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Fiscal policy incentives for minerals exploration: what South Africa can learn from the Canadian experience.

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A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration.

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ABSTRACT

South Africa has a long history of mineral resource exploitation. As a result of accelerated economic growth in emerging markets in the last decade, the demand for metals and minerals has grown rapidly. Several countries have profited from this demand-supply imbalance while others have lagged behind. This research investigates the factors affecting this situation with the objective of making recommendations to improve the competitiveness of the South African minerals sector.

A literature review identifies the potential reasons from a firm and state perspective for specific mineral resource influenced countries thriving. These factors were explored further through a qualitative research process which sampled perceptions of relevant companies listed on the Toronto Stock Exchange. Emerging from this study and in support of the factors identified in the literature review was the importance of fiscal incentives. A quantitative study was then conducted to develop an understanding of the relationships between fiscal incentives and value (market capitalisation). The potential for the application of these methods to South Africa was then assessed.

The research identified the importance of an enabling environment to the sustained competitiveness of a minerals sector. Several key factors emerged, with specific reference to tax incentives for mineral exploration. A model of the interrelationship between entrepreneur, mineral resources and the role of the state was developed to provide guidance for policy makers. If implemented, this could catalyse the mineral exploration and subsequently the extractive industries in South Africa.

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I declare that I obtained the necessary authorisation and consent to carry out this research.

…… *Date: 13 November 2008*

William Morrell

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The research process proved to be engaging and challenging. It has been a thought-provoking learning experience that has stretched and developed personal skills and capabilities. It has helped me develop a thorough understanding of the factors that influence the decision-making process around equity raising in the minerals sector. This work would not have been possible with out the help and support of family, friends and the staff of the Gordon Institute of Business Science.

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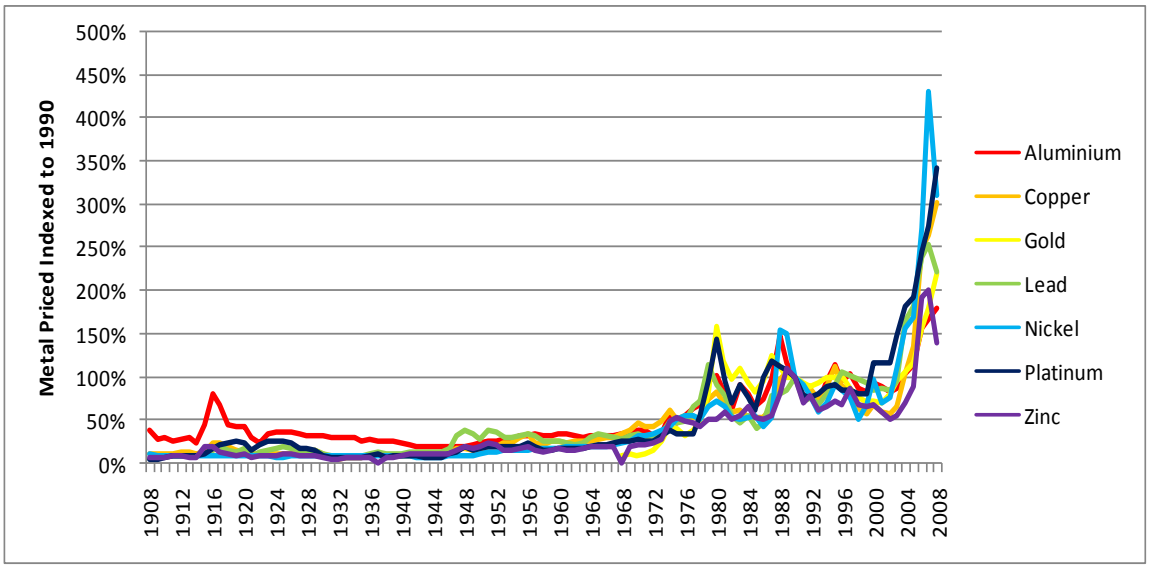
1.1 RESEARCH TITLE

Fiscal policy incentives for minerals Exploration: What South Africa can learn from the Canadian experience.

1.2 INTRODUCTION AND BACKGROUND TO THE PROBLEM

The influence of emerging economies on the world economy in the first decade of the twenty-first century has been significant. The contribution of these economies to global economic growth now surpasses that of the rich industrial countries (Bruggemans, 2008). The factors of production required to sustain this growth include the input of raw materials, incorporating minerals and metals. This has resulted in a material increase in commodity prices as a result of the demand for metals, as reflected in the price trends indicated since the beginning of the decade.

Figure 1: Historical Metal Prices



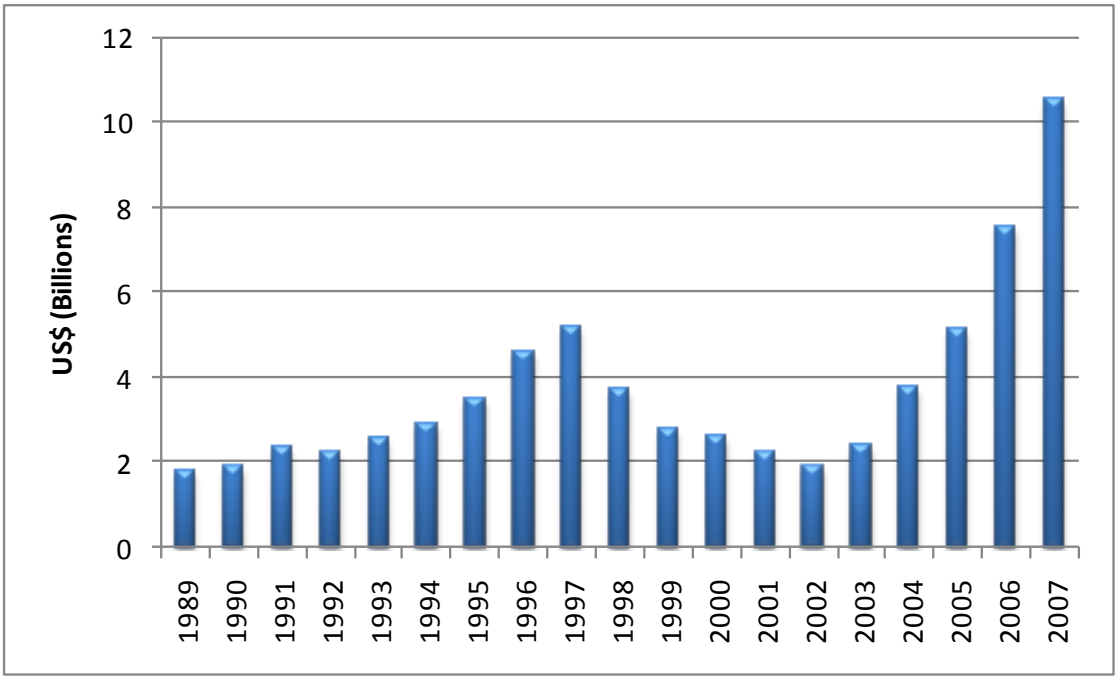
Source: United States Geological Survey website, 2008

Although metal prices remained suppressed for most of the 1990s, significant increases have been seen in most of the tracked metals from around 2004. Certain metals have significantly exceeded the annual averages shown here, with platinum reaching $2 250 per ounce (482% of its 1990 price) and gold attaining a record high of $1 031.80 per ounce in March 2008, (268% of its 1990 price). In turn, the apparent supply-demand imbalance that has led to these price increases has spurred a rapid increase in the amount of exploration and mining activity.

The nature of the minerals industry, like many primary industries, is influenced by the locality of the resource. This effectively forces investments to pursue resources according to locality. Exploration companies will therefore tend to be domiciled according to various factors, as discussed in Section 5.1, not only the location of the resource.

The levels of exploration activity (Figure 2) are indicative of the market's aspirations to identify and develop new sources of mineral production. This phase of the minerals value chain precedes the evaluation, development and production phases required to benefit from the potential windfall profits (Natural Resources Canada, 2007).

Figure 2: Estimated Total Worldwide Exploration Budgets, 1989-2007



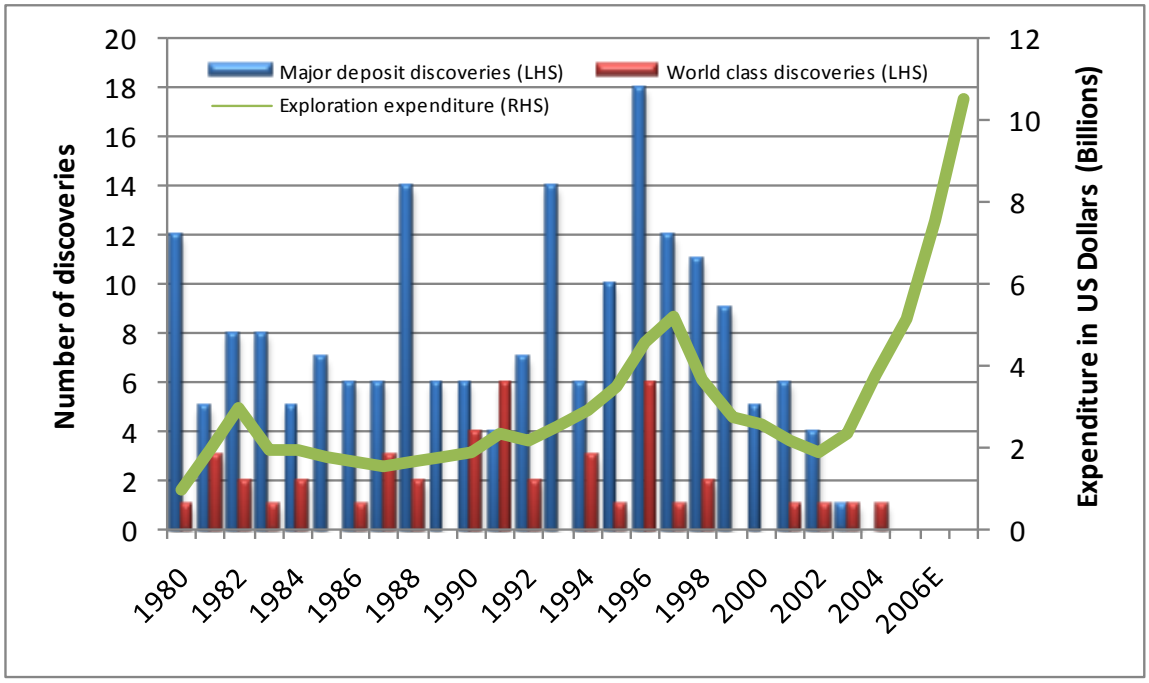
Source: Metals Economics Group, 2008, p1

Competition to identify and lay claim to the best mineral resource deposits is intense. This is becoming increasingly challenging. Ericsson (2008) attributes the decrease in new findings to three main reasons, namely:

1. Companies have to venture to more remote areas to find new deposits.
2. New discoveries are following a decreasing ore grade trend.
3. The most readily identifiable ore bodies, namely those closest to surface, have already been found.

Although the data in Figure 3 is dated, the relationship between exploration expenditure and major deposit discoveries is evident.

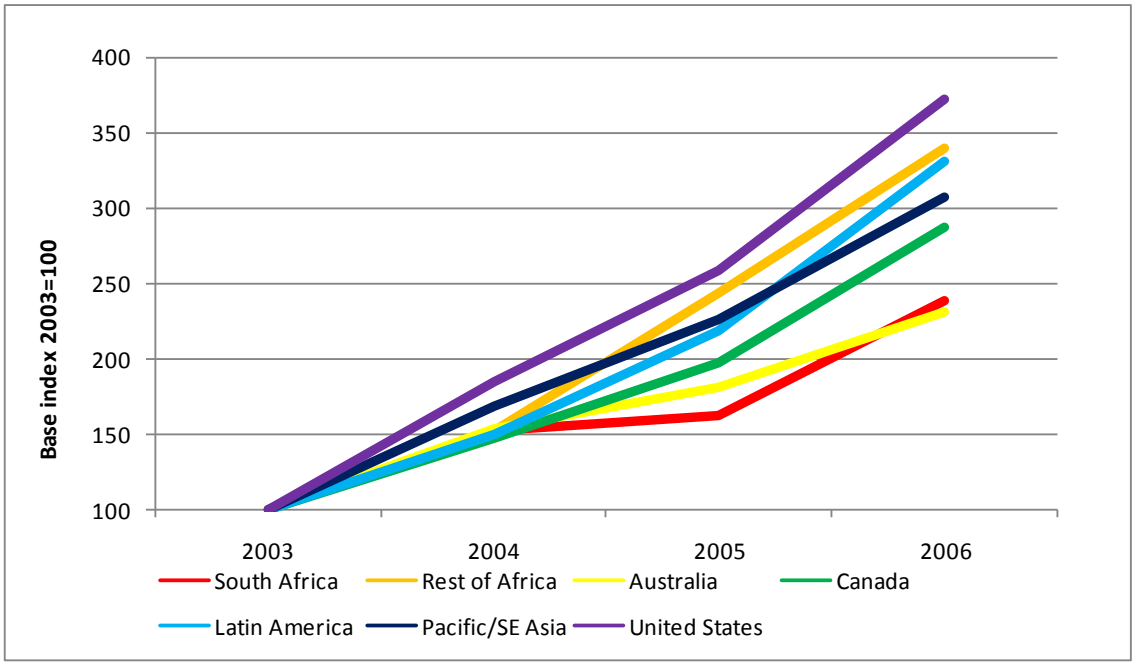
Figure 3. [illegible] Expenditure



Source: Ericsson, 2008, p7

Competition is not only distinguishable at a firm level, but at a country level. Some countries have been more active in exploring for new opportunities than others, as indicated in Figure 4.

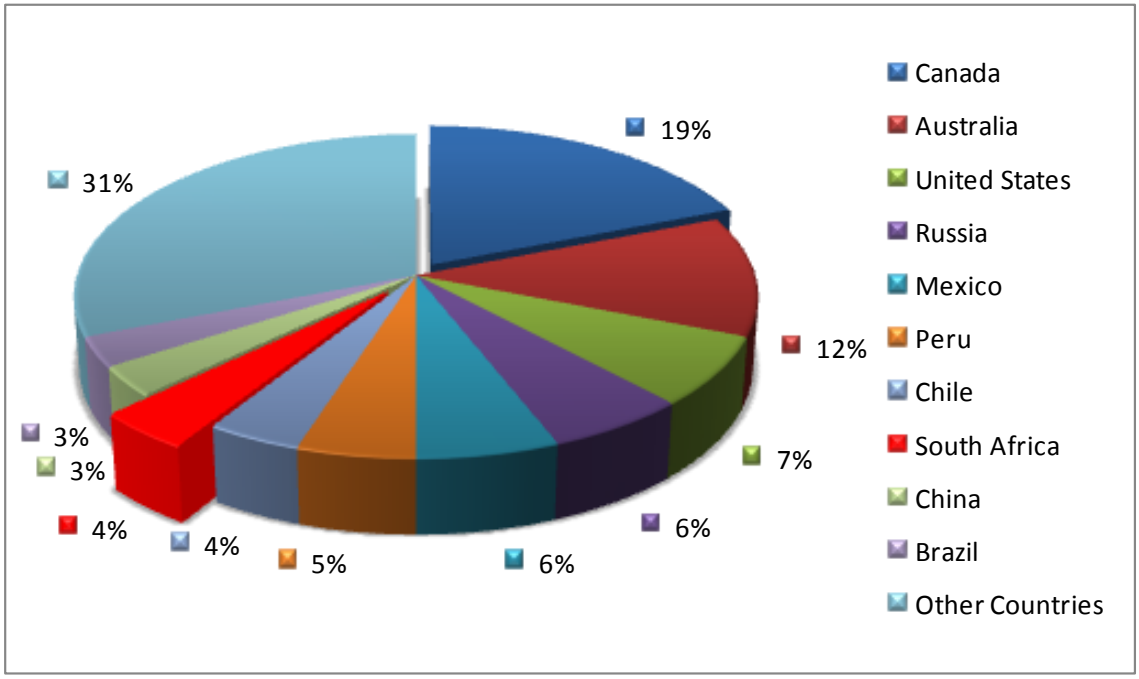
Figure 4: Exploration Expenditures per Region



Source: Minerals Economics Group, 2008, p3

The regions with the greatest increase in expenditure, with the exception of the United States, are developing economies. South Africa has traditionally been included in this category for economic analysis, but is shown to be lagging competitor countries and regions in exploration expenditure growth rate.

Figure 5: Share of 2007 Exploration Spend $9.99 Billion

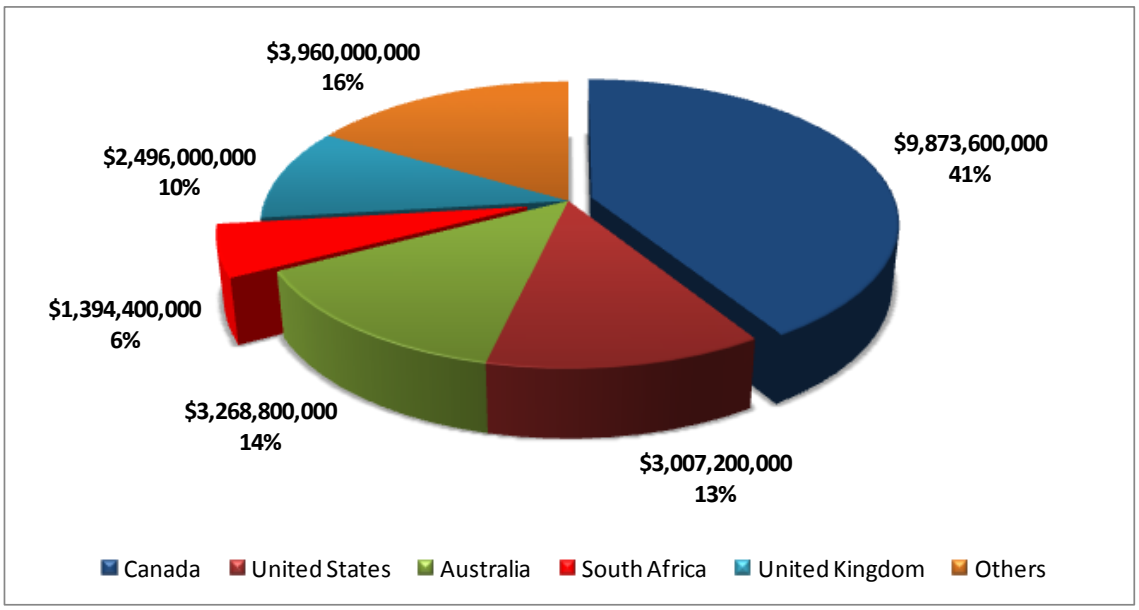


Source: Metals Economics Group, 2008, p3

In Figure 5, Canada is shown to have exceeded its next closest rival, Australia, by 42% and has exploration expenditure almost five times that of South Africa.

Owing to the inherently risky nature of mineral exploration, obtaining funding can be difficult. Many exploration companies tend to be focused juniors with few, if any, productive assets. A significant portion of exploration expenditure is therefore raised through equity. Between 1998 and 2002, $24 billion was raised globally through public equity. The geographic distribution of this equity raising activity is indicated in Figure 6.

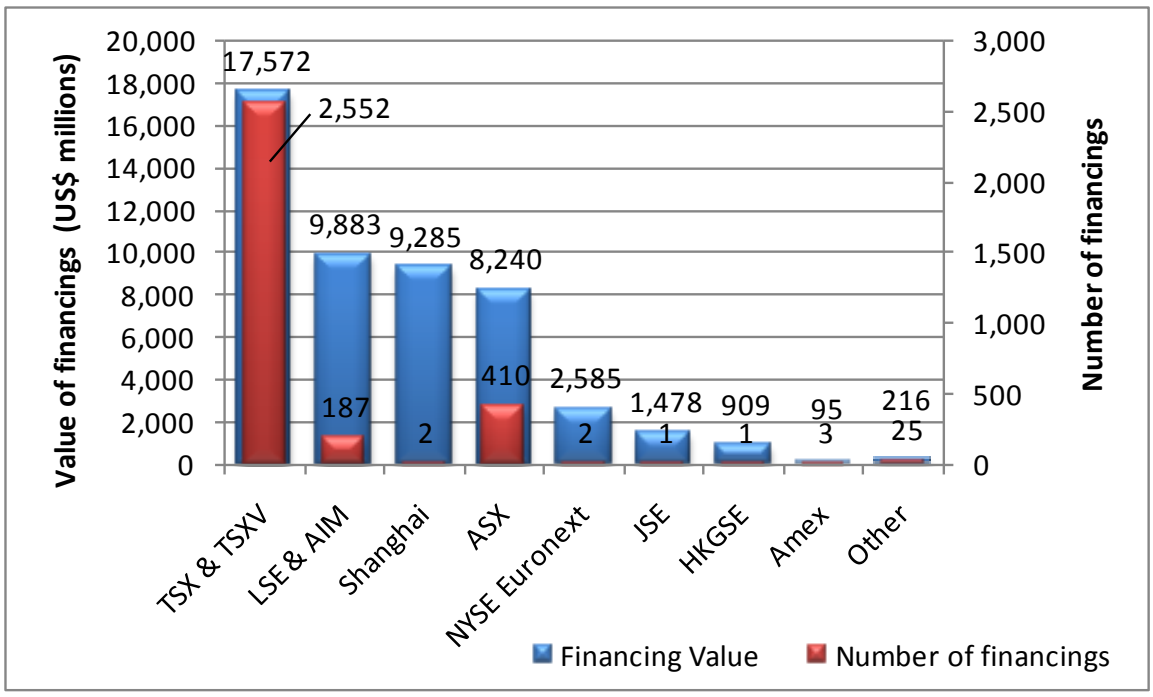
Figure 6: Sources of Equity Financing for Global Mineral Exploration and Development



Source: Clark, 2004, p3

In support of the volume of equity finance raised, a representation of the global distribution of equity raising per stock exchange and the number of listings is also relevant. This is shown in Figure 7.

