] The survey respondents identify uncertainty around the impact of the tax, the relative international competitiveness of the country, the direction of commodity prices and the longevity of the changes. In response to uncertainty and information search, the theory of the firm suggests that firms are not going to seek all information but enough to make a decision,[85] are likely to satisfice rather than optimise[86] and opt to wait and see before making large decisions with long term implications.[87]

78 S. A. Lippman and R. P. Rumelt, 'Uncertain Imitability: An Analysis of Interfirm Differences in Efficiency under Competition' (1982) 13(2) *The Bell Journal of Economics* 418, 418.

79 Barney (n 42) 105–106; as described in Foss and Stieglitz (n 47) 258.

80 Michael E. Porter, 'Towards a Dynamic Theory of Strategy' (1991) 12(S2) *Strategic Management Journal* 95, 106.

81 Ibid 102.

82 Ibid 106.

83 Holmstrom and Tirole (n 33) 88.

84 Dixon (n 40) 257.

85 March and Cyert (n 58); Nelson and Winter (n 56) 171.

86 Loasby (n 76) 176.

87 Dixon (n 40) 257.

VI Significance and Conclusion

The mining sector has particular importance to mineral dependent economies and understanding taxpayer compliance behaviour is important to understanding revenue flows from the sector. The theory of the firm is one theory that has been used by economists to understand company behaviour. Surveying mining executives about how they and their company would respond to mineral taxation changes has shown that company response is not simply to reduce or increase investment as taxes rise or fall but instead the response is complex and not uniform. The survey results show that almost as many mining executives would increase investment if mineral taxation increased as world reduce it. Factors that could change the way an executive responded to the question included increases or decreases in commodity prices, whether there was capacity in the company to reduce costs and whether the asset was high margin or was strategic to the company's future. The survey also revealed that company response would firstly consist of lobbying against any unfavourable changes, then looking at ways to mitigate the impact of any change and, only when these avenues were exhausted, looking to reduce investment and exploration.

The theory of the firm provided four areas that could explain differences in response. These areas were differences in agendas, assets, organisational structure and information. The survey demonstrated that the theory of the firm could assist in understanding taxpayer compliance behaviour in the mining sector and is significant for applying the theory of the firm to company taxpayer compliance behaviour.

The field of individual taxpayer compliance behaviour has been extensively studied and the understanding of the variables that contribute to compliance outcomes has progressed significantly as a result. Further work is needed to understand the changes in variables when moving from individual to company taxpayers if knowledge in this area is to become as sophisticated as that of individual taxpayer compliance behaviour. This research is the result of a focus on one industrial sector and respondents were largely drawn from the Asia Pacific region, further work would be needed to ensure the findings are relevant outside of the mining sector and the jurisdictional reach increased in order to validate that the findings are of general relevance to understanding company taxpayer compliance behaviour.

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APPENDIX A

SURVEY ON MINING COMPANY RESPONSE TO MINERAL TAXATION CHANGES

Q1 *Do you identify as male or female?*

(1) Male (2) Female (3) Other

Q2 *Please describe the highest education level you have obtained.*

(1) Primary (2) Secondary (High School) (3) Undergraduate Degree (4) Postgraduate Degree

Q3 *Are you currently in a role that is domestic only (national role) or expatriate?*

(1) Domestic (National) (2) Expatriate (3) Not currently in a role

Q4 *Please describe your level of international work experience*

(1) None (2) 1-3 years (3) 3-5 years (4) 5 years+

Q5 *Which mining regions are you familiar with?* (You can select multiple regions)

(1) Australia (2) Africa (3) Asia (4) North America (5) South America (6) Europe

Q6 *Have you ever worked in these countries?* (You can select multiple countries)

(1) Australia (2) Indonesia (3) Lao PDR (Laos) (4) Papua New Guinea (5) None of These

Q7 *Which mining country are you most familiar with?*

(1) Australia (2) Indonesia (3) Lao PDR (Laos) (4) Papua New Guinea (5) Other

Q8 *Please select which profession best describes your qualifications*

(1) Geologist (2) Engineer (3) Accountant (4) Trade (5) Lawyer (6) Management (7) Other

Q9 *What category best describes your current role?*

(1) Operator (2) Supervisor (3) Superintendent (4) Manager (5) Executive (6) Consultant (7) Other

Q10 *What, if any, professional bodies are you a member of?* (Select all that apply)

(1) AusIMM (2) CPA/CA (3) Engineers Australia (4) Law Society (State) (5) Geological Society of Australia (6) Australian Institute of Company Directors (7) Society for Mining, Metallurgy and Exploration (8) Other (9) None

Q11 *Where do you get most of your information from about developments in the mining industry?* (You can select multiple options)

(1) Professional Bodies (2) Corporate Intranet (3) Industry Media (Mining News etc) (4) Internet - Online (5) Colleagues (6) Professional Training Courses (7) Other

Q12 *For the company where you are currently or formerly employed, does the company only operate in one country or is it multinational?*

(1) Domestic (One Country Only) (2) Multinational

Q13 *For the company where you are currently or formerly employed, what is the main commodity focus?* (if the focus is evenly split you may select more than one)

