

# **Increasing Skilled Trades Employer Participation in Apprenticeship Training in British Columbia**

**by**

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## Abstract

The sustainability of British Columbia's economy depends on maintaining a highly-skilled and productive trades labour-force. Since the late-1990s, reports of labour shortages in the trades have become increasingly frequent. Apprenticeship has traditionally been the source of training for new entrants to the skilled trades, yet it has been in decline in recent decades. In the early 2000s, policy responses targeted increasing the supply of potential apprentices, and produced record high apprenticeship enrolments. However, a decade later these enrolments have not been paralleled with additional apprenticeship completions. Only an estimated twenty per cent of skilled trades firms are currently training apprentices. This study examines the factors that affect a firm's decision whether to participate in apprenticeship by focusing on a single trade and region— electrical trades in the Greater Vancouver Regional District. This study's methodology has two components: a survey of the population of electrical trades firms, and semi-structured interviews with ten firms including four firms that currently employ apprentices and six firms that do not employ apprentices. The study finds that apprenticeship training occurs primarily in larger firms and unionized firms, and participation is primarily dependent on the availability of steady work contracts. Economic volatility, 'underground' competition, and information problems are interrelated factors that present challenges related to economies of scale, which adversely affect the participation of small firms in apprenticeship. Interviews with firms reveal that the current policy framework of directly subsidizing apprenticeship has had no effect on their hiring decisions. To improve the flow of workers into the skilled trades and address apprenticeship barriers, policies will need to focus on producing additional work opportunities that are conducive to apprenticeship training, improving the flexibility of apprenticeship work arrangements, correcting information problems regarding skill assessment, and suppressing 'underground' firms. Possible policy alternatives include apprentice-share arrangements similar to that of the Canadian Electrical Joint Training Committee (EJTC) and Australian Group Training Organizations (GTOs), and/or an interactive user-supported web platform that provides accurate industry and firm-specific information to other firms, workers, prospective workers, and consumers.

**Keywords:** Skilled Trades; Apprenticeship; Journeyperson; Training; Skills Shortages; Underground Economy; Construction; Electrical Trades; British Columbia

*For my family—my father Peter, my mother Wendy,  
brothers Matthew and Andrew, and my nephew, Ashton*

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# Glossary

<b>Apprenticeship</b>	Agreement between apprentice and employer. It combines technical classroom training (20%) and on-the-job experience (80%) requiring 2-5 years of on-the-job hours depending on trade and jurisdiction , though the length of each component is trade specific (avg. 4 years). Over 200 apprenticeship training programs are currently available across Canada. Each province and territory has its own training and certification policies.
<b>Apprentice</b>	Individual who learns the skills of a specific career by receiving on-the-job training from someone who is already an expert. Working with a skilled worker in the field the apprentice will learn the necessary techniques to work independently in the future.
<b>Journey person</b>	Certified tradesperson; a qualified and skilled person in a trade allowed to train and act as a mentor to a registered apprentice.
<b>Employer-Sponsor</b>	Certified tradesperson or equivalent or a legal entity (e.g., a company or organization) that registers with the ITA to employ an apprentice, and is willing to assume specific responsibilities including the provision of work-based training completed under the direction or supervision of a certified tradesperson or equivalent, ensuring that the apprentice receives work-based training that incorporates the full scope of the apprenticeship program, report training hours, release the apprentice as necessary to attend technical training.
<b>Certificate of Apprenticeship</b>	Awarded by the Industry Training Authority (ITA) upon completion of the requirements of an apprenticeship program – generally the completion of a set number of hours of on-the-job training and in-class training.
<b>Certificate of Qualification (CQ)</b>	Provincial credential available to skilled workers in more than 160 trades in British Columbia. It is available to those practitioners who have received appropriate training, have passed the written and practical exams and have had sufficient work experience. In most trades, the CQ can be earned by completing a registered apprenticeship and passing an exam. People can also earn a CQ by "challenging" the examination for certification after having worked in the trade for a specified period of time.
<b>Interprovincial 'Red Seal' Endorsement</b>	In addition to the provincial CQ, many trades also offer an Interprovincial Endorsement. These are sometimes called Red Seal trades because people who have earned the endorsement receive a prominent red seal attached to their Certificate of Qualification.