Figure 7: Mining Financing Locations for 2007

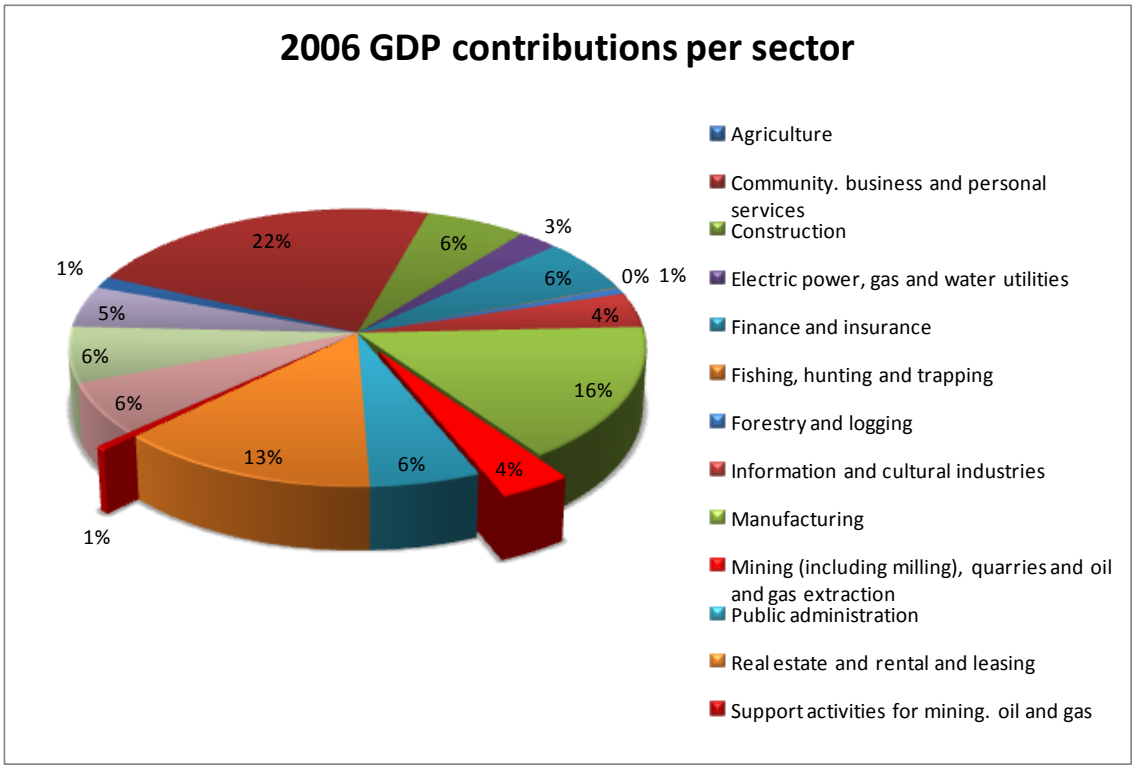


Source: TSX Group 2008, p11

Canada, represented through the Toronto Stock Exchange (TSX) and Toronto Stock Exchange Ventures (TSX-V), shows considerably more activity than any other exchange. This can be identified in the relative market capitalisation rates of various equity exchanges depicted in Figure 19: Various Bourse Mining Indices Normalised and Inflation Adjusted to 17 February 2000). This shows that the TSX has grown significantly faster in relative terms than both the Johannesburg Securities Exchange (JSX) and Financial Times Stock Exchange (FTSE). TSX mining company market capitalisation has grown 4.5 times faster than the JSE J177 mining index, six times faster than the JSX junior mining and exploration index and 3.7 times faster than the FTSE index. Canada's resource sector behaviour is evidently different from that of the rest of the world.

The rationale behind Canadian exploration expenditure is made evident by analysing the contribution of the industry to the economy. The minerals industry is a significant contributor to the Canadian economy, as shown by the analysis of contributing sectors to the Gross Domestic Product (GDP). Canada's GDP for 2006 was 1 193 billion Canadian Dollars.

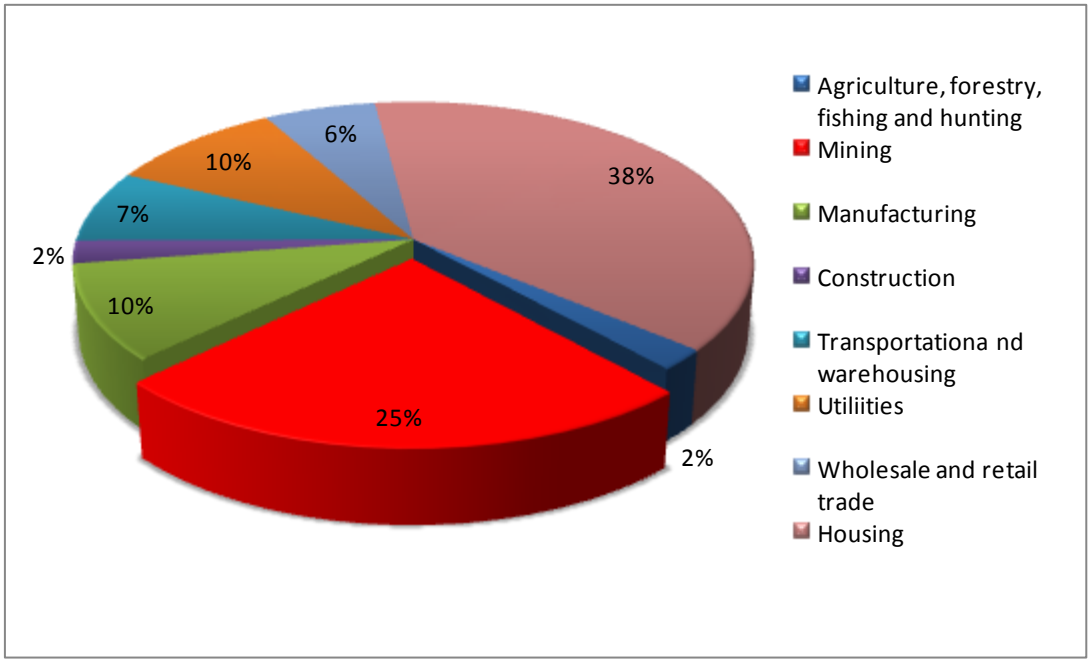
Figure 8: Canadian Sector Contribution to GDP



Source: Statistics Canada website, 2008

The industry contributed 5% directly to the economy, but indirectly drove activity in several other sectors, for example, in the construction industry. This is supported by an analysis of capital expenditure in Canada for 2007, as depicted in Figure 9.

Figure 9: Canadian Capital Expenditure for 2007

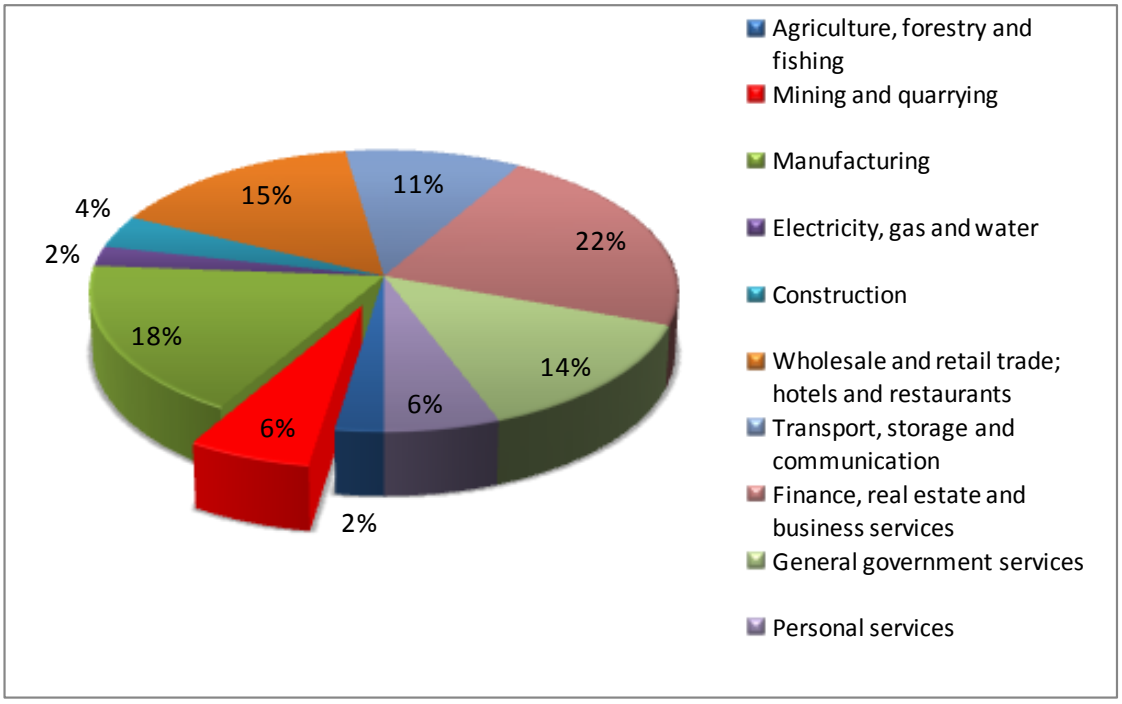


Source: Statistics Canada website, 2008

Canada has evidently achieved a commanding position in the global resource industry through active mineral exploration. This position has been beneficial to the Canadian economy.

South Africa by comparison, has lagged Canada in developing resources, in both absolute value and rate of increase, albeit that the minerals industry is a significant contributor to the economy. An analysis of the sectoral contribution to the South African GDP for 2007 (Figure 10) indicates a similar contribution from the mining industry to that of Canada.

Figure 10: Sector Contribution to South African GDP for 2007



Source: Statistics South Africa website, 2008

Canada and South Africa share several similarities with regard to their mineral sectors. However there are also significant differences in the economies. The United States Dollar (USD) equivalent value for the 2007 Canadian GDP was 814 billion. South Africa's was 160 billion, approximately a fifth of the size. The

relative size of the two industries' GDP contribution and exploration expenditure is proportionally equivalent, however the increasing difference in rate of exploration expenditure will lead to a resultant difference in sector growth rate, as the mineral extraction industry is based on a depleting and finite resource.

This paper therefore investigates the differences in exploration expenditure and mineral sector value between South Africa and the world leader, Canada and what some of the contributing factors may be.

1.3 RESEARCH PROBLEM

The Engineering and Mining Journal (2007, p52-56) published an article titled "African Mining, South Africa: Balancing Riches," stating that "South Africa has clearly missed out on some of the benefits of the surge" in reference to the global commodities boom. This raises the question as to why the South African economy has not participated to the same degree as other countries in this windfall opportunity, given that it is a mineral resource influenced economy.

If South Africa is to take a leading position in the global resources industry, current trends will need to be addressed. One aspect to be dealt with is how to attract companies to South Africa as a potential source of capital. Noah Greenhill, the Senior General Manager: Marketing and Business Development of the JSX, has stated that (Mining Review Africa, 2006, p52):

> The reason that commodity-based mineral ventures go offshore to list on the Toronto Stock Exchange or London's AIM instead of ALT-X or the JSE itself is a matter of perceptions. Capital after all is neutral and seeks only a profit. One of the reasons is that while it is possible to raise capital in South Africa, it is harder than doing so overseas.

This describes the availability and liquidity of the South African investment market, which is regulated by the country's fiscal policies. There is also the aspect of a critical mass for the mining investment cluster. Ferron (2008) partly

attributes the TSX's success as a listing destination to the number of analysts and specialist support services, for example sponsors, available in Canada and Toronto specifically. Greenhill attributes this lack of critical mass to be one of the JSX's Alt-X greatest challenges stating the following (Mining Review Africa, 2006, p53):

> Mining shares will only get a following and have analysts and institutions looking at these companies if there are enough of them, and there will only be enough of them if they get the ratings that derive from being followed by many analysts and institutions.

These attributes suggest a cycle in which success builds on success. A marginal competitive advantage may therefore be sufficient to surpass other nations and build a self-sustaining lead.

In analysing what has made the most successful country in mineral resource sector's growth rate different, several aspects must be assessed. The Fraser Institute, an independent research and educational organisation whose mission is the measurement, study, and communication of the impact of competitive markets and government interventions on the welfare of individuals, has generated a comparative framework for nations and states in the minerals industry (McMahon and Vidler, 2008, p2). The 2007/2008 survey assessed 68 different countries and territories, including South Africa. The South African results are summarised in Table 1. A more detailed analysis is presented in Section 9.1 the Summarised Fraser Institute Survey Findings. This shows the top-ranked and comparable countries according to each criterion. Although the survey may be biased owing to its origin, several Canadian territories consistently achieve high rankings. Three Canadian territories are featured in the overall top 10, including the top performer, Québec.

Table 1: Fraser Institute Survey Rankings

	South Africa's Rank / 68
Policy potential index	50
Current mineral potential index	53
Best practices mineral potential index	41
Room for improvement	15
Uncertainty concerning the administration, interpretation and enforcement of existing regulations	52
Environmental regulations	26
Regulatory duplication and inconsistencies	50
Taxation regime	58
Uncertainty concerning native land claims	54
Uncertainty concerning which areas will be protected as wilderness areas or parks	32
Infrastructure	34
Socioeconomic agreements and community development conditions	55
Political stability	49
Labour regulations and employment agreements	64
Geological database	31
Security, including physical	56
Supply of labour and skills	33

Source: McMahon and Vidler, 2008, p10

South Africa's mediocre to poor performance in all categories except that of room for improvement, is concerning. Room for improvement identifies the gap between prospectivity for mineral resources, *ceteris paribus*, with all other countries. Another observation from this data is the ability to influence almost all of these categories through state intervention.

Canada has utilised state intervention to ensure an enabling environment for business, critical to the development of the economy (Goh, 2008). One of the incentives that has been utilised which separates them from all competing nations is the application of flow-through share incentives. These are fully described in Section 2.4, The History and Performance of Canadian Fiscal Incentives. The Metals Economics Group attributes the growth in Canadian

exploration activity to this superior incentive (Clark, 2004). A simple example of this scheme is described by the British Columbia Minister of State for Mining, Pat Bell (Ministry of Mines and Energy, 2004, p1):

> The net cost of a $1 000 investment in mining flow-through shares can be as low as $366. These super flow-through shares have been a major contributor to the dramatic increase in mining exploration around the province.

Canada therefore can be attributed with offering the lowest net exploration costs in the world (Natural Resources Canada, 2007). These incentives have not only primarily been to develop the mining industry, but have been used for targeting specific industry diversification needs. Forestry areas affected by the mountain pine beetle are offered an enhanced tax credit of 30% to diversify industries, including those into exploration and mining. The incentive is not short-lived, but available until the end of 2016 (Association for Mineral Exploration, British Columbia, 2007).

1.4 RESEARCH MOTIVATION

The South African mining sector directly employed 458 600 employees in 2006, an improvement of 3.3% over 2005. This can primarily be attributed to the growth in the platinum group metal sector. Mining accounted for 6.3% of total non-agricultural formal employment in the economy and 8.1% of total private sector non-agricultural employment (Statistics South Africa, 2008). The wages and salaries paid to mine employees contributed substantially to the economy and to the purchasing power of workers. The contribution to employment by the Canadian and South African minerals sectors is reviewed in Section 2.5. In a country challenged with poverty, unemployment and income disparity as described in the Accelerated and Shared Growth Initiative (ASGISA) (South African Presidency, 2006), such contributions to economic development are

crucial. The mining industry evidently provides an excellent opportunity, if correctly managed, to contribute towards the nation-building goals of ASGISA. However, the right preconditions for investment need to exist.

As exploration is the precursor to mining activity, these preconditions must directly address this link in the minerals value chain. Although global exploration expenditure increased 225% from 2003 to 2006, South Africa achieved only 138% growth. Encouragingly the growth in global exploration expenditures of 45% in 2006 was matched by South Africa's exploration numbers (Engineering and Mining Journal, 2007).

If South Africa had been able to emulate or even precede other countries in catalysing the mining exploration sector, significant socio-economic benefits would have accrued over the last five years. Parts of these catalysts evidently revolve around reducing the cost of investment capital through fiscal policy incentives. The TSX has “been built on the back of various forms of flow-through shares” and the Alternative Investment Market (AIM) in London “benefits from various capital gains tax and inheritance tax rebates” (Van der Merwe, 2007, p1). South Africa has not been able to leverage its locale in Africa and resident resource abundance, as displayed by its exploration spend being only one fifth of Canada’s as indicated in Figure 5.

1.5 RESEARCH AIM

This investigation is aimed at assessing the factors that have contributed to Canadian success, with specific attention to fiscal incentives, which could assist in developing a minerals resource development strategy for South Africa.

Questions have been identified in this chapter, namely:

1. Since 2004, the world's mineral resource industry has been booming. The anecdotal evidence is that South Africa has not kept pace. Is this assessment valid and, if so, why has South Africa not kept pace?
2. By contrast, Canada has been successful. There is evidence that Canada has been instrumental with fiscal policy incentive instruments. Are these differences material factors in explaining the observed differences in behaviour?
3. Significant funds have been raised in the global equity markets for the minerals industry, but South Africa doesn't feature as one of the leaders. What is the reason behind this?
4. There are evidently several factors that are important in attracting mineral industry investment. What initiatives can South Africa pursue to gain a competitive advantage?

This paper aims to demonstrate that there are actions that can be taken, with specific reference to fiscal incentives, to catalyse the South African minerals industry. Such evidence may be informative to government departments, such as: the Department of Minerals and Energy, the Department of Finance and the Treasury. If such methods are implemented, South Africa may once again become the minerals industry listing destination of choice.

1.6 RESEARCH SCOPE

In an attempt to address these questions, this research addresses the following aspects and their impacts:

1. How the Canadian flow-through incentives work.
2. How the Canadian exploration and mining industry has benefited from these incentives.

3. The fact that South Africa has not managed to keep pace with Canada in raising equity for mineral resource companies.
4. The opportunity for the exploration and mining industry in South Africa of adopting similar or improved incentives.

2 CHAPTER 2: THEORY AND LITERATURE REVIEW

The purpose of this chapter is to present an argument within academic and supporting literate to endorse the need for this research. To achieve this, various sources of literature are examined, including: fundamental economic literature on supply side incentives; economic literature on globalisation and country competitiveness; the history and performance of Canadian fiscal incentives, including flow-through shares; global expenditure on exploration and mining projects; historical capital formation data for exploration, mining and mining related companies on the TSX, TSX-V, JSX and Alt-X; periodical and newspaper commentary on minerals industry performance in Canada and South Africa; and South African academic literature.

2.1 FUNDAMENTAL ECONOMICS

In 1776, Adam Smith wrote on tax: “it may obstruct the industry of the people, and discourage them from...business” (Knopf, 1910, Book V, Chapter II, Part II). To this end, Smith rightfully identified taxation, currently studied under fiscal policy, as a potential disincentive, or conversely if managed correctly, stimulus, to economic development.

Lipsey and Chrystal (2004) state that government policies for influencing economic growth include: favourable tax treatment of savings, investment and capital gains, R&D tax incentives and funding assistance. Further they state that taxes can affect growth by altering incentives to either save, to work, or to take risks. These factors are associated with capital formation (raising of equity finance through listing) of mineral exploration activities, as in the truest sense, exploration is a research and development activity, enabling future output.

However, Easterly claims that there is no statistical association between the statutory tax rate and economic growth, either across time in the United States or across countries in the world. (Easterly, 2002)

Hall and Jorgensen (1967) demonstrated that as corporate tax rates increase, so does the cost of capital, decreasing the incentive to invest. Increases in a tax credit will increase the net present value of depreciation of a project's cash flow, lowering the cost of capital and providing an incentive to invest. Auerbach (1983) added a second component to this. If the incentive is likely to be temporary, it may encourage the firms to alter the timing of their capital investments. Hence investors may accelerate investments into the period over which the incentive is offered. Even modest reductions in the after-tax cost of capital purchases provide strong incentives for increased investment (House and Shapiro, 2008).

Edwin Phelps, the winner of the 2006 Nobel Prize for economics, evaluating taxation impacts, stated: "The Golden Rule of Accumulation holds that a constant returns to scale economy achieves its highest attainable consumption path when the profit rate is equal to the rate of accumulation of Capital." (Dimand, 2008, p.23). Incentives to invest are therefore important.

Feldstein (1986) commented that the factors that increased supply side output include: capital accumulation, technical progress, improvements in the quality of the labour force, freedom from regulatory interference, and increases in personal incentives. It is these personal incentives that form the basis of Canada's flow-through tax benefits. Feldstein goes further to discuss the switch from Keynesian economics to supply-side economics that took place during the

Thatcher and Reagan administrations, and the changed role of fiscal policy. In the extreme, the Laffer curve, illustrating tax elasticity, proposition was that a tax cut would actually increase tax revenue because it would unleash an enormously depressed supply of effort (Laffer and Moore, 2000).

Auerbach and Hasset (2002) noted three aspects of fiscal incentives in their research:

1. Investment policies may affect the economy but these have been traditionally poorly timed or, owing to the political system take, exceptionally long to come into affect.
2. Automatic stabilisers are effective but their impact is declining.
3. Uncertainty associated with varying investment policy may accelerate and raise investment.

This perspective was supported by House and Shapiro (2008) who indicated the converse to be true, that is, in a temporarily high taxation environment, firms that would have normally invested, delay their investment until the tax rate returns to normal. Summers (1981) argued that policies may be used to focus investment and savings into plant and equipment, rather than general savings. This is owing to the high elasticity of supply of funds to the investment sector and that only a fraction of general savings may make its way into corporate capital. Savings may preferentially be channelled into bidding up the price of inelastic assets such as land and housing. The most desirable invest incentives are those that effectively reduce the purchase price of new capital. Caution must however be taken to ensure that tax incentives are not inflationary as this reduces the benefit of capital investment

The value and timing proposition are supported by Hall and Jorgensen (1967). They demonstrated that tax policy is highly effective in changing the level and timing of investment expenditures and that such incentives may alter the focus of investment within an economy from structures to equipment and *vice versa*.

There is a counter argument to the effectiveness of capital directed tax incentives. Desai and Goolsbee (2004, p320) noted:

> The depreciation allowance and partial expensing changes, directly reduced the tax term under either view of the dividend tax and should have stimulated investment. Their apparent failure to do so has led some to argue that tax policy is not effective. Our estimates suggest that these incentives do work as they are designed, but that their magnitude is simply too small to counteract the aggregate trend. Our results show that the dividend tax cut, despite its high revenue cost had minimal, if any, impact on marginal investment incentives.

In general this line of argument supports the use of fiscal policy to invest in plant and equipment as an effective stimulus to the economy.

2.2 EXAMPLES OF FISCAL INCENTIVES

Several current examples of fiscal policies are available.

In the case of China, collaboration has been established between the Ministry of Science and Technology, Ministry of Finance and the State administration of Taxation to develop the Administrative rule on Verification of High-Technology Enterprises. The incentive provides a reduced income tax rate of 15% if the investment is based in a special economic zone, conducts production in the same location and meets four technical requirements: products and services comply to defined scope, continually performs research and development and owns its own intellectual property, is registered in China and has more than one year of history (Wei, 2008).

In the case of Switzerland, Wuthrich (2008) argues that one of the most important aspects of locating an enterprise, next to infrastructure, is the taxation environment. Tax incentives therefore have a significant impact on destination choices. Switzerland introduced a Canton (regional) based tax incentive plan in 2008. This type of mechanism had been used successfully before to stimulate diversification away from watch making in the 1970s. The current mechanism makes use of a two tier, Federal and Canton, based incentive. Necessities for incentives are based on investment value, job creation, local value add, innovation, volume of goods and service demand created and cooperation with research and education institutes (Wuthrich, 2008).

In the case of Australia, tax incentives have been used to catalyse research and development since 1985. In 2007 this was extended to try and attract international investors' research and development spend into Australia. Research and development expenses are fully tax deductable. (Wilson, 2008) Newcrest's Ridgeway Deeps block-cave mining project was classified in its entirety as a research and development project to understand and develop the technology and processes required for its Cadia East project (Logan, 2006).