(1) Gold (2) Copper (3) Other base metals (lead, zinc, nickel etc) (4) Bulk metals (iron ore, bauxite etc) (5) Bulk energy (oil, gas and coal) (6) Industry (non-mining) (7) Not applicable

Q14 *For the company where you are currently or formerly employed, which professional bodies is the company a member* (You can select multiple memberships)

(1) ICMM - International Council on Mining and Metals (2) MCA – Minerals Council of Australia (3) EITI – Extractive Industries Transparency Initiative (4) Local Chamber of Mines (5) None of these

Q15 *Mining companies have different strategies. In your view, rank the importance from 1 to 6 these elements of strategy for the company where you are currently or formerly employed*

(1) Profit Maximisation (2) Production maximisation (3) Growth maximisation (4) Cost minimisation (5) Social benefit maximisation (6) Employment maximisation

Q16 *If the company you are currently or formerly employed, has performance-based remuneration, what form does it take?*

(1) No performance-based remuneration (2) Individual performance – bonus linked to satisfaction of individual goals (3) Group performance – bonus linked to satisfaction of group or section goals (4) Company performance – bonus linked to company performance (5) A mixture of individual, group and company performance

Q17 *The company where you are employed or formerly employed has a structured and dedicated approach to benchmarking i.e. learning from competitors. To what extent do you agree with this statement.*

(1) Strongly agree (2) Somewhat agree (3) Neither agree nor disagree (4) Somewhat disagree (5) Strongly disagree

Q18 *From the list below, rank the biggest challenges facing the mining sector at present?*

(1) Access to capital (2) Social licence to operate (3) Environmental issues (Climate Change) (4) Mineral Taxation (5) Commodity prices (6) Regulatory delays (7) Other

Q19 *In the country you are most familiar working in, what is your view of the taxes (corporate taxes, royalties etc) paid by mining companies when compared to other countries?*

(1) Far above average (2) Somewhat above average (3) Average (4) Somewhat below average (5) Far below average

Q20 *In the country you are most familiar working in, are you aware of whether mineral taxation has increased in the last 10 years?*

(1) Yes (2) Maybe (3) No

Q21 *How did or would your company respond to an increase in mineral taxation rates?*

(1) Increase Investment (2) Increase Exploration (3) Reduce Investment (4) Reduce Exploration (5) Cut Costs (6) Lobby Government (7) No Change (8) Other. Rank from (1) Never (2) Almost Never (3) About Half the Time (5) Most of the Time (6) Always

Q22 *If commodity prices were also increasing, how would you expect mining companies to respond to an increase in taxation rates?*

(1) Increase Investment (2) Increase Exploration (3) Reduce Investment (4) Reduce Exploration (5) Cut Costs (6) Lobby Government (7) No Change (8) Other. Rank from (1) Never (2) Almost Never (3) About Half the Time (5) Most of the Time (6) Always

Q23 *What factors may change the way you would expect a mining company to respond to an increase in mineral taxation?*

(1) Mine is nearing closure (2) Mine is newly commissioned (3) Mine is a core asset (4) Mine is a non-core asset (5) Executive remuneration targets tied to production (6) Shareholding structure i.e. state-owned or stock exchange listed. Rank from (1) Never (2) Almost Never (3) About Half the Time (5) Most of the Time (6) Always

Q24 *How else would you expect mining firms to respond to an increase in mineral taxation?* (Mark all that apply)

(1) Increase cut-off grade i.e. high grade (2) Increase production (3) Reduce production (4) Reduce discretionary expenditure (5) Reduce staff and benefits (6) Outsource more services (7) Offshore business functions (8) Sell assets (9) Avoid tax (10) Other

Q25 *How did or would your company respond to a DECREASE in mineral taxation rates?*

(1) Increase Investment (2) Increase Exploration (3) Reduce Investment (4) Reduce Exploration (5) Cut Costs (6) Lobby Government (7) No Change (8) Other

Rank from (1) Never (2) Almost Never (3) About Half the Time (5) Most of the Time (6) Always

Q26 *How important do you believe Corporate Social Responsibility (CSR) and reputation factors are to determining how a company responds to mineral taxation changes?*

(1) Extremely important (2) Very important (3) Moderately important (4) Slightly important (5) Not at all important

Q27 *How important do you believe environmental issues (e.g. mine closure, land disturbance or climate change) are to determining how a company responds to mineral taxation changes?*

(1) Extremely important (2) Very important (3) Moderately important (4) Slightly important (5) Not at all important

Q28 *How important do you believe corporate culture to determining how a company responds to mineral taxation changes?*

(1) Extremely important (2) Very important (3) Moderately important (4) Slightly important (5) Not at all important

Q29 *How important do you believe government relations i.e. politics is to determining how a company responds to mineral taxation changes?*

(1) Extremely important (2) Very important (3) Moderately important (4) Slightly important (5) Not at all important

Q30 *In a hypothetical country, the government announces that it will be increasing taxes on the mining sector. If you were the executive responsible for responding to the proposed changes, what would you do?*

Q31 *What are the considerations that you think are the most important for a company determining how it will respond to mineral taxation?*