## Executive Summary

The skilled trades have long been a crucial part of the Canadian economy as a driving force behind Canada's industrial growth throughout the 20th century. Over the past decade, however, there has been a great deal of concern among stakeholders and policy-makers over skilled labour shortages in the trades. Although concern over shortages quickly switched to concern over unemployment following the 2008-2009 recession, the combination of an ageing workforce and a much smaller cohort of younger trades workers suggests that there will be labour shortages in various skilled trades across Canada in the near future. If significant shortages do occur, the result will be increased costs of goods and services, constrained economic growth, reduced productivity, and decreased economic competitiveness of Canadian firms—all of which would contribute to a reduction in the Canadian standard of living.

'Importing' skilled workers is one option, but does not necessarily escape the requirement of an apprenticeship. Due to regionally specific building codes and government regulations even experienced immigrant tradespeople must complete a portion of the required apprenticeship hours before attaining local certification.<sup>1</sup> Importing workers also carries other implications including: productivity losses resulting from the elimination of high-quality vocational training in British Columbia, fairness issues for the domestic work-force as many jobless workers seeking employment remain unemployed and untrained while new workers enter those relatively high-paying trades jobs, and economic costs associated with side-lining domestic workers as they suffer poorer life and labour market outcomes as a result.

<sup>1</sup> Much of learning a trade is learning the building code, which is specific to BC and takes time to learn. Therefore, the Industry Training Authority (ITA) requires that all immigrants admitted under the credential recognition program as a tradesperson have their qualifications reviewed and tested, and for most trades, immigrants are required apprentice for a portion of the necessary apprenticeship hours before attaining local certification (typically 2 years of a required 4-year apprenticeship).

According to Statistics Canada (2012), the recession and current economic downturn resulted in unemployment for nearly three hundred thousand workers in trades-dependent sectors across Canada (construction and manufacturing), and with those workers, the loss of significant training investments. Although many workers were only temporarily unemployed, many others became discouraged from looking for work and have since exited the labour market. Many studies reveal a plethora of lasting negative social and labour market outcomes associated with long-term joblessness (Atkinson, et al., 1986; Furaker, 2010; Goldsmith, et al., 1996; Korpi, 2002; Machin and Manning, 1998; McClelland and Macdonald, 1998; Muller, et al., 1996; OECD, 2002). Meanwhile, youth joblessness is quite high as thousands of potential new labour market entrants stand at the side-lines waiting for their chance to enter the trades.<sup>2</sup> A number of studies show that prolonged youth joblessness can have lasting negative social and economic consequences including a weak labour force attachment (Hammer 1993; Mroz and Savage, 2003; Kletzer and Fairlie, 2003; and United Nations, 2007).

The economic consequences of side-lining entire cohorts of potential workers extend well beyond the immediate opportunity costs associated with failing to reap the benefits of their added labour productivity. Several studies find that long-term joblessness can lead to human capital depreciation for previously employed workers, and stunted human capital development for unemployed or underemployed young workers (Hollenbeck, 1990; Pissarides, 1992; Kletzer and Fairlie, 2003; Mroz and Savage, 2006). The consequence of failing to address youth unemployment means that these potential workers do not gain the training and work experience needed to fill soon to be vacant jobs left by retiring baby-boomers. Because the trades rely on industry to train, the en mass labour force exit of the baby-boomers presents challenges to effective

<sup>2</sup> Jackson (2012) demonstrates that the true youth jobless rate is over 20%. Statistics Canada's definition of unemployment does not provide an accurate measure of true joblessness as it includes only persons without paid employment who have attempted to gain paid employment in the past four weeks. The measure therefore ignores the uncounted thousands, who are either discouraged from looking for work and therefore not counted as being in the labour market, are involuntarily self-employed (i.e. register a business without much, if any, income), or are severely 'underemployed' (i.e. employed part-time or seasonal, whereas preference is for full-time, full year, or employed at a pay and productivity level far beneath one's potential).

knowledge transfers and succession planning. This has resulted in a much lower 'starting point' in terms of human capital in the trades, making it all the more difficult to cope with future labour market demand. According to BCStats (2010), labour demand growth for trades occupations will outstrip labour supply growth from 2009-2019, due mainly to retirements, but also expansion in demand. The average age of a journeyperson is about fifty, with significant turnover expected in the next ten years (Conference Board, 2002). To make matters worse, studies indicate that young people entering trades are far less likely to participate in apprenticeship (ibid; Canadian Council on Learning, 2006).