In the case of Argentina, fiscal incentives have been used to accelerate hydrocarbon exploration. These incentives primarily targeted the systems around Value Added Tax to expedite refunds but also addressed relief from minimal notional income tax, accelerated depreciation and exemption from import duties (Edelstein and Rodríguez, 2006).

2.3 ECONOMIC LITERATURE ON GLOBALISATION AND COUNTRY COMPETITIVENESS.

Several statistical publications have been used to identify trends within the minerals industry. The Statistics South Africa, Statistics Canada and Natural Resources Canada on line data facilities and report archives have all provided significant information into the performance of the minerals sectors for these countries.

The Fraser Institute survey has been utilised to qualitatively compare potential extraneous factors which may impact on listing destinations.

The Metals Economics Group, an American research organisation, conducts in-depth analysis of various aspects of the minerals industry. Where available, this information has been used to investigate exploration expenditure.

2.4 THE HISTORY AND PERFORMANCE OF CANADIAN FISCAL INCENTIVES.

Several articles have been written in finance and trade journals, such as the 2002 article by Chouinard, where he describes the incentives offered to minerals exploration activities by the Québec and Ontario governments of Canada. There is a long history of the use of fiscal policy in Canada, as shown in Table 2.

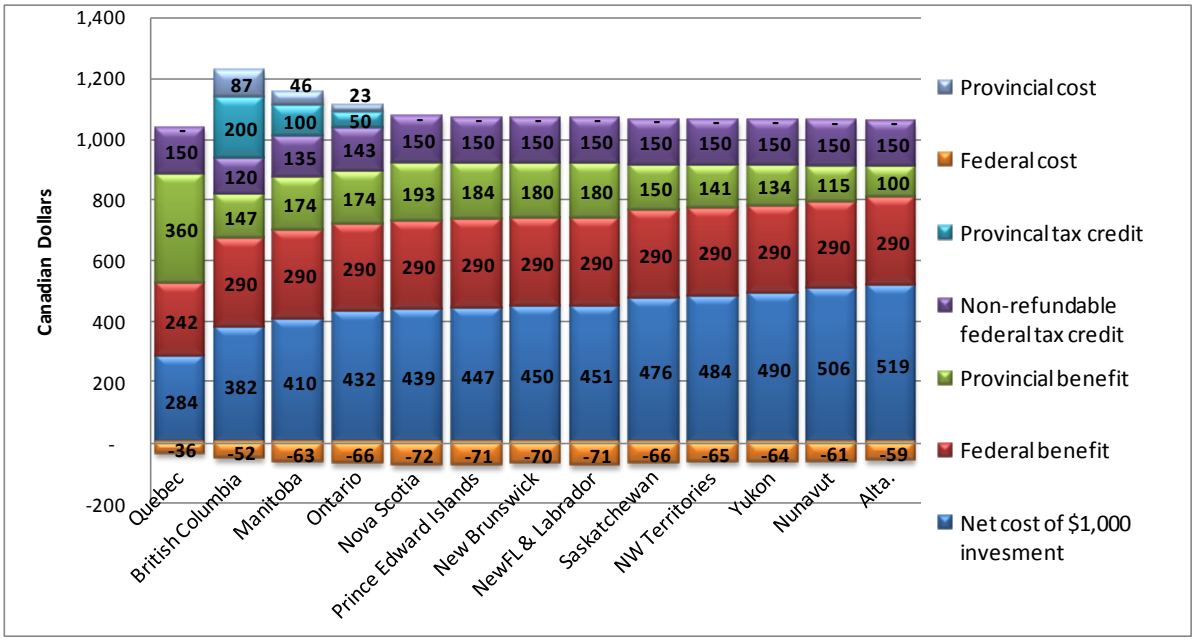
Table 2: History of Flow-Through Share Mechanism and Related Incentives in Income Tax Acts

Year	Tax Policy
1954	ITA allows mining and oil and gas companies to deduct expenses incurred in exchange for shares of another company
1972	Tax Reform –New definition of exploration expenses. Individuals can deduct at 20 percent per annum on a declining balance
1974	Rate of deduction increased to 30 percent
1976	Rate of deduction increased to 100 percent
1981	Proceeds of sale of flow-through shares could be taxed as capital gain
1983	Mining Exploration Depletion Allowance (MEDA) 33 1/3 percent deduction added to 100 percent Deduction
1985	$100 000 Lifetime Capital Gains Exemption (1985 to 1994)
1989	30 percent grant program. Canadian Exploration Incentive Program (CEIP)
1996	Extension of spending period to one year (Look back rule)
2000	15 percent Investment Tax Credit for Exploration (ITCE)

Source: Clark, 2007, p12

Canada has utilised tax incentives to address specific requirements, such as areas previously utilised for forestry which have been decimated by Mountain Pine Beetle, offering a 30% tax credit for mineral exploration activities (AME of British Columbia, 2007). These tax incentives, called flow-through or super flow-through shares, are a type of common share which allows a company that often does not have income from production against which to claim tax deductions, to transfer the tax deduction opportunity to investors who can use them to reduce their personal taxable income (Clark, 2004, p2). Figure 11 shows the benefits and final costs of an equivalent C$1 000 investment in a qualifying investment company to the individual investor. This has enabled Canada's junior exploration industry to flourish by obtaining capital where they do not have a current income.

Figure 11: Flow-throug... Share Benefits to Investors from CAD 1 000



Source: Clark, 2004, p16

In support of this cost analysis, the Prospectors and Developers Association of Canadian (PDAC, 2007, p1) president, Patricia Dillon, states that:

> There is a general consensus that the METC (Mineral Exploration Tax Credit) has helped Canada capture and maintain its position as the number one country in the world for mineral exploration spending.

There are two basic types of flow-through shares namely regular shares where a 100% deduction write-off for exploration (net of federal and provincial credits) is allowed and a super flow-through share where an additional 15% federal tax credits for grassroots exploration is allowed. The deductions and tax credits apply only to eligible expenditures in the applicable province and territory and are only available to taxpayers residing within the jurisdiction where the exploration is taking place. The combination of these benefits has resulted in Canada enjoying one of the lowest net exploration costs in the world, owing to reduced tax burdens and effective cost of capital (Natural Resources Canada 2007). Similar to the Swiss tax credit system, policy is applied at a federal and regional level.

Québec offers additional tax credits under the Taxation Act. A tax credit for resources (CIRR) was introduced in 2001 which provides direct assistance to mining companies that incur eligible exploration expenses in Québec. This aspect is different to the flow-through-share regime in which companies give up the right to deduct eligible expenses to an investor. Part of this tax credit is refundable and part is non-refundable. This mechanism expired at the end of 2007. The deductable amounts differed according to area, with the highest allowable deductible portion, 38.75% for the Near North, down to 18.75% for the Far North (Canadian Intergovernmental Working Group, 2007, p67).

The Manitoba Minerals Exploration Credit (MMETC) was introduced by the Government of Manitoba in April 2002 to promote investment in Manitoba-based exploration projects. The MMETC is a 10% non-refundable personal income tax credit for investors in eligible flow-through shares of qualifying mineral exploration companies and can only be applied against Manitoba tax payable. In addition, the MMETC parallels and tops up the 15% federal exploration tax credit (Canadian Intergovernmental Working Group 2007).

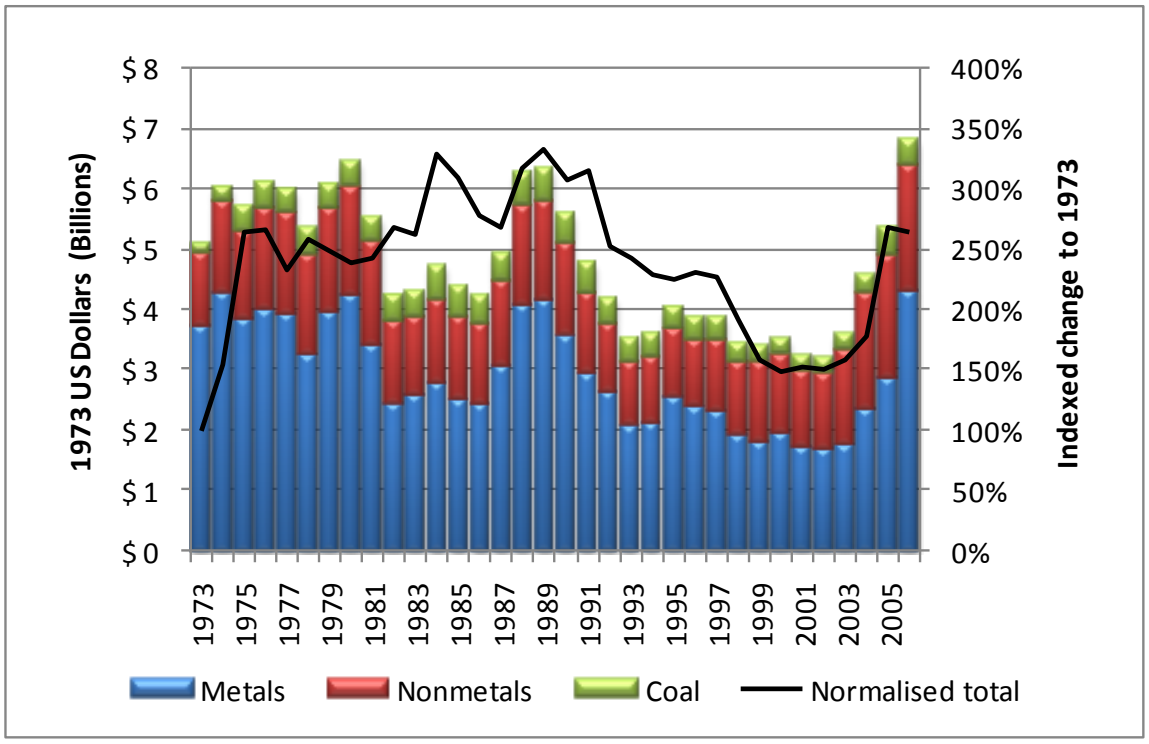
These integrated approaches between various state and federal agencies indicate a level of sophistication and farsightedness not duplicated in mineral legislation in other parts of the world.

2.5 GLOBAL EXPENDITURE ON EXPLORATION AND MINING PROJECTS.

As stated earlier, a successful mining industry is reliant on the results of a successful exploration industry. The Minerals Economic Group (PDAC, 2008), Statistics Canada and Natural Resources Canada provide detailed cost

information on mineral resource activity and expenditure. Figure 12 indicates the recent increase in minerals output into the Canadian economy.

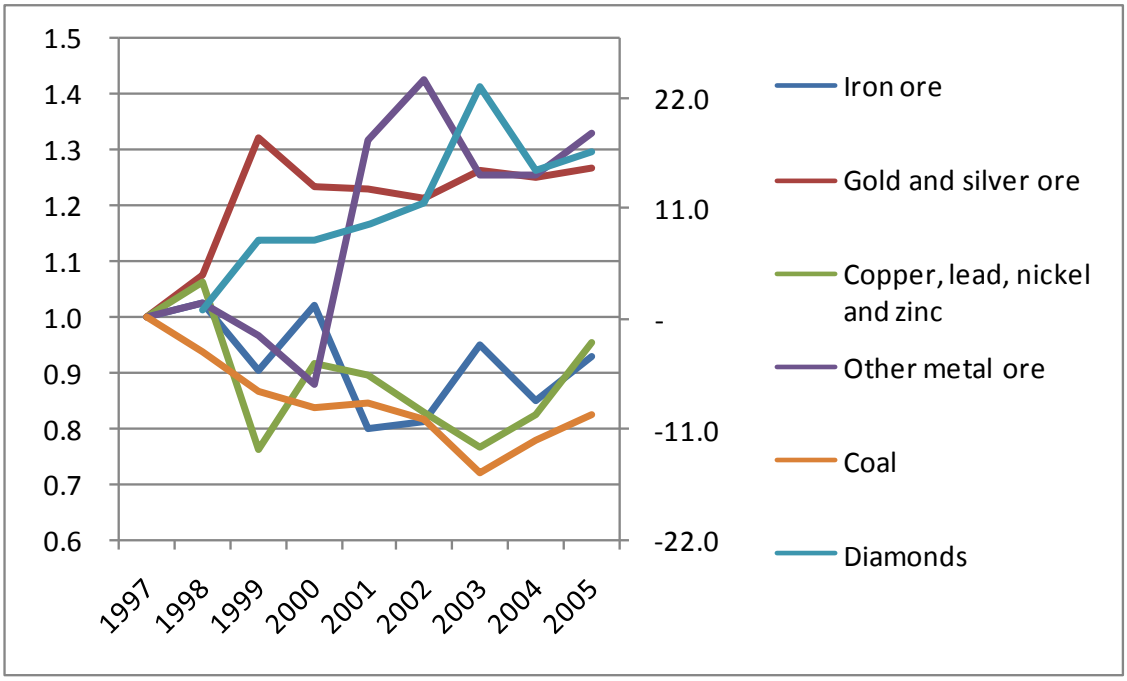
Figure 12: Canadian Mineral Sales



Source: Bouchard, 2006, p5

Although sales have increased dramatically, this is partly owing to the rapid changes in minerals prices. An alternative view of output is that of mineral production. Figure 13 shows the volume of mineral output (indexed to 1997, except for diamonds indexed to 1998).

Figure 13: Canadian M...1997

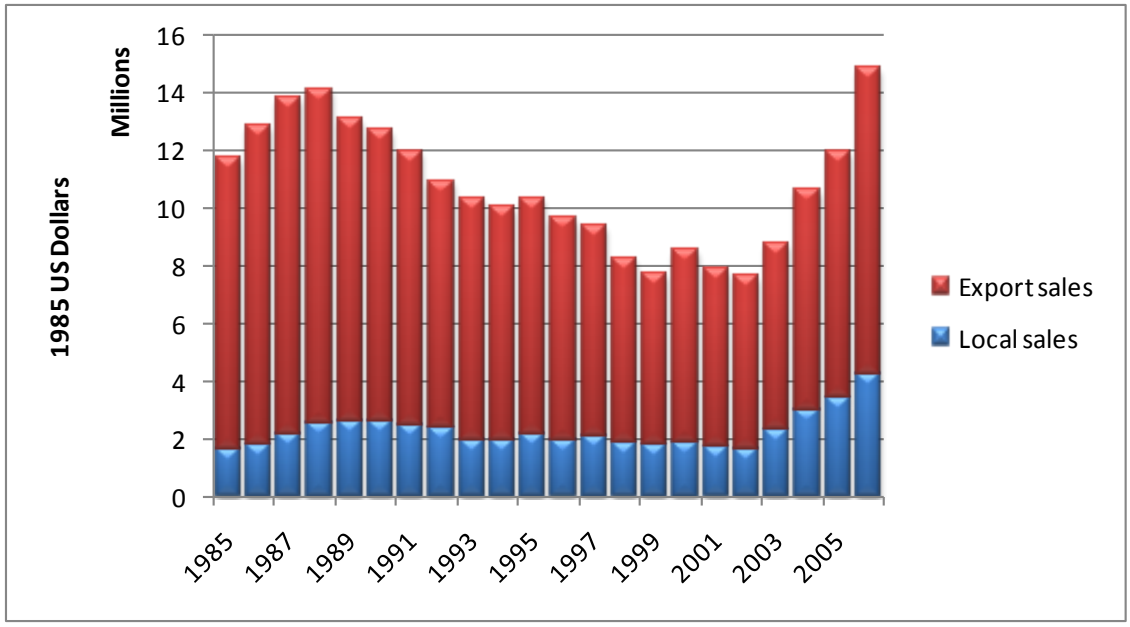


Source: Bouchard, 2006, p28

This indicates that only gold, silver, diamonds and a category termed other metal ore, have increased. Diamonds have increased almost 16 fold since 1998 while the other growth output metals have increased by approximately 30%. Iron, copper and coal, the major industrial minerals have in fact been on a declining trend until 2003.

The South African mineral output value has seen similar increases, although was not as variable as the Canadian trend during the late 1980s, as indicated in Figure 14.

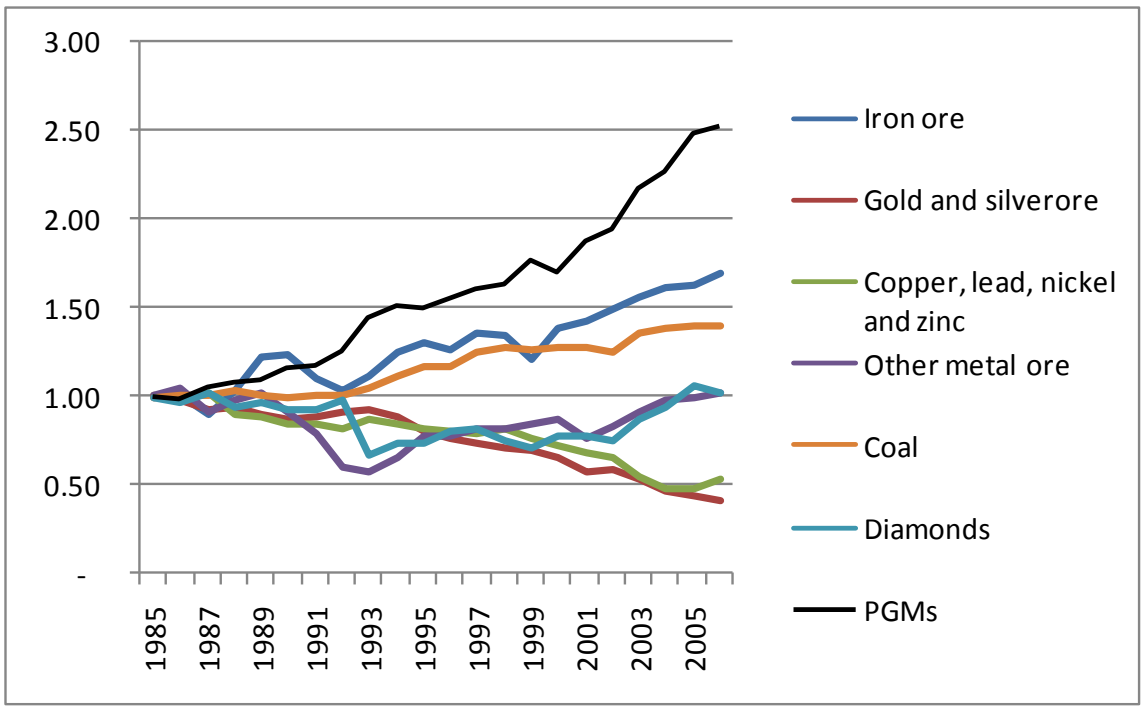
Figure 14: South Africa: Mineral Sales



Source: Statistics South Africa website, 2008

Although the value of South African mineral exports has increased significantly, representation of the volume of mineral production yields a mixed result, as represented in Figure 15.

Figure 15: South African Mineral Production Volume Indexed To 1985

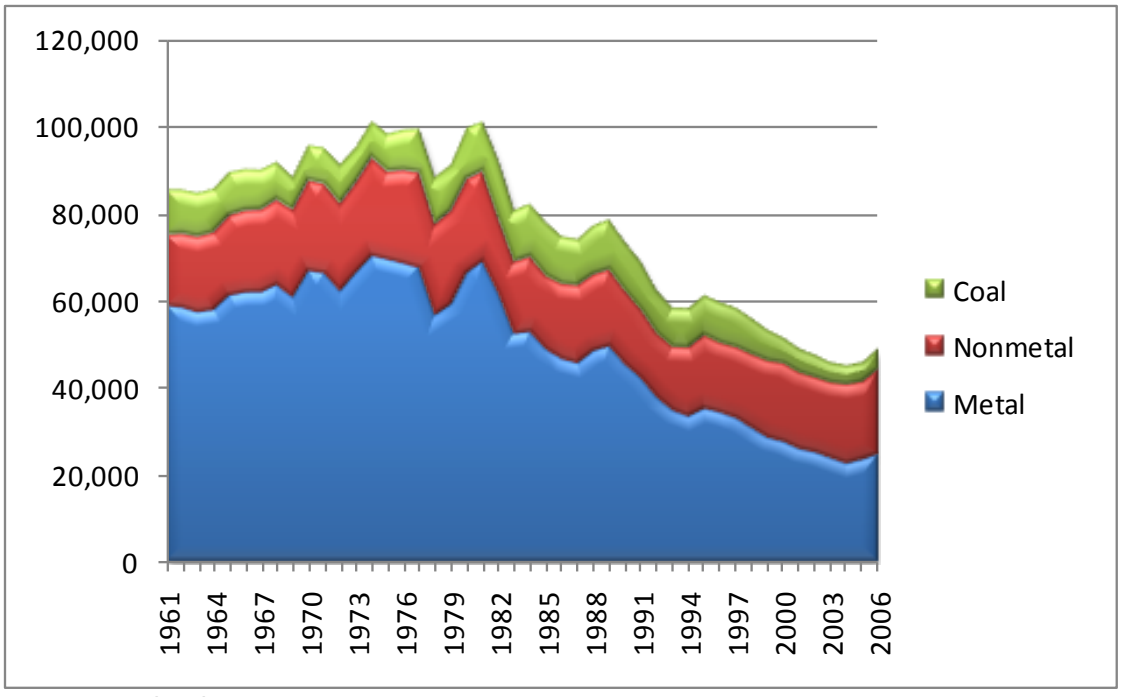


Source: Department Of Minerals and Energy website, 2008

This indicates that only a few of the significant foreign exchange earning mineral products have increased, including the most significant growth sector, platinum group metals (PGMs); coal and iron ore. The remaining minerals have generally reduced in volume output.

Of further interest is how this increased sales value has translated into direct employment opportunities. Figure 16 indicates that there has been a long term decline in the employment opportunities within the Canadian mining industry. This trend has reversed recently, but not to the same degree as the level of output. This would indicate an increasing level of mechanisation and use of capital equipment. The skills required to manufacture, operate and maintain this type of equipment are superior to those of labour intensive production and indicate a move towards a more highly-skilled and knowledge-based industry.

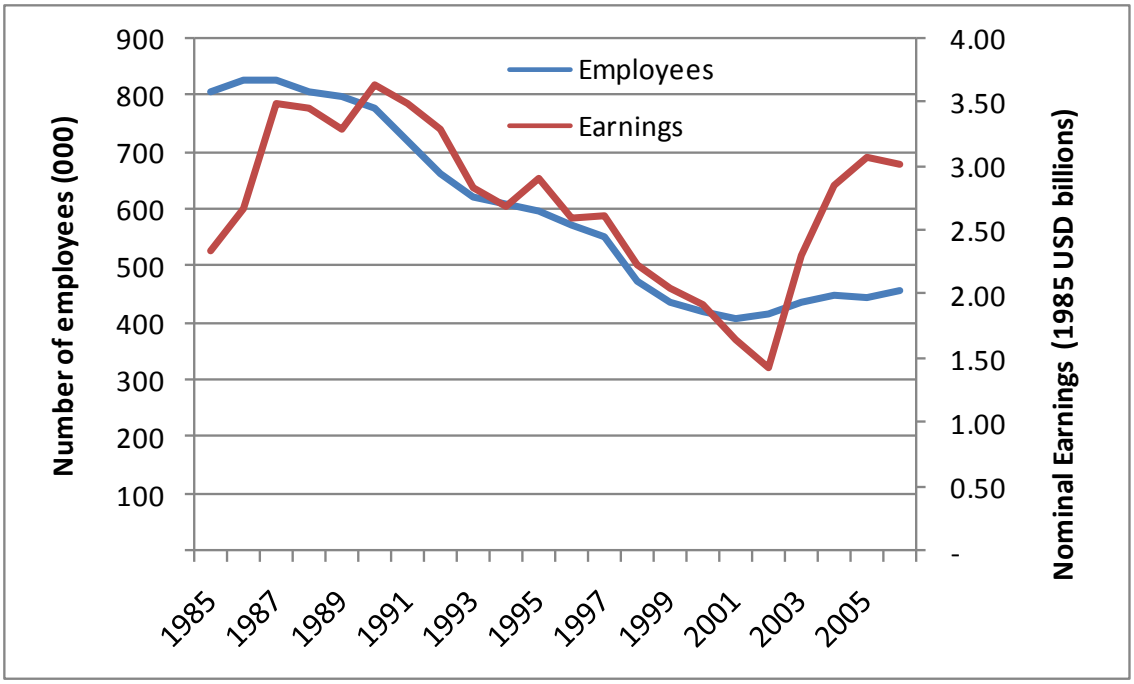
Figure 16: Canadian Mineral Industry Employment



Source: Bouchard 2007, p23

South Africa's mineral sector employment has shown a similar trend to that of Canada, although the recent inflection point was reached earlier. Earnings per employee have increased significantly in South Africa since 2003 when there was a correction to an exchange rate trend (Figure 17).

Figure 17: South African Mining Employment and Earnings



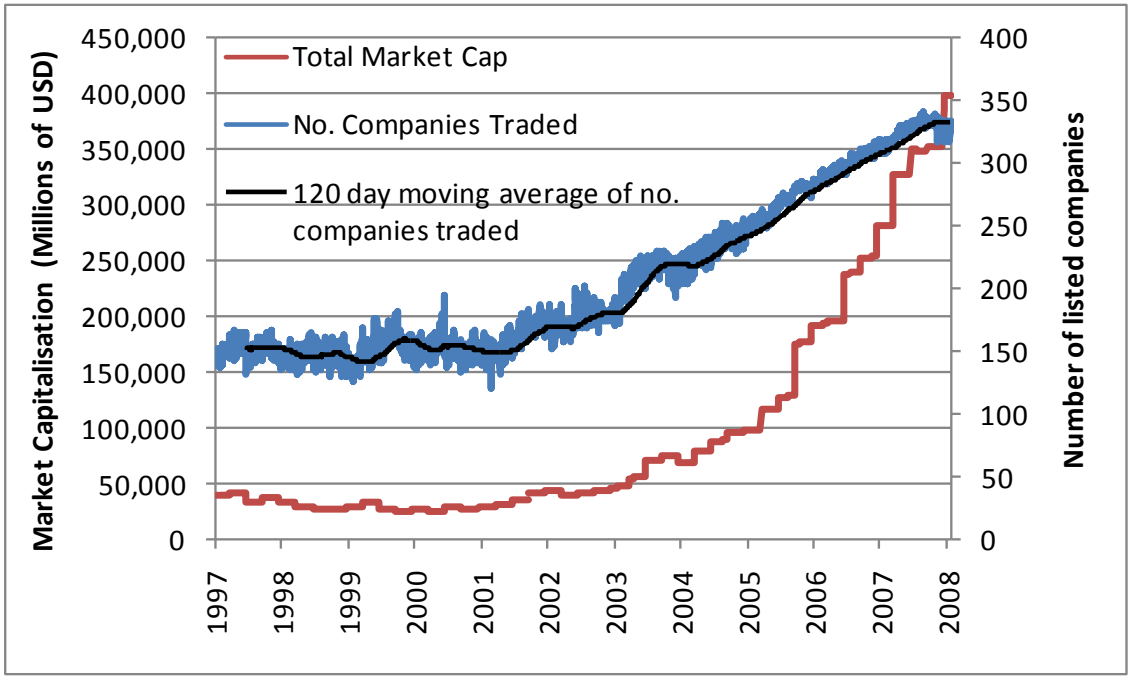
Source: Statistic South Africa website, 2008

South Africa and Canada can therefore be seen to be comparable economies in terms of their economic reliance on mining and related activities and the general trends for output and input (labour and capital) factors..

2.6 Historical Capital Formation Data for Mineral Resource Companies

Several sources have been used to obtain data on market capitalisation of various companies. Bloomberg information has been used to analyse the 353 TSX listed mining companies, as indicated in Figure 18.

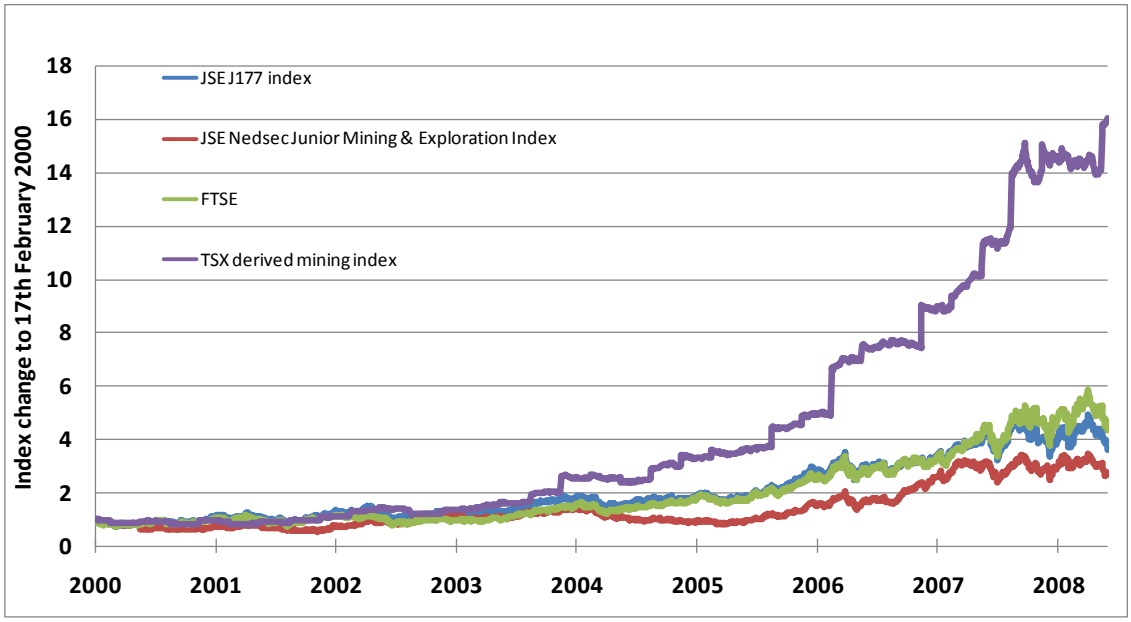
Figure 18: TSX Market Capitalisation Calculated Quarterly



Source: Bloomberg, 2008

The data is not ideal as the database only registers a company if there is a trade on the day, resulting in the blue band for number of companies. This information is analysed in comparison to that of the FTSE 350 mining index, JSE Nedsec junior mining and exploration index and the JSE J177 composite mining index (McGregor BFA 2008) as indicated in Figure 19.

Figure 19: Various Bourse Mining Indices Normalised and Inflation Adjusted to 17 February 2000



Source: Bloomberg, McGregor BFA, 2008

This data requires detailed analysis and correction for exchange rate and inflation differences.

2.7 Periodical and Newspaper Commentary on Minerals Industry Performance.

The subject has received attention locally in journals and newspapers with Creamer's Mining Weekly publishing an article entitled Flow-through shares would encourage JSX listing of junior miners (Mining Weekly, 2008) and a Mail and Guardian article entitled How flow-through shares could aid Africa (Mail and Guardian, 2007). These articles acknowledge that the South African mining industry in general, and exploration sector specifically, could benefit from fiscal incentives.

2.8 SOUTH AFRICAN ACADEMIC LITERATURE

Little South African academic literature has been found on the application of tax incentives for encouraging mineral exploration, except for a 2001 MBA thesis report by David Austen. Austen discusses, *inter alia*, introducing schemes such as flow-through financing to encourage investment into exploration and subsequently mining projects (Austen, 2001, p iii).

2.9 LITERATURE STUDY CONCLUSIONS

Several points are notable form the literature study.

The South Africa and Canada's economies are significantly influenced by the minerals industry which may have deep linkages through various industries in their cluster.

Fiscal catalysts in the form of tax incentives can increase the rate of capital investment and may act to draw in future capital expenditure through accelerating value determination by reducing the cost of capital.

South Africa has a need to address several socio-economic issues. Increased exploration, and subsequently mining, activity will aid this with particular reference to a demand for more highly skilled operators, artisans and engineers.

Canada has managed to incentivise savings and investment in exploration activities by changing the reward mechanisms for such expenditure. Exploration need no longer be seen as a high risk venture with little current benefit, as this benefit is attributed to individual investors through fiscal policies.

Many countries struggle to implement effective fiscal incentive policies owing to the lag of implementation and poor inter-departmental coordination. Canada has developed a sophisticated and effective set of fiscal policies that builds on Government interdepartmental integration.

3 CHAPTER 3: RESEARCH PROPOSITIONS

The research aims to establish the impact of flow-through tax incentives in the minerals exploration sector in Canada. The potential application and benefits that such a system may deliver to the South African economy will then be assessed. The following propositions have been established to support this deductive reasoning:

3.1 PROPOSITION 1

Taxation incentives have been instrumental in attracting minerals exploration and production companies to list in Canada.

3.2 PROPOSITION 2

Taxation incentives have been instrumental in increasing the rate of capital formation amongst minerals exploration and production companies in Canada.

3.3 PROPOSITION 3

The rate of capital formation in South Africa's mineral exploration and production companies has lagged that of Canada.

3.4 PROPOSITION 4

South Africa could benefit from flow-through taxation incentives in terms of capital formation and wealth creation.

4 CHAPTER 4: RESEARCH METHODOLOGY

This study was an applied research study, utilising macroeconomic theory to analyse the impacts of fiscal policy on the minerals exploration industry. The method utilised examined empirical evidence to assess the merits of the concepts stated in the research propositions, namely that taxation incentives have been instrumental in attracting minerals exploration and production companies to list in Canada, have increased the rate of capital formation in this sector and that the rate of capital formation in South Africa's sector has lagged that of Canada. These findings were then assessed to determine whether South Africa could benefit from flow-through taxation incentives in terms of capital formation and wealth creation.

The research process was conducted in four phases. The initial phase consisted of an exploratory, qualitative study (Zikmund, 2003) and was conducted using a survey in the form of a structured questionnaire to assess the perceived importance of flow-through taxation on listing destination choice. This phase addresses the first proposition, that is, as to whether flow-through taxes have been instrumental in attracting investment to Canada's mineral exploration industries. The questionnaire is discussed in Section 4.1.

The second phase was a quantitative, causal analysis (Zikmund, 2003), conducted on the implementation of tax codes and the frequency and volume of capital formation in the mineral sector of the TSX, the primary listing destination in Canada. This phase evaluates the second proposition, that fiscal incentives have been instrumental in increasing the rate of capital formation. This time

series analysis was used to evaluate the trends of capital formation on the TSX using other capital markets as controls.

The third phase of the study investigated the capital formation rate on South Africa's JSX, to evaluate proposition three. This phase drew on the comparative studies of phase three, analysing the environment from the South African perspective.

The fourth and final phase of the investigation utilised deductive reasoning (Zikmund, 2003) to demonstrate how South Africa could benefit from the use of fiscal incentives to catalyse its mineral industry, as raised in proposition 4.

4.1 Phase 1: Fiscal Incentives and Their Effectiveness in Attracting Minerals Companies to List in Canada

The qualitative investigation into the perceived importance of flow-through taxation (Proposition 1) developed an understanding of the perceived importance of fiscal incentives. This phase assessed to what degree fiscal incentives influence corporate listing behaviour. It was exploratory in nature and aimed to determine what additional aspects (extraneous variables) influence the capital formation location process.

4.1.1 Rationale for Proposed Method

A questionnaire has been used to address Proposition 1. The full questionnaire is appended in Section 9.2. The questionnaire was divided into five areas, namely:

1. The nature of the business of the mineral resource company. This section assessed the level of exploration activity within the company when it was listed and other areas of activity in the mining value chain.

This section also defined the mineral type on which the company focused (Minerals and Statistics on line Canada, 2008), the state of operation, and other countries of operation. The questions utilised a simple nominal scale to capture areas of activity and descriptions. Simple statistics were used to analyse the output in graphical format, such as histograms and pie charts, to identify the distributions of focus areas.

2. Funding methods. This section assessed the relative importance of the listing for the company by analysing the source of funding. The question used a constant sum to assess the relative contributions from various funding mechanisms (Zikmund, 2003). The relative importance of public equity was compared to the results from questions three and four.
3. Listing destination. This section used an ordinal scale to assess the preference, followed by a simple nominal selection scale to identify where the listing actually took place (Zikmund, 2003).
4. Factors affecting listing. This question used a compound constant sum methodology to assess the relative importance of each contributing factor to the listing destination decision. The factors were accumulated from the multitude of factors identified in the Fraser Institute Annual Survey of Mining Companies report (McMahon & Vidler, 2008). Fiscal policies were then assessed in relative importance to other factors.
5. The last section is an open-ended question which allowed individuals to comment on other potential factors affecting listing destinations which were not captured within the structured questionnaire. This data were assessed in a grid evaluation to identify significant and frequently occurring observations.

The questionnaire was piloted with the chief financial officer (CFO) of Gem Diamonds Limited (PLC), Mr. Kevin Burford, a mining and exploration company

that listed during 2008. The pilot study was also utilised to assess content validity (Zikmund, 2003) and the ease of interpretation of instructions.

4.1.2 POPULATION

The population of relevance (Zikmund, 2003) comprised the group of mineral resource companies listed on the TSX.

4.1.2.1 UNIT OF ANALYSIS

The unit of analysis (Zikmund, 2003) for the questionnaire was the mineral resource company, as identified within the population, that is, those listed on the TSX.

4.1.2.2 VARIABLES

The variables for the questionnaire were the responses to each of the questions as defined in the rationale for the questionnaire. These were the responses of the targeted individuals, either the CFO or investment relations manager of the identified companies.

4.1.3 SAMPLING

4.1.3.1 SAMPLING FRAME

The sampling frame included all the exploration and mining related companies that were listed on the TSX as at 7 July 2008, that is, the TSX minerals industry population. There were 353 companies listed in this category at the specified date.

4.1.3.2 SAMPLE SELECTION

A convenience sampling method was utilised for selecting candidates for the questionnaire. Owing to the recently promulgated Privacy Act in Canada, the

TSX was unable to divulge contact details for the sampling frame (Ferron, 2008). Additional research was therefore required to find contact details for the relevant individuals at each company. Two research assistants were utilised to obtain the email addresses or telephone numbers for the companies. The list of companies was sorted alphabetically according to ticker symbol. The research assistants then started at opposite ends of the list, working inward. Where no contact details were available, the primary researcher attempted to identify relevant contact details. Contact details were found through company websites or through internet searches for the CFO, usually identified on the board of directors on the company website. A total of 196 email addresses were identified for CFOs and 204 email addresses for investor relations managers or information mail boxes.

4.1.3.3 DATA COLLECTION

The email addresses, CFOs' names and titles, company location and company names identified during the sample selection exercise were mail-merged into a request letter. The letter included: an explanation of the intent of the research; motivation for the research; a personalised link to the survey; contact details for the researcher and supervisor; survey completion date; and ethical clearance requirements. This was first emailed on 1 September 2008 with a target completion date of 21 September.

A second request was distributed to the selected sample companies on 14 September, and a final reminder was distributed on 19 September.

The online survey instrument, SurveyMonkey, was used to facilitate access to the questionnaire, gathering and sorting of the survey responses.

4.1.3.4 DATA ANALYSIS

The summary and detailed reports were downloaded from the SurveyMonkey database and analysed within MS Excel. The responses for each question were interpreted graphically. The four areas identified that affect listing, that is, locality, governance, exchange characteristics and financial criteria, were devolved into the corresponding questions within each section to allocate an overall percentage response allocation (cumulative sum of 100) to the 21 sub-questions. In this way, all 21 factors could be analysed by relative contribution.

The response of each individual was recorded for each of the questions. A time and date of response was also recorded. All responses were subsequently summarised into: number of respondents, allocation of cumulative sum values and averages per answer. The number of respondents answering or skipping each question was also recorded.

4.1.3.5 DATA MANAGEMENT

The data were initially maintained on the SurveyMonkey database. Subsequently, a local copy was downloaded and stored as an MS Excel file. These files were stored on a local computer, removable hard drive, backed up daily to a server which is in turn backed up on a weekly basis to a remote site.

4.1.3.6 DATA VALIDITY AND RELIABILITY

The greatest concern for data validity was that of internal validity, that is, if the experiment (implementation of fiscal policy) was the sole cause of changes in the dependent variable, or whether this was owing to the impact of extraneous factors (Zikmund, 2003). Several biases may potentially have influenced the results of the questionnaire. The convenience sampling selection mechanism

was adequately unselective so as to avoid selection bias. The response rate is summarised in Table 3.

Table 3: Survey Distribution and Response Rate

Request	Date	Distributed	Delivered	Failed	Unread	Cumulative Responses
Initial request	01.09.08	159	89	62	8	4
Reminder	14.09.08	192	134	56	2	15
Final reminder	19.09.08	181	126	48	7	31

Source: Data Derived from Questionnaire (Appendix 9.2)

The survey achieved a 16% response rate, above a potential 3% expected norm (Zikmund, 2003). A possibility existed that potential respondents may have self-selected themselves if they were either aware or supportive of the subject matter, that is, fiscal incentives.

A further concern is that of questionnaire fatigue (Zikmund, 2003). Table 4 summarises the response rate per question.

Table 4: Survey Fatigue Assessment

Question no.	Answered	Skipped
1	31	0
2	31	0
3	31	0
4 - 8	N/A	
9	30	1
10	29	2
11	28	3
12 - 14	23	8
15	24	7
16	23	8
17 (open ended)	6	25

Source: Data Derived from Questionnaire (Appendix 9.2)

This clearly indicated a level of survey fatigue, although the questionnaire took no longer than ten minutes to answer.

4.1.3.7 POTENTIAL RESEARCH LIMITATIONS

The initial qualitative assessment of the sample population was limited owing to budgetary constraints. In-depth interviews would have provided a much richer source of information as opposed to a questionnaire. As the majority of the TSX population are resident in Canada, the cost of conducting such interviews, either telephonically or face to face was prohibitive.

Several of the email addresses identified were inoperable (30%) or the Chief Financial Officer had recently left the organisation. If access had been obtained, as initially indicated by TSX staff, this may have been reduced significantly. A contact list is available from the TSX for one individual per listed company, but at a cost of CAD300 (Ferron, 2003).

A much larger and potentially more responsive population to Canadian fiscal policy incentives exists within the TSX-V bourse. At the time of the investigation, 1 047 minerals companies were listed on the TSX-V.

4.2 PHASE 2: TAXATION INCENTIVES HAVE BEEN INSTRUMENTAL IN INCREASING THE RATE OF CAPITAL FORMATION

For the second proposition, a link between fiscal policy introduction (the flow-through tax incentives) and the actual rate of capital formation (in both frequency and volume) was assessed. The assessment was quasi-experimental as it was a time series study, taking multiple measures across time. It was vulnerable to historical effects but is able to distinguish between

transient change and change of a more permanent nature. Control groups (Zikmund, 2003) are used to remove global industry trends.

4.2.1 RATIONALE FOR PROPOSED METHOD

Time series analyses have been used to assess the response of capital markets to various stimuli and correlations between various indicators such as exchange rates, forward interest rates and stock index data (Lundin *et al,* 1998).

The 353 companies listed on the TSX at the time of the study were therefore investigated for changes in market capitalisation over a ten year period (17 July 1998 to 16 July 2008). The occurrence of promulgation of fiscal policy incentives targeting the minerals industry was also investigated to obtain specific break points in order to assess the change in rate of capital accumulation.

4.2.2 POPULATION

The population for this quantitative study was the same as that of phase one, namely the 353 minerals companies listed on the TSX during this investigation. Control groups were obtained from the Standard and Poor's Australian Stock Exchange (ASX) 300 mining and metals index and the FTSE 350 mining index. The FTSE 350 Mining Index is a capitalisation-weighted index of all stocks designed to measure the performance of the mining sector of the FTSE 350 Index. The index was developed with a base value of 1 000 as of 31 December 1985. The parent index is the NMX. The TSX has developed a mining index, the S&P/TSX Global Mining index. However the index has only been active since 12 June 2007 (The Toronto Stock Exchange press release, 2007) and therefore does not provide adequate history for research purposes.

4.2.2.1 UNIT OF ANALYSIS

The unit of analysis for this phase was the mineral resource company constituting the individuals within the population.

4.2.2.2 VARIABLES

The variable for this phase was the market capitalisation for each unit of analysis on a daily basis, or quarterly in the case of the TSX information obtained from Bloomberg.

4.2.3 SAMPLING

4.2.3.1 SAMPLING FRAME

The sample frame was the entire population, as defined in Section 4.2.2.

4.2.3.2 SAMPLE SELECTION

This phase did not require a sample selection as it was a census of the entire population. A search was conducted for comparable indices that represent the market capitalisation of mineral resource companies in various countries. The only indices found during the search were for the JSX, ASX and FTSE. The New American Stock Exchange (AMEX) has a traded fund that represents selected mining companies, the SPDR S&P Metals and Mining Electronically Traded Fund (ETF) trading under the ticker XME. (Yahoo finance, 2008). This is a fund of selected mining stocks and is not representative of the entire minerals resource. A control group from the United States was therefore not available.

4.2.3.3 DATA COLLECTION

Trading data for the population were obtained from the Bloomberg market database. The market data were obtained by running a query on the Bloomberg database, using the company root ticker and the TSX prefix. The

size of the queries was limited by the number of columns available within MS Excel 2003. Several separate queries were run and subsequently combined in MS Excel 2007. The data included the company's root ticker, date, trading activity and market capitalisation.

Information on fiscal policy incentives was obtained from the Canadian Intergovernmental Working Group on the Mineral Industry (Natural Resources Canada, 2007). This included the quantum of the fiscal policy, how it was applied and the date of implementation.

Exchange rate information required to convert the data to US Dollars for comparison to other bourse later in the study was obtained from the Oanda Foreign Exchange website (2008).

Historical US inflation was obtained from the United States Department of Labor website (2008).

The TSX index was developed from data obtained from Bloomberg, as described in 4.2.3.3. The JSE 177 and Nedsec Junior indices were obtained from the McGregor BFA Research Domain in the Gordon Institute of Business Science Resource Centre. The ASX 300 index data were obtained from Google Finance (2008). The FTSE 350 mining index was obtained from Bloomberg (2008).

4.2.3.4 DATA ANALYSIS

Market capitalisation information was aggregated to generate a total market capitalisation value for the mineral sector of the TSX. This was then converted

to US Dollars and de-escalated to constant money terms. The rates of change of market capitalisation were then assessed for each period after the introduction of a new fiscal policy using a regression analysis to assess the gradient of the equation producing the best sum of least squares (correlation coefficient). The gradient of each section of the market capitalisation line was then compared to the preceding and following sections to assess the impact of the policy.

Liow (2007) used a cross tabulation methodology on time series data to assess the relationships between Asian real estate markets over time. This study made use of an advanced filtering technique, Hodrick-Prescott, to detrend time series data. However in this investigation, the trend in the data was the aspect under investigation and therefore it was not detrended.

In order to compare the similarity of the time series under study, a regression and correlation was run on each variable, for example TSX data versus date and FTSE data versus date. A linear regression model was then created for each segment of data analysed. The model was tested for validity, using the null hypothesis H_0 = there is no correlation, that is, the slope of the model equals zero. If this can be disproved, that is, the slope of the model is not zero, and then there is a correlation between the model and the data. The strength of this trend is given by a correlation coefficient, the R^2 value. The slope of the market capitalisation, that is, the first differential, represents the rate of capital accumulation.

The segments of each data set were then compared over the same time period by developing a model for each segment. The upper and lower confidence

limits of the angle of the regression model were recorded and the regression model of the corresponding segment of the alternate population assessed as to whether it lay within these bounds. If the slope was within the 95% confidence limit of the corresponding slope, the rate of capital accumulation could be shown to be similar. If the slope lay outside of the confidence limits, the rate of capital accumulation could be shown to be different.

The statistical package NCSS (Release 14 February 2007), was used for statistical evaluations.

4.2.3.5 DATA MANAGEMENT

Data were populated into an MS Excel template from the Bloomberg database. This information was then converted to US Dollars and normalised to obtain a real (constant money term) value of the market capitalisation of the 353 companies under review. Data were stored and secured as per the method described in Section 4.1.3.5.

4.2.3.6 DATA VALIDITY AND RELIABILITY

The Bloomberg database produces an incomplete dataset. Where no shares are traded on a particular day, the database does not record the last traded price or the date. The data were therefore cleaned and sorted to ensure datum was chronically sequenced and aligned. No material errors were identified during the inspection of the data. Market capitalisation data were only revised quarterly in the Bloomberg database.

Lundin *et al* (1998) identified three problems with analysing stock data, including missing data, instability and decrease in correlation associated with high frequency measurements. The methods for addressing these challenges

have been utilised with the exception of using co-volatility weights to correct missing data. Instead, the previous recorded data point was extrapolated to fill the void.

Although a relationship between the two models created by fitting a model to the data could have been demonstrated, causality could not be proven.

4.2.3.7 POTENTIAL RESEARCH LIMITATIONS

This phase of the investigation is limited by the external factors affecting the market capitalisation of the individual companies. Such external factors may include the supply – demand balance and hence pricing of the company product, management efficiency, weather, labour unrest, investor sentiment and alternative investment opportunities. As fiscal policies are utilised at a federal as well as a regional level, their relative impact differs between companies depending on the location of their operation. A detailed analysis of the distribution of each company's operations and fiscal policy benefit could be conducted but is beyond the scope and resources of this investigation.

4.3 PHASE 3: SOUTH AFRICA HAS LAGGED CANADA IN CAPITAL FORMATION RATE

For the third proposition, the trend in South African mineral resource company capital formation is compared to that of Canada for the same period. The impact of extraneous variables, such as other policy (for example the introduction of the Minerals Resource and Petroleum Development Act in 2004) was qualitatively used to indicate potential variances in trends. This phase is therefore a qualitative, descriptive analysis (Zikmund, 2003). An element of quantitative analysis, using fiscal event timing and subsequent rate of capital formation, was pursued by comparing the different rates of capital formation between the two exchanges and how these are affected by fiscal policy, to

demonstrate the postulated benefit of flow-through fiscal policy. In addition, the FTSE 350 index was used as a control to assess the variance in trends.

4.3.1 RATIONALE FOR PROPOSED METHOD

Investment in a sector is indicative of the expected value and returns for that sector in the future. By tracking the market capitalisation of the sector in specific markets, the potential for value creation can be assessed.

4.3.2 POPULATION

The population for this phase comprised the minerals companies defined in 4.2.2 and the South African mineral resource companies defined within the JSE 177 index and Nedsec Juniors index. Control groups as described in 4.2.2 were used.

4.3.2.1 UNIT OF ANALYSIS

The unit of analysis for all populations was the index value (total market capitalisation).

4.3.2.2 VARIABLES

The variable analysed is the change in value of the indices as described in Section 4.3.2.

4.3.3 SAMPLING

4.3.3.1 SAMPLING FRAME

The sampling frame is defined by the time frame under investigation. The units of analysis were selected over a ten-year frame, or if the history of the index was shorter than this or where limited data existed, for example historical FTSE 350 index where data were only available from 2000, for the duration of the dataset.

4.3.3.2 SAMPLE SELECTION

The same sample as described in 4.2.3.2 was used.

4.3.3.3 DATA COLLECTION

The same data as developed in 4.2.3.3 were used, with the addition of the JSE 177 and Nedsec Junior information. This information was obtained from the McGregor BFA online database, accessed through the University of Pretoria's Gordon Institute of Business Science information centre.

4.3.3.4 DATA ANALYSIS

Data were first normalised using the method described in 4.2.3.4. A tabulation of correlations is utilised to assess the relationship, or lack thereof, between the two populations under investigation (JSX and TSX indices). The remaining indices, where available, were used as controls to determine the global trend.

4.3.3.5 DATA MANAGEMENT

Data were managed as per the process described in Section 4.1.3.5.

4.3.3.6 DATA VALIDITY AND RELIABILITY

The indices are normalised groupings of selected minerals companies on specific exchanges. There are qualifying criteria for a company to remain within the selected group. As a result of this, companies may move in or out of the index, altering the composition and nature of the overall index. The indices are based on the selected rank of market capitalisation values. As a result of this, a company leaving the index is usually replaced by another company of similar market capitalisation (Chetwode, 2008). This may impact on internal validity (Zikmund, 2003). The greatest concern for data validity was that of internal validity, that is, if the experiment (implementation of fiscal policy) was the sole cause of changes in the dependent variable, or whether this was owing to the impact of extraneous factors (Zikmund, 2003).

4.3.3.7 POTENTIAL RESEARCH LIMITATIONS

There are numerous extraneous factors that impact on investor confidence, and hence market capitalisation. The results of this study are not absolute as it is not possible to implement controls for all extraneous factors. The impact of world metal prices was not assessed as a direct contributing factor. This was however controlled for with the use of a control group, the FTSE 350 mining index.

4.4 PHASE 4: SOUTH AFRICA COULD BENEFIT FROM THE USE OF FISCAL INCENTIVES

Deductive reasoning (Zikmund, 2003) was utilised to logically argue the potential benefit, or lack thereof, of flow-through fiscal policy to South Africa. This phase is fully explored in Chapter 6, Discussion of Results, and brings the investigation to a conclusion. The results are therefore not discussed in Chapter Five.

4.4.1 RATIONALE FOR PROPOSED METHOD

The deductive reasoning process draws on the results of the preceding three phases to argue, through a logical chain of relationships, the potential benefit to South Africa.

4.4.1.1 POTENTIAL RESEARCH LIMITATIONS

The global economic climate has changed significantly since this research was initiated. The nature of funding and the need for tangible assets as collateral for debt may undermine the historically speculative nature of mineral resource exploration. Hence the applicability of such methods is uncertain in the future. Auerbach and Hassett, (2002) have argued that fiscal incentives are a remedial tool in recovery from recession. Subsequently, although the global capital markets have changed significantly, the approach may still have potential.

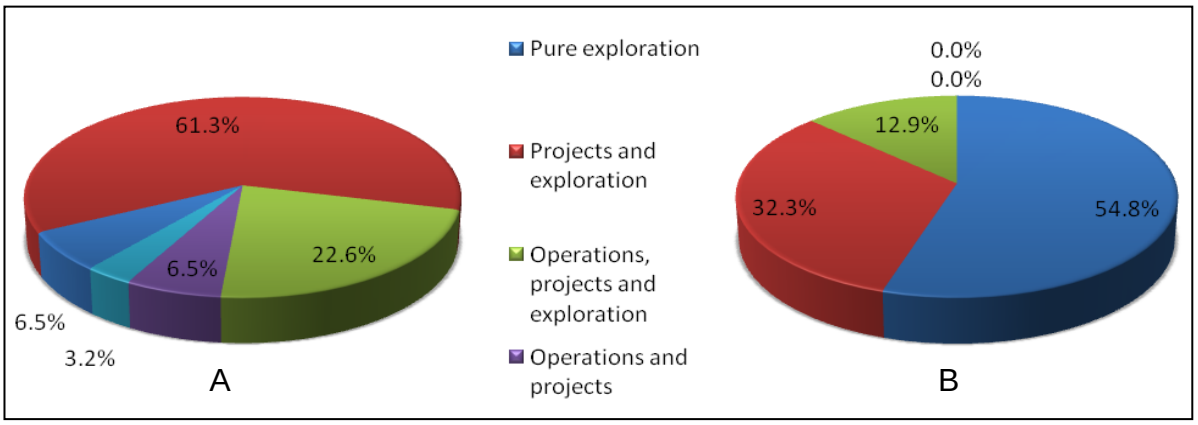
5 CHAPTER 5: RESULTS

The results are provided in the phases of the investigation, aligned to the research propositions, with the exception of Proposition four, which is a process of deductive reasoning and therefore addressed in Chapter 6: Discussion of Results).

5.1 PHASE 1: FISCAL INCENTIVES AND THEIR EFFECTIVENESS IN ATTRACTING MINERALS COMPANIES TO LIST IN CANADA

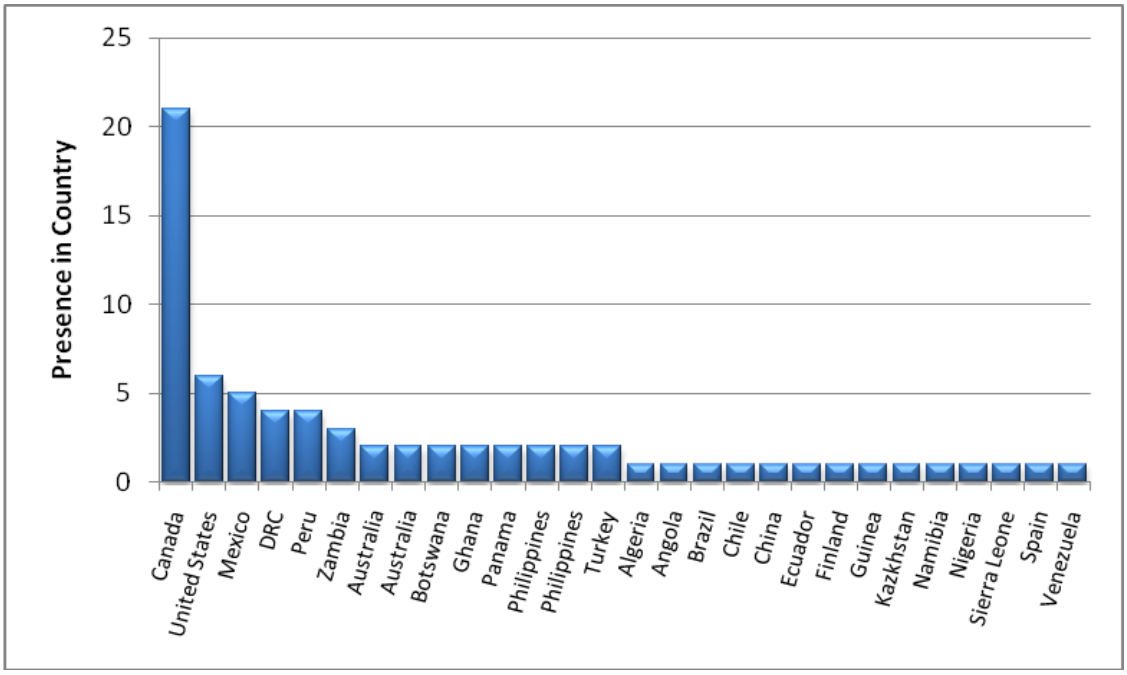
The respondents to the questionnaire represented a broad spectrum of companies, in terms of business model (Figure 20), geographical diversity (Figure 21), and commodities (Figure 22).

Figure 20: Type of Business Model, A – Current, B – Time of Listing



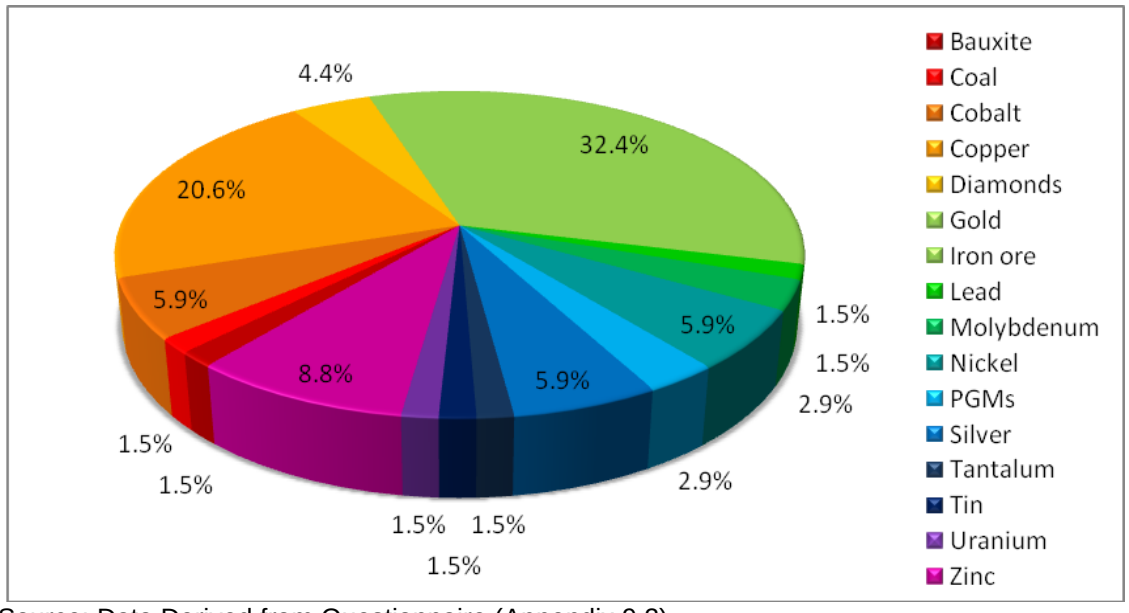
Source: Data Derived from Questionnaire (Appendix 9.2)

Figure 21: Geographical Distribution



Source: Data Derived from Questionnaire (Appendix 9.2)

Figure 22: Representation of Target Commodity

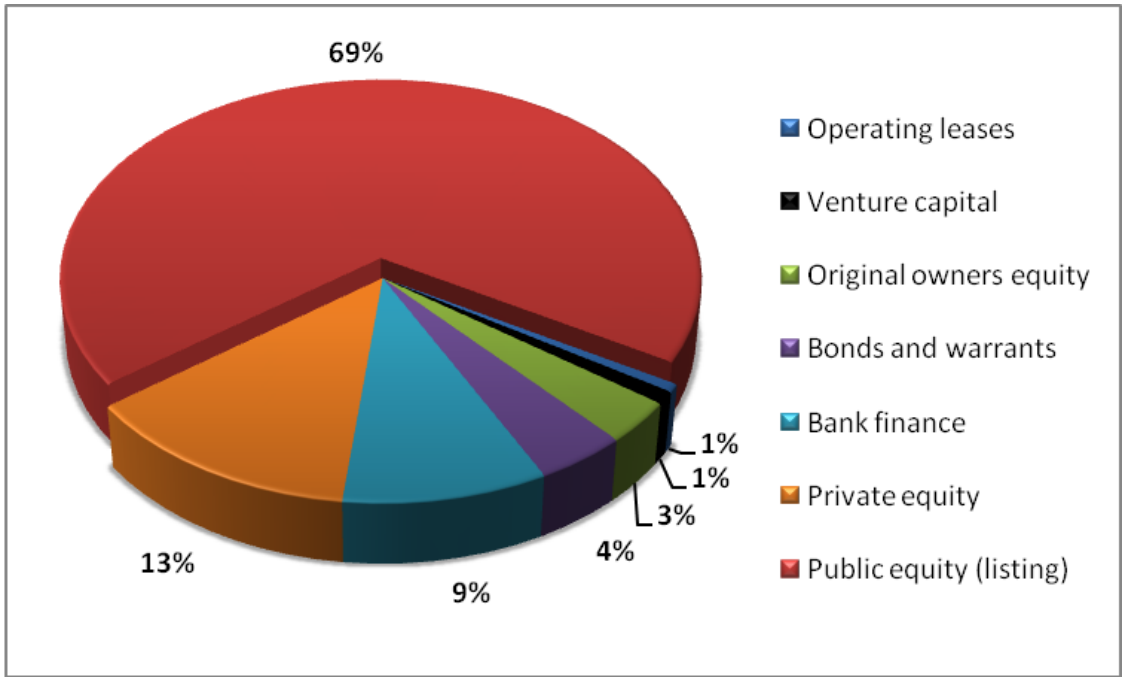


Source: Data Derived from Questionnaire (Appendix 9.2)

Figure 22 is only a representation of the type of commodities the sampled companies target. Neither does it analyse the relative turnover of each company, nor does it take into account the contribution from each commodity.

Subsequent to developing an understanding of the nature of the business for the respondents, the source of financing was analysed. This is represented in Figure 23.

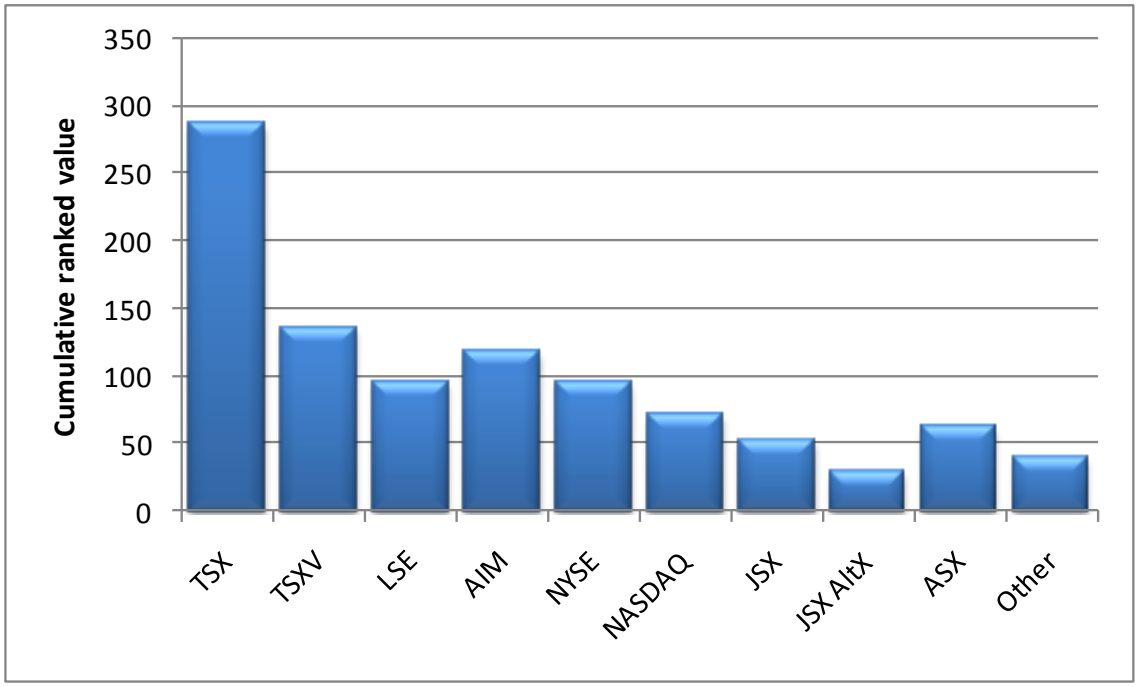
Figure 23: Sources of Funding



Source: Data Derived from Questionnaire (Appendix 9.2)

The necessity to fund operations from public equity (listing) was investigated further by analysing the preference for listing destinations. The respondents were requested to rank the world's largest mining listing destinations in order of attractiveness, producing the results in Figure 24.

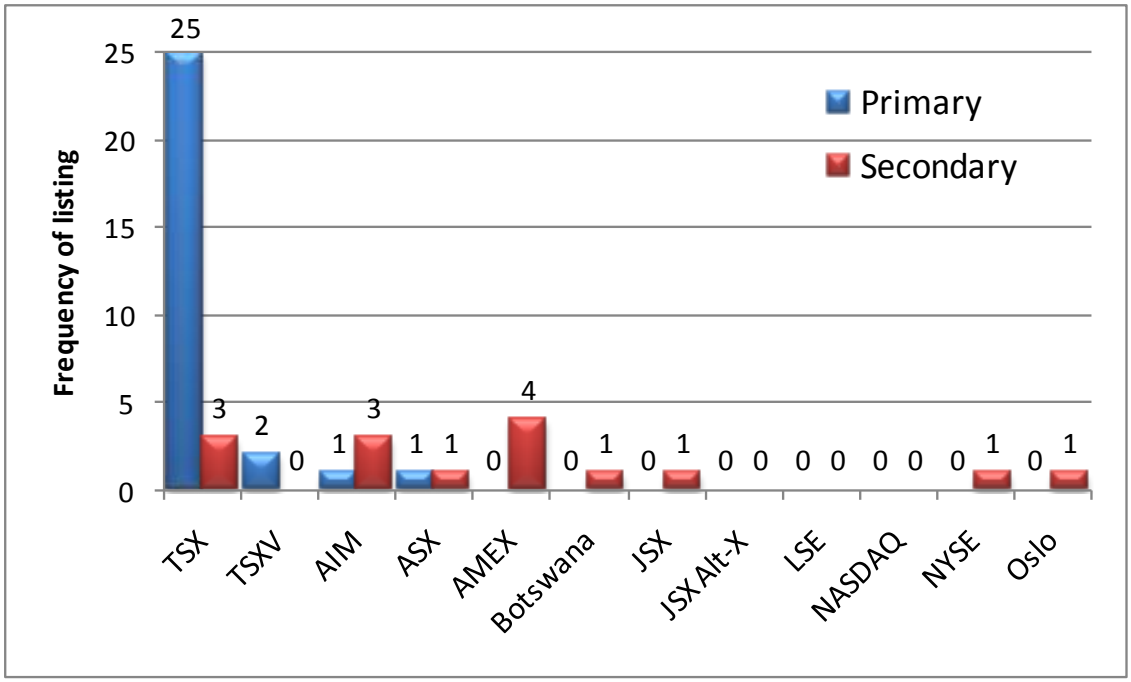
Figure 24: Preferred Listing Destination



Source: Data Derived from Questionnaire (Appendix 9.2)

As many companies do not solely rely on one listing destination, the sample was assessed for secondary listing destinations. Secondary listing may serve alternative objectives to those of the primary listing. This produced the results in Figure 25.

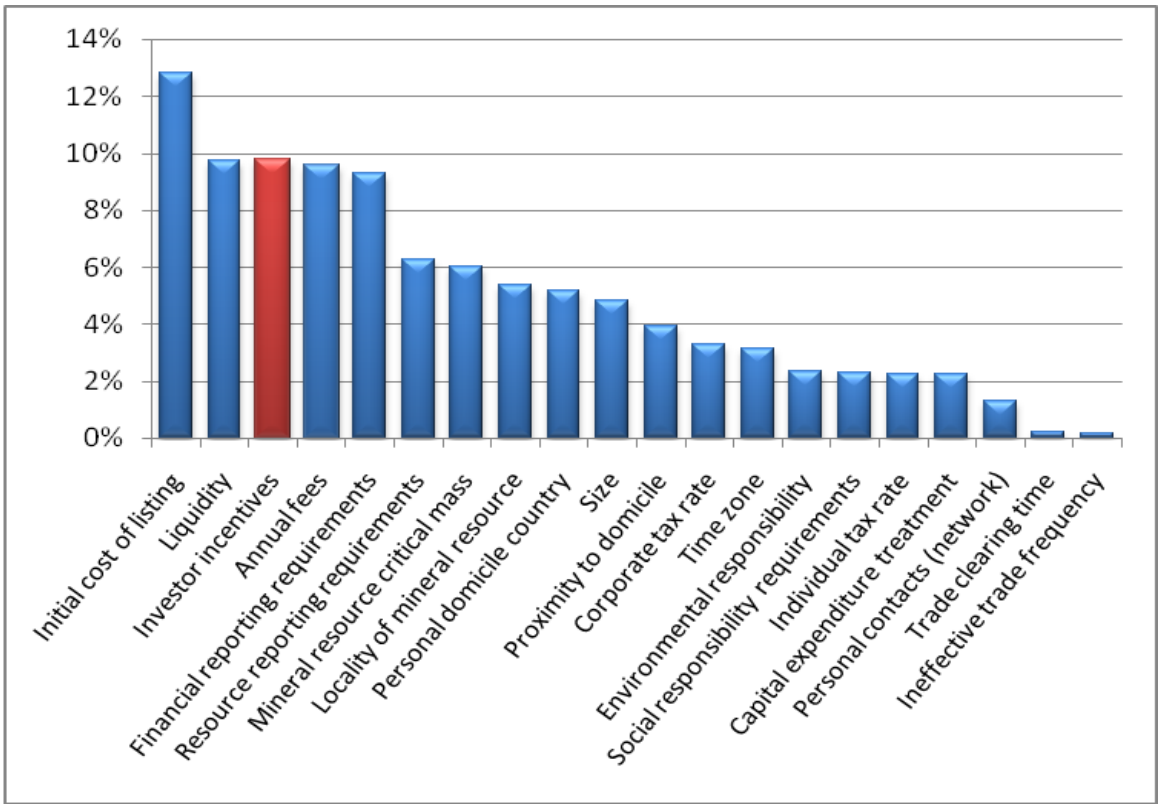
Figure 25: Listing Destinations



Source: Data Derived from Questionnaire (Appendix 9.2)

The factors affecting listing were subsequently analysed. These were grouped into four categories: locality, governance, exchange characteristics and financial. Each of these categories was subsequently decomposed into the most significant aspects. Each step required a cumulative sum allocation of 100 points to assess the relative importance of each factor. To obtain the comparative importance of all factors, the four categories were used to generate a weighted contribution for each of the individual criteria. The results from this indicated that the most important factor in selecting a listing destination was the domicile of the country at 25.4% of the total allocation. As this is a counter-intuitive and circular argument (you are listed where you are because of where you are), this criterion was removed from the responses to assess the remaining influential factors. The results are represented in Figure 26.

Figure 26: Contributing Factors to Listing Destination Preference



Source: Data Derived from Questionnaire (Appendix 9.2)

The last question in the survey was an open-ended question assessing other influential factors. The responses in Table 5 were obtained.

Table 5: Open Ended Responses

Strength of interest in the projects metals sector.
Brokers requirements.
Reputation of the exchange from the standpoint of individual and retail investors and fund managers.
Investor knowledge of exploration and willingness to invest.

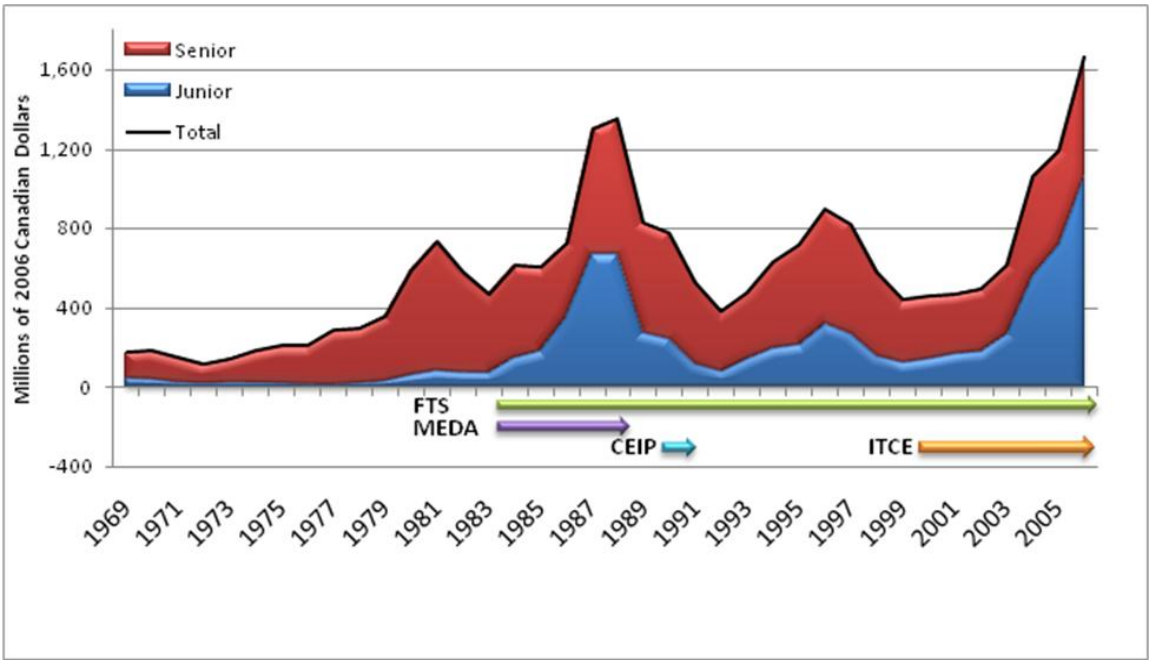
Source: Data Derived from Questionnaire (Appendix 9.2)

The analysis of these results is addressed in Section 6.1.

5.2 Phase 2: Taxation Incentives Have Been Instrumental in Increasing the Rate of Capital Formation

Canadian fiscal incentives operate at a federal and regional level. As the companies listed on the TSX, the population in question, are all influenced by Canadian federal fiscal incentives, these federal events were used as discrete time point references in analysing the data. There have been four critical events pertaining to these incentives. The concept of flow-through shares was introduced in 1983 with the implementation of the Mining Exploration Development Allowance (MEDA). This incentive was in place for just over five years. The next incentive was the Canadian Exploration Incentive Program (CEIP), introduced in 1990 but which only lasted for one year. The investment tax credit for exploration (ITCE) was introduced early in 2000 and has recently been extended. These instruments are plotted against the exploration and deposit appraisal expenditure.

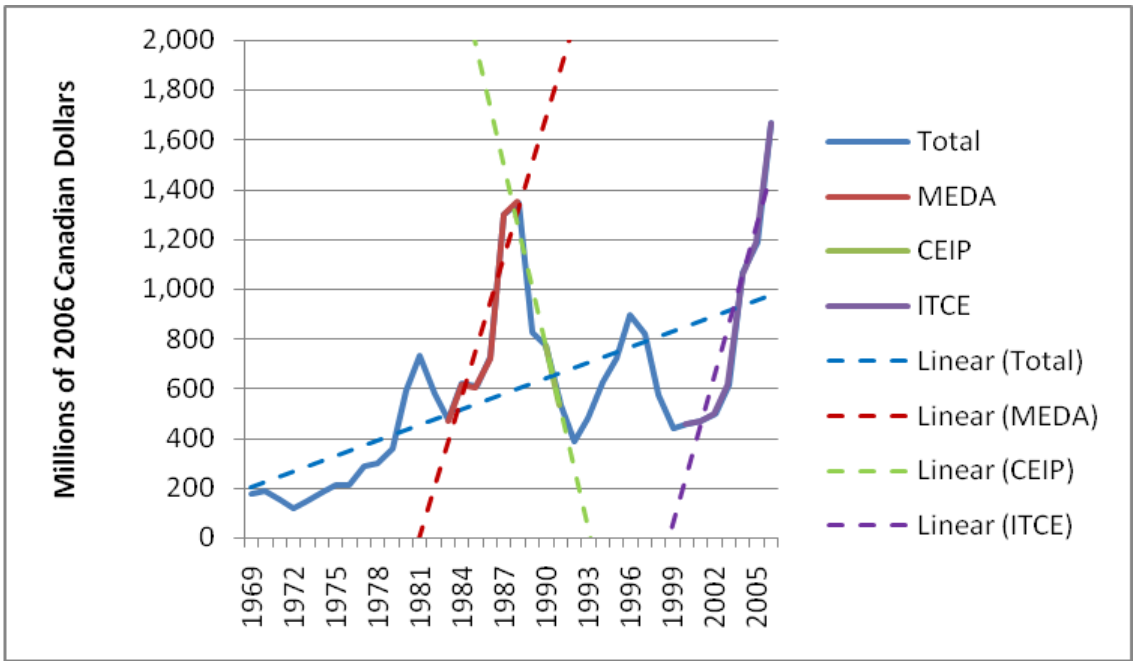
Figure 27: Canadian Exploration Expenditure and Fiscal Policy Timing



Source: Bouchard 2007, p3.19

The impact of the fiscal policy can be assessed by comparing the trend of exploration expenditure before and after the implementation date. If a graph is plotted of the best fit correlations for the three periods in addition to the entire series, as presented in Figure 28, the table of values, Table 6, can be generated through statistical analysis.

Figure 28: Exploration Expenditure Trends and Incentive Durations



Source: Bouchard 2007, p3.19.

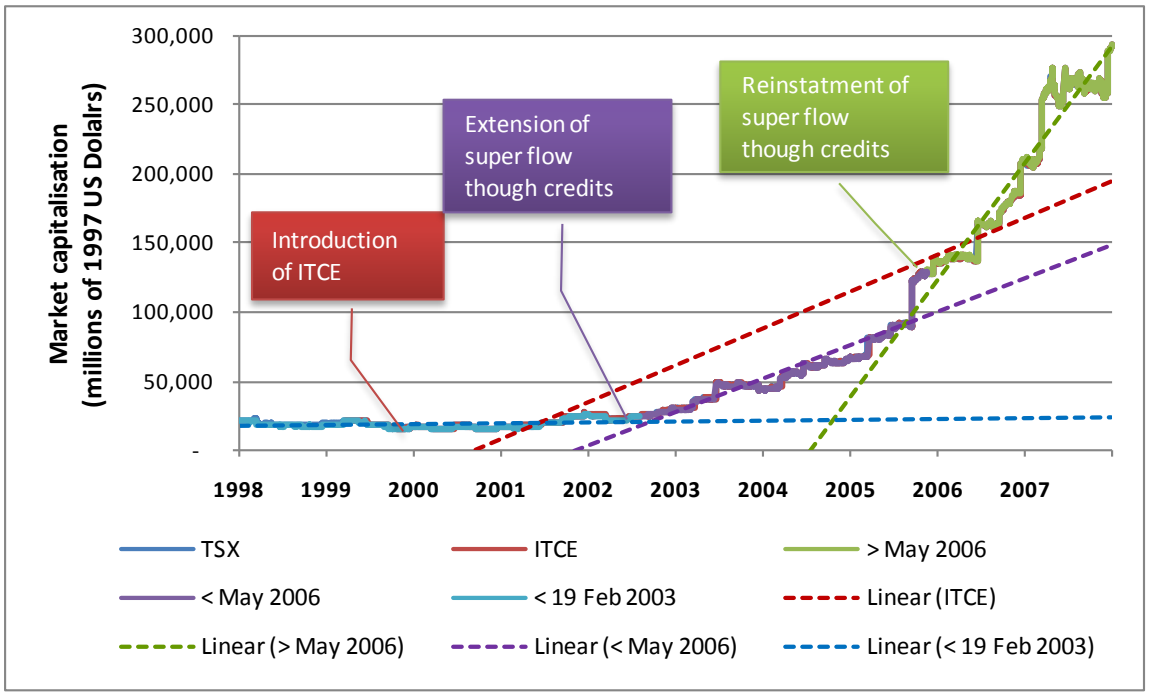
This table represents the gradient of the regression line fitted through the data using a sum of least squares approach to obtain a correlation coefficient.

Table 6: Trends per Segment

Segment	R^2 value	Gradient
Total series	0.40	20.8
MEDA	0.85	187.3
CEIP	1.00	-242.7
ITCE	0.87	201.5

The exploration expenditure represented in Figure 28 is obtained through funding of various means. As demonstrated in Figure 23, a significant portion of this exploration expenditure is obtained from public equity through listing. It is therefore necessary to analyse the TSX market capitalisation for the sample in question, the 353 listed minerals companies. The market capitalisation data were converted to US dollars and normalised using US inflation to August 1998 real values. This was then used to produce Figure 29.

Figure 29: Market Capitalisation and Fiscal Policy Incentives



Source: Bloomberg (2008) and Bouchard (2007, p3.19)

Analysis of these sums of least squares trend lines provides the information shown in Table 7.

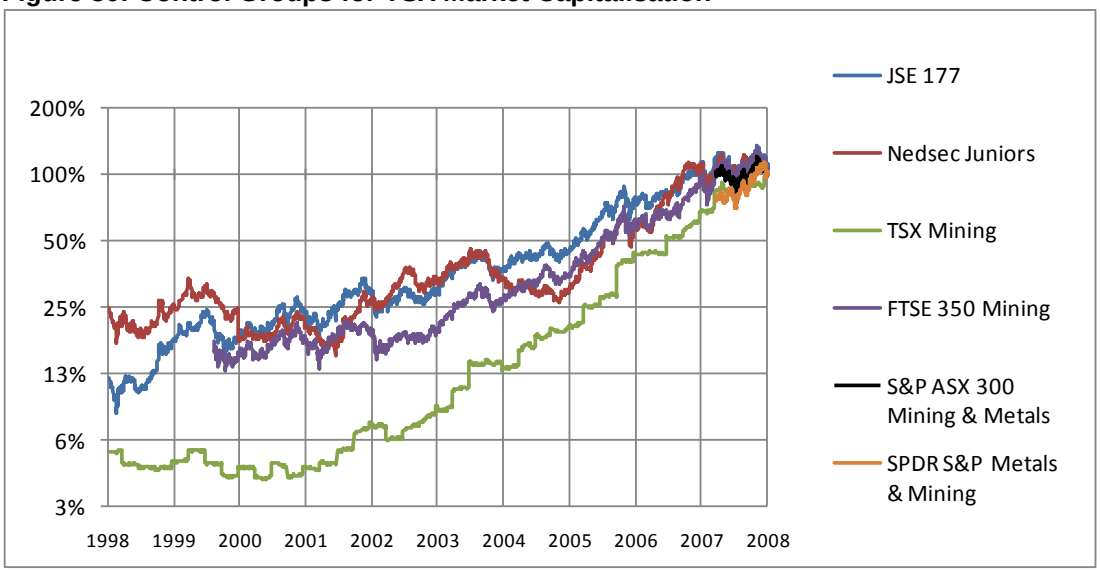
Table 7: Market Capitalisation Segment Gradients

Segment	R^2 value	Gradient	Standard error	95% Lower CL	95% Upper CL	Power α=0.05 *
TSX total history	0.70	0.01	$1.50x10^{-4}$	$1.13x10^{-2}$	$1.19x10^{-2}$	1
Prior to credit extension	0.15	2.43	0.17	2.11	2.76	1
ITCE duration	0.75	73.33	0.89	71.58	75.08	1
Extension of credits	0.87	66.1	0.90	64.30	67.82	1
Reinstatement of credits	0.93	231.60	2.83	226.04	237.16	1

* Cronbach's alpha

In evaluating the relevance of these trends, control groups were used, as indicated in Figure 30.

Figure 30: Control Groups for TSX Market Capitalisation



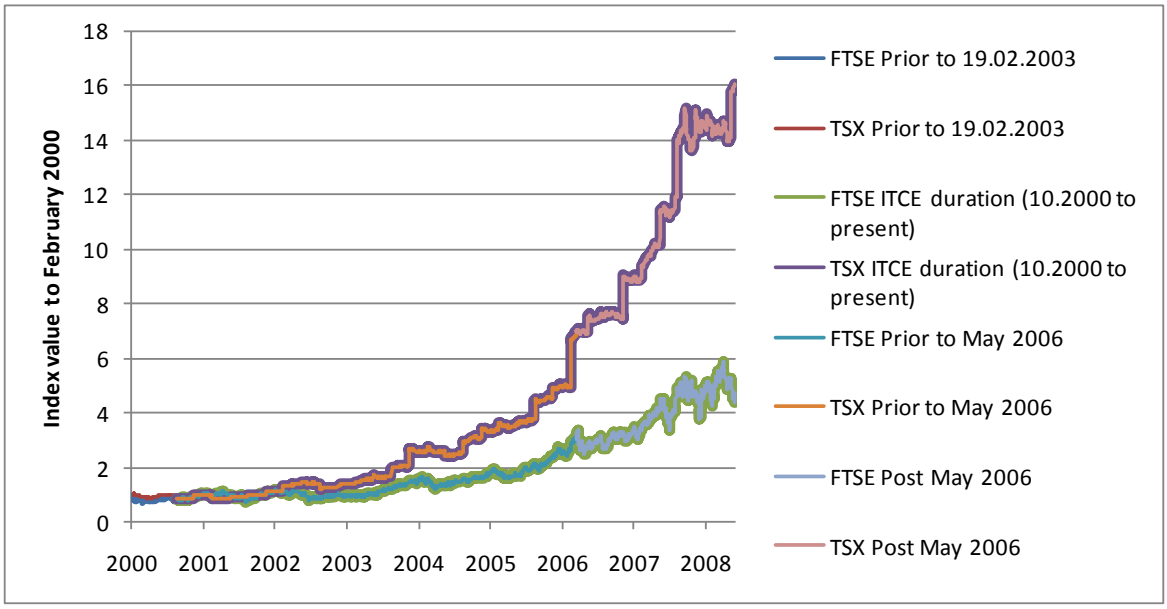
Source: Bloomberg, McGregor BFA, Yahoo Finance 2008

As the data were not available for the full history of all control groups, they have been represented as being normalised to the end date of the time series. The

FTSE was utilised as a control group for the TSX as it had adequate history and did not form part of the experiment. The JSE 177 and Nedsec Juniors index form part of the experiment and are therefore excluded form the control group.

The segments of the time series under analysis are represented in Figure 31.

Figure 31: TSX Control Using FTSE



Source: Bloomberg, 2008

Table 8 represents the correlation between the TSX and the control unit, the FTSE, for the periods specified in Table 7. The data were converted to US Dollars and adjusted for inflation to represent constant July 1998 US Dollars and normalised to the start of the FTSE time series, 17 February 2000.

Table 8: Statistical Analysis of Control Group

Segment	R^2	Slope	95% Lower CL	95% Upper CL	T Value	Reject H0 at α=0.05	Power α=0.05 *	Mean within CL?
FTSE total history	0.80	$1.30x10^{-3}$	$1.28x10^{-3}$	$1.33x10^{-3}$	90.79	Yes	1.00	No
TSX total history	0.77	$4.27x10^{-3}$	$4.17x10^{-3}$	$4.37x10^{-3}$	85.05	Yes	1.00	No
FTSE Prior to credit extension	0.21	$1.41x10^{-4}$	$1.21x10^{-4}$	$1.60x10^{-4}$	13.97	Yes	1.00	No
TSX Prior to credit extension	0.66	$4.99x10^{-4}$	$4.74x10^{-4}$	$5.25x10^{-4}$	37.95	Yes	1.00	No
FTSE ITCE duration	0.82	$1.44x10^{-3}$	$1.41x10^{-3}$	$1.47x10^{-3}$	93.42	Yes	1.00	No
TSX ITCE duration	0.80	$4.75x10^{-3}$	$4.65x10^{-3}$	$4.85x10^{-3}$	88.89	Yes	1.00	No
FTSE Extension of credits	0.76	$7.21x10^{-4}$	$7.00x10^{-4}$	$7.42x10^{-4}$	66.59	Yes	1.00	No
TSX Extension of credits	0.86	$2.07x10^{-3}$	$2.02x10^{-3}$	$2.11x10^{-3}$	90.73	Yes	1.00	No
FTSE Reinstatement of credits	0.87	$3.49x10^{-3}$	$3.37x10^{-3}$	$3.60x10^{-3}$	61.30	Yes	1.00	No
TSX Reinstatement of credits	0.93	$1.23x10^{-2}$	$1.20x10^{-2}$	$1.26x10^{-2}$	83.83	Yes	1.00	No

*Cronbach's alpha. A value greater than 0.8 shows relevance (NCSS 2007)

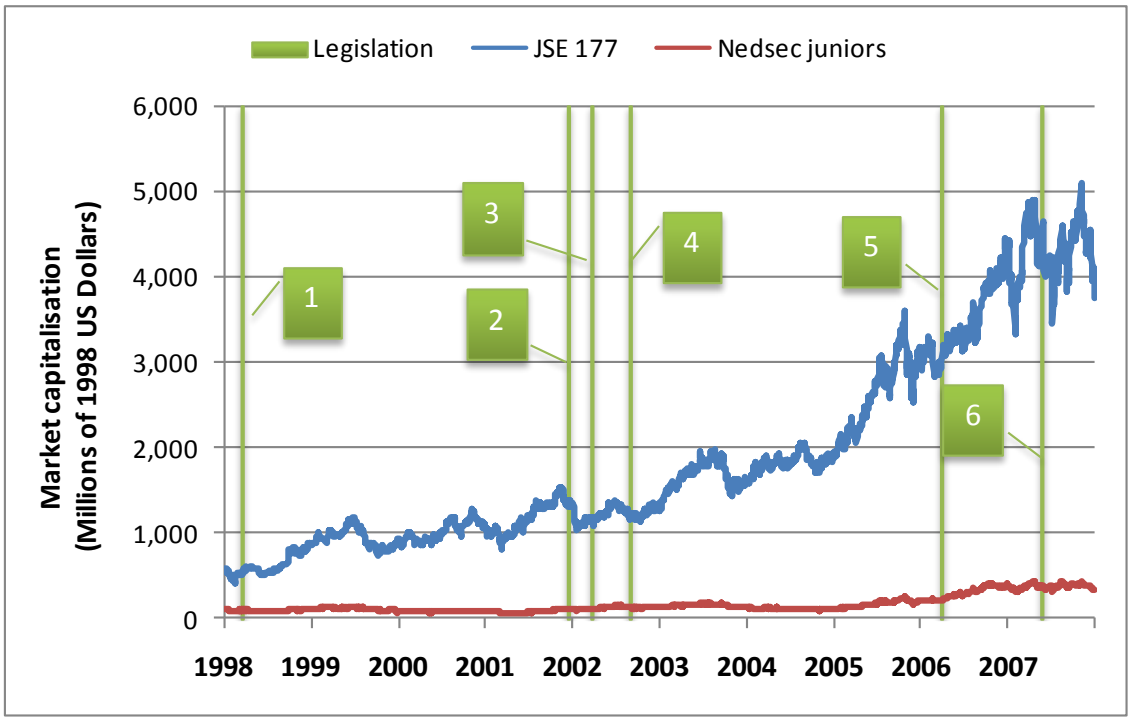
5.3 PHASE 3: SOUTH AFRICA HAS LAGGED CANADA IN CAPITAL FORMATION RATE

During the period under investigation, the TSX minerals index developed in this study increased 11.8 times in nominal Canadian Dollar value, 12.7 times in real US Dollar value. Over the same period, the JSE 177 mining index increased 10.4 times in nominal Rand value and 5.3 times in real US Dollar value.

The following legislation is utilised for analysing the JSE 177 and Nedsec junior indices and represented in Figure 32 and referenced to this list:

1. White Paper on a Minerals and Mining Policy for South Africa, 23 September 1998 (Cawood, 2007).
2. Leaked draft charter, 30 July 2002 (Northern Cape Government website, 2003).
3. Mineral and Petroleum Resources Development Act 28 of 2002, 3 October 2002 (Cawood, 2007).
4. Mineral and Petroleum Royalty Bill, 10 March 2003 (Cawood, 2007).
5. Mineral and Petroleum Resources Royalty Bill, 11 October 2006 (Cawood, 2007).
6. Draft Royalty Bill, 6 December 2007 (Cawood, 2007).

Figure 32: Legislation Impact on JSE 177 and Nedsec Junior Indices



Source: Bloomberg, McGregor BFA (2008)

Table 9 represents the two month average of the market capitalisation immediately before and after the legislation events.

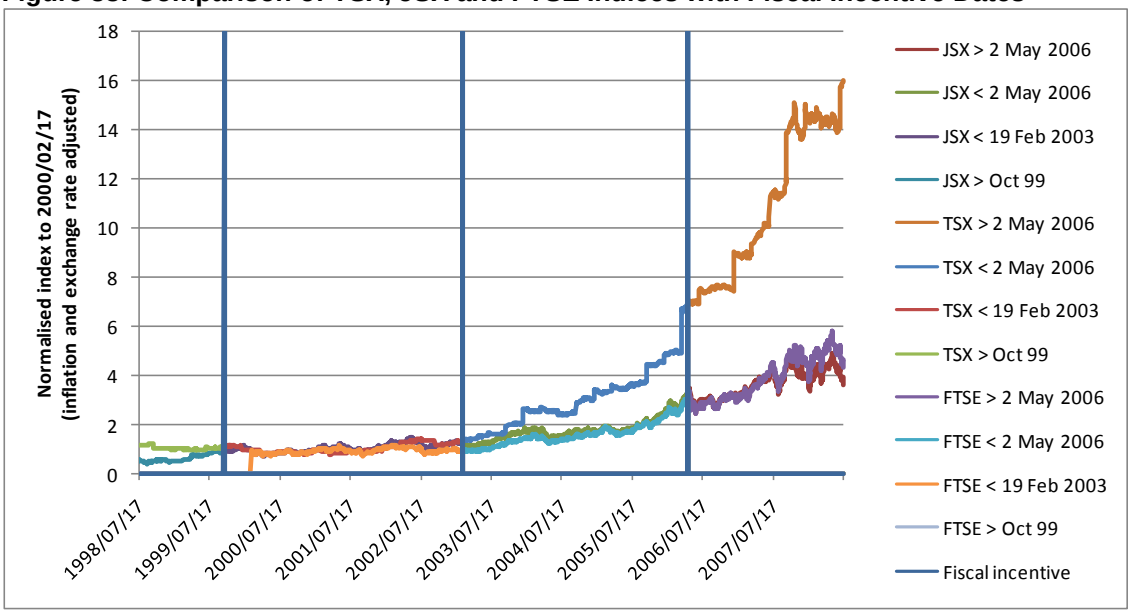
Table 9: Impact of Legislative Changes

Ref	JSX before	JSX after	Nedsec before	Nedsec after	JSX difference	% JSX Change	Nedsec difference	% Nedsec change
1	512	582	95	96	70	14%	1	1%
2	1 437	1 198	111	107	-239	-17%	-3	-3%
3	1 127	1 196	106	121	69	6%	15	14%
4	1 299	1 204	148	127	-95	-7%	-21	-14%
5	3 044	3 211	211	248	167	5%	37	17%
6	4 567	4 099	396	356	-468	-10%	-40	-10%

Note: figures in millions of July 1998 US Dollars

For the purposes of comparing the rates of capital accumulation, the JSE 177 and Nedsec Junior miners were combined as a more complete representation of the South African listed minerals industry companies. The three indices, namely the derived TSX minerals index, the combined JSE 177 and Nedsec Junior minerals index and the FTSE 350 mining index, are graphically represented in Figure 33.

Figure 33: Comparison of TSX, JSX and FTSE Indices with Fiscal Incentive Dates



Source: Bloomberg, McGregor BFA, Yahoo Finance (2008)

Table 10 indicates the correlations of regression models and the differences in the gradients of the associated models.

Table 10: Statistical Analysis of Experiment and Control Group

Segment	R^2	Slope	95% Lower CL	95% Upper CL	T Value	Reject H0 at α=0.05	Power α=0.05 *
JSX > 2 May 2006	0.69	$2.05x10^{-3}$	$1.93x10^{-3}$	$2.16x10^{-3}$	35.03	Yes	1.00
TSX > 2 May 2006	0.63	$1.23x10^{-2}$	$1.15x10^{-2}$	$1.30x10^{-2}$	30.91	Yes	1.00
FTSE > 2 May 2006	0.82	$3.44x10^{-3}$	$3.30x10^{-3}$	$3.57x10^{-3}$	50.05	Yes	1.00
JSX < 2 May 2006	0.72	$1.19x10^{-3}$	$1.14x10^{-3}$	$1.24x10^{-3}$	45.66	Yes	1.00
TSX < 2 May 2006	0.89	$3.31x10^{-3}$	$3.23x10^{-3}$	$3.39x10^{-3}$	78.54	Yes	1.00
FTSE < 2 May 2006	0.78	$1.29x10^{-3}$	$1.24x10^{-3}$	$1.34x10^{-3}$	52.30	Yes	1.00
JSX < 19 Feb 2003	0.17	$3.34x10^{-4}$	$2.83x10^{-4}$	$3.84x10^{-4}$	12.96	Yes	1.00
TSX < 19 Feb 2003	0.18	$2.67x10^{-4}$	$2.29x10^{-4}$	$3.05x10^{-4}$	13.74	Yes	1.00
FTSE < 19 Feb 2003	0.10	$2.99x10^{-4}$	$2.35x10^{-4}$	$3.64x10^{-4}$	9.10	Yes	1.00
JSX < Oct 1999	0.82	$1.11x10^{-3}$	$1.05x10^{-3}$	$1.16x10^{-3}$	37.42	Yes	1.00
TSX < Oct 1999	0.02	$2.41x10^{-4}$	$5.60x10^{-5}$	$4.26x10^{-4}$	2.57	Yes	0.73
FTSE < Oct 1999	*Insufficient data*						

*Cronbach's alpha

As there are three units under investigation, the analysis of the means lying within the 95% confidence limits for the gradient of the linear regression models is represented as a matrix, Table 11.

Table 11: Cross Tabulation of Model Means Lying Within 95% Confidence Level

Period	Index	JSX	TSX	FTSE
After May 2006	JSX		No	No
	TSX	No		No
	FTSE	No	No	
Before May 2006	JSX		No	No (within 2SD's)
	TSX	No		No
	FTSE	No (within 2SD's)	No	
Before February 2003	JSX		No (within 2SD's)	Yes
	TSX	No (within 2SD's)		Yes
	FTSE	Yes	Yes	
Before October 1999	JSX		No	*Insufficient data*
	TSX	No		
	FTSE	*Insufficient data*		

6 CHAPTER 6: DISCUSSION OF RESULTS

6.1 PHASE 1: FISCAL INCENTIVES AND THEIR EFFECTIVENESS IN ATTRACTING MINERALS COMPANIES TO LIST IN CANADA

The respondents to the survey represent a broad range of commodities and business models. The majority however are still involved in projects. With more than half of the companies starting off as pure exploration companies, primarily focused in Canada, there is evidence that they were taking advantage of several factors of production. These include Canada's abundance of mineral resources and the availability of capital to exploit them. Seven of Canada's provinces are ranked in the top twenty-five states in the Fraser survey for mineral potential (McMahon and Vidler, 2008). Half of the sample's focus was on gold and copper (Figure 22), commodities which have both seen significant price increases since the turn of the century (Figure 1). These may also be favourites of exploration companies. Gold deposits are usually able to support small focused opportunities owing to the small size yet highly focused value of the mineralisation. Copper deposits tend to be large disseminated ore bodies with lower unit value which favour economies of scale. The behaviour of these exploration-oriented junior companies may therefore be described in two modes: seeking the opportunity to grow into small scale producers or seeking to sell a defined reserve to a significant operator. This is supported by Figure 19 indicating the maturation of many companies into project-orientated organisations, out of pure exploration, and the increase in production-orientated companies.

Both of these modes are well aligned to the need for equity financing. Owing to the speculative nature of exploration companies, their inability to generate positive cash flows and lack of assets to secure debt financing, equity financing is an ideal fund raising mechanism. This is supported by Figure 23, indicating that almost 70% of funding is sourced through public equity and only 13% through conventional debt (bank finance, bonds and warrants).

The fact that such operations prefer the TSX and TSX-V as listing destinations is aligned to their preferences for equity funding. These exchanges also benefit from flow-through taxes. Most of the companies in the survey (81%) have their primary listing on the TSX, but are represented globally through secondary listings. The analysis of the factors influencing the attractiveness of listing destinations is therefore important. Once the factor of locality influencing the listing destination has been removed, investor incentives rank as the third most important aspect in efficacy of bourses to attract listings. The most important factor, initial cost of listing, is obviously significant to small exploration companies with limited capital. This is where many exchanges remain prohibitively out of reach for the exploration fraternity. Several exchanges have responded to this challenge by developing exchanges which have lower barriers to entry, such as London's Alternative Investment Market (AIM) and Johannesburg's Alt-X. This is therefore not a unique feature of the TSX. The second most important factors, liquidity and investor incentives, are intimately related. By improving the investor environment in the manner described by House and Shapiro (2008), liquidity is improved. These factors have combined to provide Canada with the lowest cost of exploration (Clark, 2004).

The sample response also shows Canada to be a solid staging ground for forays into the rest of the world's mineral opportunities. The thirty-one companies are represented in 28 countries (Figure 21). The need for credibility in pursuing these foreign ventures is therefore important. The fifth and sixth most important factors affecting listing, financial and resource reporting requirements support the need for credibility. Canada has been a forerunner in the development of natural resource reporting codes, publishing National Instrument 43-101, effective from December 30, 2005. This postdates the Australian Joint Ore Reserves Committee (JORC) code which became effective from December 2004, and the South African code for the reporting of exploration results, mineral resources and mineral reserves (the SAMREC code), for which the first edition was published in March 2000 and incorporated into the JSX listing requirements. There remains some confusion in the development of the South African codes however, with the most recent revision being launched in July 2007 (South African Mineral Code website, 2008).

The open-ended questions in the survey resulted in four responses that all indicate a mature minerals investment community. As to whether this preceded the rapid growth in market capitalisation of the population or was a result of it, is uncertain. What is evident however is the developed and complex minerals investment sector supported by competent analysts and financial institutions. This is not dissimilar to the development of South Africa's banking sector which evolved in order to finance large mining projects in the absence of equity.

In summary therefore, the ability to raise equity to fund speculative exploration ventures has enabled the growth of the Canadian minerals sector. This has been associated with the growth and development of supporting industries and

services, such as governance structures, financing and analytical services. As a result of this momentum, a cycle of success developed, positioning Canada's minerals sector to surpass international competition. This has enabled Canadian firms to become multinational and generate significant wealth for the country (Figure 8).

6.2 Phase 2: Taxation Incentives Have Been Instrumental in Increasing the Rate of Capital Formation

Hall and Jorgensen (1967) have demonstrated that the cost of capital is proportional to corporate tax rate. This was demonstrated for conventional businesses generating an income, but exploration companies tend to be reliant on initial funding which is speculative in nature. In Canada this has been tempered with strict financial and mineral resource management codes. The cost of minerals exploration, a specific subset of research and development, is affected by the same laws of costs of capital as the companies described by Hall and Jorgensen. By reducing the effective cost of investment by transferring this benefit to the provider of equity, Canada has been able to provide an enabling environment for exploration funded by equity. The results of this environment are demonstrated in this section.

When analysing the three federal incentives, the MEDA, CEIP and ITCE, only the CEIP period is associated with exploration expenditure growth (Table 6). According to Auerbach and Hasset (2002), uncertainty in fiscal policy may accelerate or delay investment as may be the case for the CEIP. The impacts of the two remaining federal incentives, the MEDA and ITCE are considerable. With the average trend having a relative gradient of 21, this is exceeded nine times by the duration of exploration expenditure associated with MEDA and

almost ten times by the ITCE duration. The direct impact of investment incentives is therefore demonstrated by the associated exploration expenditure.

A shorter time period was subsequently assessed for market capitalisation associations with fiscal incentives. Table 7 indicates the linear regression model gradient characteristics associated with three specific segments of market capitalisation associated with the ITCE incentive, extension of the duration of eligibility for flow-through credits and a subsequent reinstatement of flow-through credits. The total time series as well as the four subsets generated linear regression models. Although the initial segment model only generated an R^2 value of 0.15, a low correlation value, the power (that is α=0.05) remained one for all models, indicating significance. The rates of growth of market capitalisation are demonstrated to increase rapidly during the periods of the ITCE, extension and reinstatement of flow-through shares. The rate of capital accumulation for the four subsets can be shown to be significantly different as the gradients of each subset do not lie within the 95% confidence limits of the other subsets. The rate of increased market capitalisation is therefore correlated to the introduction of flow-through incentives.

Of interest is the significant jump in market capitalisation just prior to the reinstatement of super flow-through credits between the 30 March 2006 and 31 March 2006, where markets jumped by 37% in one day. This could be attributed to the market incorporating expected value prior to the announcement and the difference between first and second quarter valuations.

These results were validated using a control group, namely the FTSE 350 mining index (Figure 31). This control group was utilised as it has the longest

relevant history comparable to the TSX index generated in this study, Figure 30 and is a major mining listing destination. The results of the linear regression models fitted to each subset and the overall dataset are captured in Table 8. All of the models have a significant correlation to the data. The gradients of these models represent the rate of market capitalisation for each subset. The gradients of all of these models are discrete, that is, they do not fall within the 95% confidence limit of the corresponding model from the control group. This indicates that the behaviour of the TSX is different from that of the FTSE and although the graphs appear to be following a general increase, they remain significantly different.

Although Desai and Goolsbee (2004) argue that incentives are inadequate to change a trend, it has been demonstrated in the case of Canada that incentives are associated with an acceleration of activity and value that is not represented within the rest of the population of this study.

6.3 PHASE 3: SOUTH AFRICA HAS LAGGED CANADA IN CAPITAL FORMATION RATE

Figure 19 shows that the TSX index has exceeded the growth rate of both South African indices, as well as the FTSE control group. There is evidently a significant difference in the rates of capital accumulation between the two bourses. It may be argued that South Africa has lagged as a result of other extraneous factors. This statement was investigated from the perspective of the changing minerals legislative environment, arguably the most significant extraneous factors (Cawood, 2007). Figure 32 graphically indicates the timing of several legislative implementations. Although there is circumstantial evidence of legislative impact such as the reduction in R51 billion of the market

capitalisation of the JSX as a result of the leaked draft Mining Charter (Northern Cape Government website, 2003), the assessment provided in Table 9 indicates a mixed message. Upon analysis of the type of information released, the pattern becomes clear. The first point is a policy document, but indicates a general increase of 14% on the JSX. The dip associated with earlier draft legislation may be identified, indicating the market correcting the assessment of the impacts once the policy was released. This second impact is significant and direct. The leaked draft charter resulted in a decrease of 17% of the JSE 177 index. This immediate impact may have been as a result of the unexpected timing of the leak. The third change is the promulgation of the Mineral and Petroleum Resources Development Act, associated with an increase in indexed value of 6%, indicating a decrease of uncertainty in the market. The fourth impact is a negative change of 7% on the JSX associated with the release of the draft royalty bill, which included surprisingly high royalty rates, specifically for platinum and diamond producers. The fifth impact of a positive 5% was associated with a revision to the royalty bill, which while still onerous, reduced royalty payments from the first draft. The last item of legislative impact was the third draft of the royalty bill. As this was perceived to be the final draft of the bill, opportunities for further representation to reduce royalty impacts, such as changing from revenue to profit based royalty, were removed. This was associated with a 10% reduction in the JSE 177 (Cawood, 2007 and McGregor BFA, 2008).

The impact of legislation is demonstrated to associate with volatility within the mining indices. However the association is variable and tends to be both negative and positive. The net impact of these six items of draft and final legislation are associated with a net decrease of over half a billion 1998 US

Dollars. The relationship can be described as initial market uncertainty and decrease in market capitalisation associated with draft legislation and improvement at the time of promulgation. This may either be owing to a market overreaction or the stance of legislators being antagonistic with onerous initial requirements tempered to more palatable final objectives. Whichever the case, the net affect is the destruction of value.

The next most significant external factor of influence to the study is that of mineral potential. The Fraser Institute Study (McMahon and Vidler, 2008) ranked South Africa's mineral potential without the impact of land restrictions and industry best practices as 42nd out of 68 in 2007 / 2008. This is down from 23rd out of 64 in 2004 / 2005. This in itself is surprising as the mineral potential of a country is unlikely to change over a period of time shorter than is required to deplete that mineral. Canadian states on average tend not to be more attractive than South Africa in the same survey index. In fact, the 2004 / 2005 ranking places South Africa well above the average of the Canadian territories (24th for 2007/2008 and 33rd for 2004/4005). This would indicate that South Africa remains attractive for mineral resource development and that other issues are impacting on exploration and development.

Although South Africa may be burdened with different legislative requirements from Canada, it does not have the benefit of investment incentives such as flow-through shares. It is therefore necessary to analyse the rate of market capitalisation between South Africa, using a combined JSE 177 and Nedsec Junior index, and the derived TSX index. To assess the impact of extraneous factors, such as other legislation, the FTSE control group was incorporated. The analysis of these sets of data and subsets of fiscal incentive information is

graphically represented in Figure 33 and the analysis of the data in Table 10. In these statistical evaluations, the null hypothesis, that the gradient is zero, is rejected. The linear regression models fitted to all of these data sets and subsets therefore indicate statistically relevant relationships. The strength of the relationship is indicated in the R^2 value and the statistical significance of the relationship by the Chronbach's alpha value. The only data subset that is therefore lacking in significance is the earliest TSX set with a Chronbach's alpha of 0.73. Values below 0.8 are regarded as lacking significance (NCSS 2007). This is probably owing to the relative volatility of the TSX index and a lack of a general direction of change in market capitalisation, that is, a trend. The gradients of the models were assessed to determine whether they lay within the 95% confidence limits of the corresponding datasets and subsets. The results of this analysis are represented in Table 11.

By analysing the models that display similar behaviour, it can be shown that the JSX and FTSE indices are similar between 2000 and 2003 and within two standard deviations between 2003 and 2006. The FTSE is also similar to the derived TSX index between 2000 and 2003. The derived TSX index shows some similarity (within two standard deviations) to the JSX between 2000 and 2003. Thereafter the models diverge and are no longer similar to each other.

This indicates that the behaviour of the TSX is similar to that of the FTSE after the implementation of the ITCE incentive, but dissimilar to the JSX during the same period, which is the same period as the introduction of several sets of legislation and draft legislation (items two, three and four in Figure 32). These are associated with a net negative impact of 274 million 1998 US Dollars.

The periods after the extension of super flow-through credits show that the behaviour of the derived TSX index is significantly different from that of the JSX combined index and the FTSE control, that is, after 2003.

Although the JSX and FTSE indices seem to be well aligned after 2003, the gradient of the models representing the first segment lie between one and two standard deviations from one another. The gradient of the FTSE model is only 8% greater than that of the combined JSX model. In the volatile equity markets, this relationship may be seen as material, but not statistically related, unless the confidence limits of the test are revised to, say, 90%. The volatility of the markets in the last segment results in no statistically relevant relationship between the FTSE and JSX. The gradient of the FTSE model is 40% steeper than that of the JSX combined index. It is during the same period that two more articles of draft legislation, the second and third Draft Royalty Bills, were released. These two articles are associated with a net decrease of 304 million 1998 US Dollars. The removal of the impact of this reduction would return the combined JSX index to having a statistically relevant relationship to the FTSE.

The result of this analysis is that the three indices are initially statistically similar to one another, but the TSX begins to diverge from 2003. The JSX and FTSE remain similar, although the relationship is not statistically relevant at a 95% confidence level, until 2006, when they diverge again. As the combined JSX index shows some relationship with the control group, it may be shown that the experiment sample, the TSX, has behaved significantly differently. The one unique observed factor that differentiates the derived TSX index from the other experiment sample, the combined JSX index, and the control, the FTSE index, is that of the application of fiscal incentives in the form of flow-through shares.

It may therefore be shown that fiscal incentives, in the form of flow-through shares, are associated with the increased rate of market capitalisation growth displayed by the derived TSX index. Although causality cannot be demonstrated, the nature of the time series evaluation implies that the preceding factors are responsible for the result.

6.4 Phase 4: South Africa Could Benefit From the Use of Fiscal Incentives

It has been shown in Section 6.1 that fiscal incentives are material in attracting investors to select destinations for raising capital on equity markets. Furthermore, the comparative advantage (Porter, 2007) gained by reducing the cost of capital through such measures incentivises businesses and individuals to invest in the targeted industries as opposed to competing entities, such as other bourses.

Canada has demonstrated that through the application of a coherent mineral development strategy, catalysed through personal fiscal incentives tailored to support the unique business model pursued by mineral exploration companies, that investment in mineral exploration and subsequently development and extraction of mineral wealth can significantly exceed that of competing nations.

Although the South African industry has had to deal with other factors, it has significantly lagged the growth rate of the Canadian mineral sector. South Africa is not alone however. The control group, the FTSE, is in a similar position, although this is only apparent later in the time series analysis. Canada has therefore been able to develop a comparative advantage in the application of fiscal policies. These have however not been emulated elsewhere, although several countries have considered this option. Canada has been successful in

aligning several government institutions, both federal and regional, and across functional areas, to develop incentive systems and the required monitoring and enforcement of the necessary bureaucracy, to effectively and efficiently implement and manage fiscal incentives. Owing to this efficiency, the poor timing described by Auerbach and Hasset (2002) of falling into the delayed execution trap, has been avoided. The complex nature of the systems and networks required to effectively implement these catalysts, Canada's comparative advantage, has in fact become a competitive advantage.

South Africa has significant mineral wealth and a long history of mineral extraction. Employment in the local mining industry has fallen owing to the reduced output of labour-intensive gold mines and the move to more capital-intensive, mechanised mining processes. The total contribution to the fiscus through employment has not declined at the same rate (Figure 17). In fact nominal labour earnings have grown on average 9% per year for the last ten years, contributing R40 billion, or 3.4% of the GDP in 2006 (Statistics SA, 2008). This indicates that labour is becoming more expensive, but in order to maintain a similar output, has increased in productivity. This supports the trend in the industry in moving towards more mechanised processes, utilising more highly skilled labour. If the South African minerals sector is able to increase its growth rate, the spinoffs will be significant. Not only will employees benefit directly, but a host of related industries forming the minerals exploration, extraction and processing cluster, will benefit. The additional tax revenue generated for government which may be diverted to indirectly related services such as education and health would also be significant. A common argument against fiscal incentives is the potential drain on the economy. However, Finance Canada research indicates that there is a multiplier of 2.6 for every unit

of tax revenue lost from government income to expenditure on exploration activities (Van der Merwe, 2007). If this expenditure could be focused through the South African minerals extraction and services cluster, significant benefit would accrue to the South African economy. The incentive provided to individuals may also address the poor national savings rate endemic within the country, where the net household savings as a percentage of disposable income dropped to an all time low of -0.4% in 2006 (Lings and Ranklin, 2007).

If an holistic mineral development strategy can be developed, addressing issues around: incentives, exploration business models, target development areas, labour legislation, ownership, property rights, beneficiation, import tariffs, environmental management and governance, South Africa may become globally competitive in attracting and developing its own capital funding sources. In a country with an exceptionally poor national savings rate, such incentives could be valuable in correcting this behaviour. Canada has demonstrated through past actions that it is possible to develop an internationally competitive advantage through the development of a well-coordinated and executed strategy.

7 CHAPTER 7: CONCLUSION

With the prospect of further job losses in the mining industry owing to a slow-down in global markets, this is an opportune time to create an environment where South Africa's minerals sector can outperform the states with which it competes. By analysing the factors of production required for a competitive sector, it is possible to identify specific opportunities. One of these is the cost of capital. Canada has managed to significantly reduce the cost of capital to match the unique business model of minerals exploration by junior companies. This has been shown through activity on the TSX to be correlated to the use of fiscal incentives in the form of flow-through shares. As a result of these incentives, a sector has been created that is a global leader in mineral exploration and development.

Policy makers, regulators, investors, and mineral sector entrepreneurs should take an interest in the findings of this study. The current economic environment has placed significant stress on most sectors of the global economy. In such a climate the most competitive organisations and states will be able to minimise the impact of a cyclical downturn. Those that lag others in terms of product, process, business models and investment environment development, will suffer the greatest.

South Africa, as a developmental state, requires focused and well-managed policies. ASGISA has not identified the minerals sector as one of sectors requiring focused developmental policy, with the exception of metals beneficiation (ASIGISA, 2007) which relies on a regulated primary industry

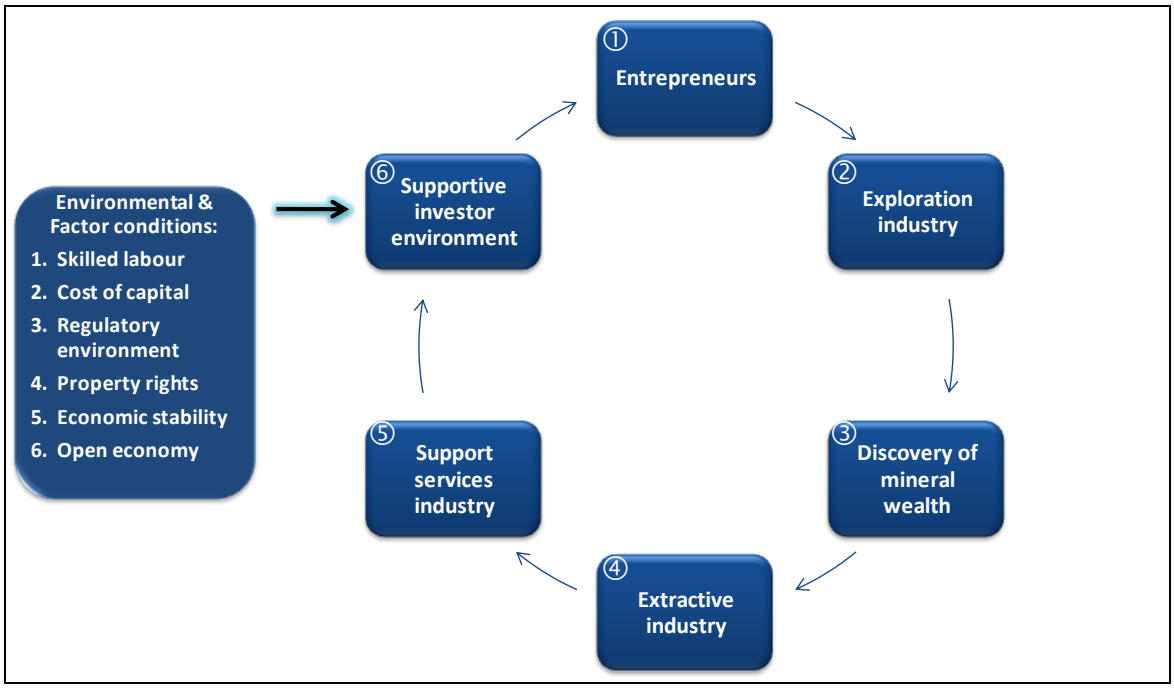
operating with an increasing cost base, owing to imposition of royalties. Contrary to current methods, policies aimed at enabling the growth of the base of the value chain may be far more rewarding than regulating latter stages. Targeted development should therefore focus on the type of organisation such as those represented by the respondents' companies in this study. They have taken speculative and entrepreneurial endeavour to success, through a focus on exploration opportunities, to translate into significant contributors to the Canadian economy. It is therefore such companies, and the individuals who conceive them, that are the type of individuals required for the nation-building objectives of a developmental state.

For South Africa to achieve an outcome comparable to Canada's success, an holistic plan would require coordination between several government departments, including: National Treasury, Minerals and Energy, Labour, Public Enterprises, Finance, Trade and Industry and Education. These departments would have to work in close collaboration with several private institutions such as the JSX, Chamber of Mines, universities, and broking and analyst services. Furthermore, the initiative would not be successful without the collaborative assistance of organised labour.

To develop a defensible advantage, South Africa would need to take the process one step further. With the integration of labour and education to develop an aligned advantage in the provision of skilled resources, one of the other critical factors of production, Canada could be overtaken as the premier minerals exploration and equity-raising destination. This may be further developed by looking at the application of incentives on a regional basis with

the objective of sourcing capital, skills, material, equipment and services from South Africa. This approach is summarised in Figure 34.

Figure 34: Sector Development Process Flow



The starting point of the cycle may be difficult to identify as one process will inevitably initiate the next. As South Africa already has an existing minerals sector with all of the identified steps in the process, it is step number six, creating a supportive investor environment that offers the best opportunity for state assistance through intervention to create a globally competitive sector.

This research is not exhaustive in analysing the complete population. Consequently there are several areas for potential further investigation.

The TSX-V market was specifically developed for small market capital companies, typical of the entrepreneurial exploration businesses that catalyse the industry. When this research was started there were 1 047 companies

listed on the TSX-V. With a more complete list of contacts, this research could be repeated with a more relevant sampling frame.

Although some anecdotal evidence is available of the benefits of flow-through shares to the economy and state income, no full analysis has been conducted on the opportunity cost to the state of lost revenues as a direct result of flow-through shares. A cost-benefit analysis of this relationship would be beneficial in understanding the indirect impacts of flow-through shares.

Mineral and metal prices have fluctuated significantly over the past decade. Recent devaluation of many commodities will have a deleterious impact on the industry. This research has not been controlled directly for metal prices. By analysing the contribution of each commodity to the change in market capitalisation of the TSX, a clearer picture may emerge of the patterns of behaviour of investors in response to market conditions.

As flow-through taxes are managed at a regional as well as a federal level in Canada, a focused regional assessment of the impact of flow-through shares may lead to improved interpretation of the response. Regional incentives may experience a shorter lag and have a more direct impact on specific companies.

The benefit of flow-through shares to the investor may also be investigated to ascertain how effectively the incentives have worked to generate sustainable wealth. Current commodity price trend reversals have eroded the market capitalisation of many firms. Research into the impact on the individual investor versus the historical tax benefits that have been accrued, may yield insight into the appetite of investors for similar incentives in the future. The Claymore

S&P/TSX Global Mining (ETF) which approximates the S&P/TSX Global Mining Index has dropped from a high of 27.13 on 16 May 2008 to a current value of 12.00 on 31 October, 2008 (Google Finance, 2008), a reduction of 56%. The impact of this trend reversal will be significant on individual investors.

It has been shown that South Africa and Canada's economies are significantly influenced by the minerals industry. Fiscal catalysts in the form of tax incentives can increase the rate of capital investment and may act to draw in future capital expenditure through accelerating value determination by reducing the cost of capital. South Africa has a need to address several socio-economic issues. Increased exploration activity, and subsequently mining activity, will aid this objective. The benefit will be particular to a demand for more highly skilled operators, artisans and engineers. Canada has managed to incentivise savings and investment in exploration activities by changing the reward mechanisms for such expenditure. Exploration need no longer be seen as a high risk venture with little current benefit, as this benefit is attributable to individual investors through fiscal policies in the short term, and the strength of the economy and coffers of the state in the long term. Many countries struggle to implement effective fiscal incentive policies, owing to the lag of implementation and poor inter-departmental coordination. Canada has developed a sophisticated and effective set of fiscal policies which have supported their objectives. It is through this holistic and well-managed strategy that the sector and country have been able to prosper.

South Africa, therefore, may learn much from Canada's experience with fiscal policy incentives in the minerals exploration and extraction industries.

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9 APPENDICES

9.1 SUMMARISED FRASER INSTITUTE SURVEY FINDINGS

Table 12: Summarised Fraser Institute Survey Findings

	SA Rank	Similar states	Top performers
Policy potential index	50/68	Russia, Turkey, South Dakota, Tanzania, DRC (Congo), Wisconsin, China, Nunavut, Papa New Guinea.	Québec, Nevada, Finland, Alberta, Manitoba, Chile, Utah, Wyoming, Ireland, Sweden and Botswana.
Current mineral potential index	53/68	Russia, India, Philippines, New Zealand, Minnesota, Mongolia, Washington, Bolivia	Mexico, Québec, Chile, South Australia, Bakino Faso, Finland, Manitoba, Nevada, Ghana and Mali.
Best Practices Mineral Potential Index	41/68	Wyoming, Nunavut, China, Montana, Namibia, Peru, Botswana, New South Wales.	Russia, Brazil, Ghana, Philippines, Papua New Guinea, Indonesia, Minnesota, Western Australia, Québec, Queensland
Room for improvement	15/68	Papua New Guinea, DRC (Congo), Colombia, North West Territories, Bolivia, British Columbia, Nunavut, China	Montana, Venezuela, Wisconsin, Ecuador, Minnesota, Kazakhstan, Zimbabwe, Philippines, Russia, Mongolia, Indonesia, India, California, Colorado
Uncertainty Concerning the Administration, Interpretation and Enforcement of Existing Regulations	52/68	California, Papua New Guinea, Wisconsin, Minnesota, Montana, Argentina, South Africa, Colorado, China, Panama, India, Indonesia, Bolivia, Ecuador, Honduras, Russia, DRC (Congo), Mongolia, Philippines, Venezuela, Kazakhstan, Zimbabwe	Finland, Québec, Nevada, Saskatchewan, New Brunswick, Manitoba, Sweden, Newfoundland / Labrador, Northern Territories, Utah, Victoria, Chile, South Australia, Tasmania, Queensland.
Environmental Regulations	26/68	California, Papua New Guinea, Wisconsin, Minnesota, Montana, Argentina, South Africa, Colorado, China, Panama, India, Indonesia, Bolivia, Ecuador, Honduras, Russia, DRC (Congo), Mongolia, Philippines, Venezuela, Kazakhstan, Zimbabwe	Botswana, Mali, Burkina Faso, Ghana, Colombia, Zambia, Namibia, Alberta, Chile, Tanzania
Regulatory Duplication and Inconsistencies	50/68	Mali, Washington, Wisconsin, California, Nunavut, Montana, New Mexico, Bolivia, China	Alberta, Botswana, Finland, Ireland, Manitoba, Nevada, New Brunswick, Newfoundland / Labrador, Nova Scotia, Northern Territories, Québec, Saskatchewan, South Australia
Taxation Regime	58/68	Indonesia, Colorado, Russia, Wisconsin, Argentina, Ecuador, China, California, Honduras, Bolivia,	Nevada, Québec, Minnesota, New Brunswick, Yukon, NWT, Alberta, Utah, Botswana, Wyoming

		Kazakhstan	
Uncertainty Concerning Native Land Claims	54/68	New South Wales, New Zealand, Panama, Venezuela, Papa New Guinea, South Australia, Nunavut, NWT, British Columbia, Western Australia, Honduras, Ecuador, Queensland	Burkina Faso, Ghana, Wyoming, Botswana, Minnesota, Russia, Sweden, South Dakota, Nova Scotia, Nevada
Uncertainty Concerning which Areas will be Protected as Wilderness Areas or Parks	32/68	Sweden, Colombia, Chile, Queensland, Spain, Argentina, China, Minnesota, South Dakota, Nova Scotia	New Brunswick, Mali, Ghana, Russia, Kazakhstan, Nfld./Labrador, Namibia, Saskatchewan, Alberta, Nevada
Infrastructure	34/68	Chile, Manitoba, Botswana, Northern Territories, New Zealand, Panama, Sweden, Namibia, Mexico, Turkey, Argentina	Minnesota, Nova Scotia, Alberta, Arizona, Nevada, New Brunswick, New South Wales, Washington, Utah, Spain
Socioeconomic Agreements and Community Development Conditions	55/68	Tanzania, Mongolia, Indonesia, Peru, Mali, Philippines, Colombia, DRC (Congo), India, Kazakhstan, Ecuador	Finland, Tasmania, New Brunswick, Alberta, Sweden, Arizona, New South Wales, Nevada, Nova Scotia, Utah
Political stability	49/68	Tanzania, Mongolia, Indonesia, Peru, Mali, Philippines, Colombia, DRC (Congo), India, Kazakhstan, Ecuador	Montana, Colorado, Turkey, California, China, Mali, South Dakota, Panama, Wisconsin, Argentina
Labour Regulations and Employment Agreements	64/68	Argentina, Panama, Mali, Colombia, Kazakhstan, India, Honduras, Ecuador, Venezuela, Bolivia, Zimbabwe	Tasmania, Northern Territory, Victoria, Alaska, Utah, Nova Scotia, Alberta, South Australia, Wyoming, New Mexico
Geological database	31/68	Ghana, Arizona, Peru, Botswana, Turkey, Spain, Brazil, Colorado, Washington, Argentina	Ireland, Finland, Minnesota, Québec, Yukon, New South Wales, Manitoba, South Australia, Nunavut, Northern Territory
Security, including physical	56/68	Mali, Panama, Mexico, Tanzania, Russia, Ecuador, Kazakhstan, Honduras, Indonesia, Papua New Guinea	Sweden, Ireland, Finland, Northern Territory, Wyoming, Washington, Nova Scotia, Alberta, Nevada, Québec
Supply of Labour and skills	33/68	Tasmania, Mexico, Alaska, Wisconsin, South Dakota, Brazil, Turkey, Manitoba, British Columbia, Western Australia	Utah, Finland, Ireland, Nova Scotia, Minnesota, Nevada, New Brunswick, Arizona, Wyoming, Newfoundland / Labrador

Source: McMahon and Vidler (2008)

9.2 SURVEY QUESTIONNAIRE

Listing Destinations

1. Introduction

I am conducting research into the benefits of investment incentives used in Canada, with specific reference to "flow-through" and "super flow-through" shares. I wish to establish if there is a relationship between these incentives and rates of capital formation, with the intent of assessing the potential application of similar incentives in other countries. To achieve this, you are requested to complete the following questionnaire. This should take no more than ten minutes of your time. Your participation is voluntary, and you may withdraw from the process at any time without penalty. All data will be kept confidential in this research. If you have any concerns, please contact either me or my supervisor on the contact details below.

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Listing Destinations

2. Company characteristics

*** 1. Which description is currently most appropriate for your organisation?**

- ◯ Pure exploration
- ◯ Projects and exploration
- ◯ Operations, projects and exploration
- ◯ Operations and projects
- ◯ Operations

*** 2. Which description was most appropriate for your organisation at the time of listing?**

- ◯ Pure exploration
- ◯ Projects and exploration
- ◯ Operations, projects and exploration
- ◯ Operations and projects
- ◯ Operations

*** 3. What type/s mineral do you target?**

- ☐ Coal
- ☐ Cobalt
- ☐ Copper
- ☐ Diamonds
- ☐ Gas
- ☐ Gold
- ☐ Iron ore
- ☐ Lead
- ☐ Nickel
- ☐ Oil
- ☐ PGMs
- ☐ Silver
- ☐ Tar sands
- ☐ Uranium
- ☐ Zinc

Other (please specify)

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Listing Destinations

3. Countries of operation

1. In which of the following Canadian territories do you operate?

- [ ] Alberta
- [ ] British Columbia
- [ ] Manitoba
- [ ] New Brunswick
- [ ] Newfoundland & Labrador
- [ ] Nova Scotia
- [ ] Nunavut
- [ ] NW Territories
- [ ] Ontario
- [ ] P.E.I.
- [ ] Quebec
- [ ] Saskatchewan
- [ ] Yukon

2. In which of the other American countries do you operate?

- [ ] United States
- [ ] Mexico
- [ ] Guatemala
- [ ] Nicaragua
- [ ] Costa Rica
- [ ] Colombia
- [ ] Venezuela
- [ ] Ecuador
- [ ] Brazil
- [ ] Bolivia
- [ ] Peru
- [ ] Chile
- [ ] Paraguay
- [ ] Argentina

Other (please specify)

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Listing Destinations

3. In which of the Pacific and Australasian countries do you operate

- [ ] Australia
- [ ] Indonesia
- [ ] Malaysia
- [ ] Philippines
- [ ] Papau New Guinea

Other (please specify)

4. In which African Countires do you operate?

- [ ] Angola
- [ ] Botswana
- [ ] Democratic Republic of Congo
- [ ] Namibia
- [ ] Nigeria
- [ ] South Africa
- [ ] Zambia
- [ ] Zambia

Other (please specify)

5. In which European, Middle East and Asian countries do you operate?

- [ ] United Kingdom
- [ ] Germany
- [ ] France
- [ ] Spain
- [ ] Portugal
- [ ] Italy
- [ ] Russia
- [ ] Saudi Arabia
- [ ] India
- [ ] China
- [ ] Thailand
- [ ] Vietnam
- [ ] Japan

Other (please specify)

Listing Destinations

4. Methods of funding and listing destinations

* **1. Please allocate a percentage to the following forms of funding (i.e. allocate 100 points).**

Operating leases	
Bank finance	
Bonds and warrants	
Public equity (listing)	
Original owners equity	
Private equity	
Venture capital	

2. Which of the following listing destinations did you consider, ranked from most (1) to least (10) attractive?

TSX	
TSXV	
LSE	
AIM	
NYSE	
NASDAQ	
JSE	
JSE Alt-ex	
ASX	
Other	

3. Which of the following listing destinations did you choose for your primary and / or secondary listings?

	TSX	TSXV	LSE	AIM	NYSE	NASDAQ	JSE	JSE Alt-ex	ASX
Primary listing destination	○	○	○	○	○	○	○	○	○
Secondary listing destination	○	○	○	○	○	○	○	○	○

Other (please specify)

Listing Destinations

5. Factors affecting listing

Instruction: allocate 100 points, with the most important receiving the greatest allocation of points.

1. Please allocate a percentage to which of the following factors you considered most to least important.

Further detail explaining the intent of each category can be found in the subsequent four questions.

Locality	
Governance	
Exchange characteristics	
Financial	

2. Please allocate a percentage to the most important factors affecting locality of the stock exchange.

Locality of mineral resource	
Corporate domicile country	
Personal domicile country	
Time zone	
Proximity to domicile	

3. Please allocate a percentage to the most important factors affecting governance requirements of the stock exchange.

Financial reporting requirements	
Resource reporting requirements	
Social responsibility requirements	
Environmental responsibility requirements	

4. Please allocate a percentage to the most important factors affecting characteristics of the stock exchange.

Liquidity	
Size	
Mineral resource critical mass	
Ineffective (failed) trade frequency	
Trade clearing time	
Personal contacts (network)	

Listing Destinations

5. Please allocate a percentage to the most important factors affecting financial aspects of the stock exchange and listing country.

Initial cost of listing	
Annual fees	
Corporate tax rate	
Individual tax rate	
Capital expenditure treatment (accelerated depreciation)	
Investor incentives (e.g. flow through tax shields)	

Listing Destinations

6. Open ended question

1. Are there any other factors that you considered during your choice of listing location?

2. If you would like to, you may include your particulars which may assist in the analysis of the data.

Company name	
Your name	
Your position in the company	
Date of listing (primary)	
Date of listing (secondary - if applicable)	