In order to address concerns over labour shortages in the trades, the federal and provincial governments developed a number of programs including a media campaign to attract new entrants to the trades, and a system of apprenticeship grants and tax credits to incentivize registrations and completions. However, despite record apprenticeship registrations and direct subsidies, Statistics Canada (2007) finds new apprenticeship certifications have been flat consistently for three decades, and Meredith (2010) estimates the contribution of apprenticeship to the trades has fallen to just over one-third in 2006.

The Canadian Apprenticeship Forum (CAF, 2009) reveals problems of low firm participation in apprenticeship, with an estimated participation rate of 20 per cent of all skilled trades firms, though rates vary from trade to trade. Despite frequent claims of journeyperson shortages in the trades, over 80 per cent of skilled trades firms are not participating in apprenticeship, which is the primary mode of producing more journeypersons. This contradiction has generally been associated with a number of interrelated factors barring certain firms from participating in apprenticeship, such as economic volatility, long-term training commitment, cost of training and return on investment (RoI) perceptions, and wage issues such as 'who pays?' for training (Gunderson, 2009). Indirect evidence from O'Grady (2004) suggests that the pool of eligible or likely apprentice employer-sponsors may be drying up in the construction trades with the rise of 'fly-by-night' independent operators engaged in underground work, which now accounts for the majority of work conducted in the home renovation subsector.



## ***Investigative Framework***

This study explores factors affecting a firm's decision to participate in apprenticeship training as a means to help generate policy options to increase the number of participating firms. Given the impracticality of surveying all skilled trades firms in BC, this study focuses on a single trade and region—electrical firms in the Greater Vancouver Regional District (GVRD). This study's methodology consists of two parts: a survey of the population of electrical firms in the GVRD, and ten semi-structured interviews with the subset of that population in which non-participation in apprenticeship primarily occurs, including four participating and six non-participating firms. The survey of that population serves to recruit interview candidates and narrow to the sample of interest, confirming two core assumptions about firm participation suggested by the apprenticeship literature: firms that participate in apprenticeship training are either large and/or unionized. This study therefore narrows its focus to what determines whether small, non-unionized firms participate in apprenticeship training.<sup>3</sup>

## ***Findings***

Interviews reveal that participation in apprenticeship training is primarily dependent on the availability of steady work contracts. The question for many business owners is not so much *whether* to hire apprentices, but *at what point* in a firm's development to hire them. Small firms typically have less 'training capacity' than larger firms given fluctuating workload volumes. For an independent owner-operator, employing a single apprentice will often result in situations of either too many or too few workers, both of which impose costs (actual and opportunity costs). These findings indicate that a policy response directed toward supporting small business may result in apprenticeship gains, such as either fostering circumstances conducive to apprenticeship training or improving the flexibility of apprenticeship work arrangements

<sup>3</sup> Industry Canada defines a small business as one that has fewer than 100 employees for goods-producing sector businesses like construction. In this study the term refers to firms with fewer than 20 employees, including owner-operators.

to allow small firms to adjust their participation depending on their fluctuating needs. Interviews also reveal significant information problems associated with skill assessment. Employers cannot gauge the skill level of prospective hires because of signalling problems associated with 'decredentalizing'. In addition, interviewees believe that consumers are not able to gauge the skill level of prospective contractors, nor recognize the difference in work quality, allowing price alone to influence contracting decisions. This provides a significant advantage to firms engaged in 'underground' practices compared with 'above-board' firms.<sup>4</sup> Interview respondents are well aware of the competitive advantage of underground or 'fly-by-night' operators and the related impact on their own workload and bottom-line.

### ***Policy Directions***

Supported by an extensive literature review, interviews with trades firms indicate that the current policy framework of directly subsidizing apprenticeships has had little to no effect on most firms' hiring decisions. This is not because the subsidies are not high enough, but because the sole determinant of whether to hire and train an (additional) apprentice is the sufficiency of available work contracts to support additional hires. Policy options should support conditions conducive to apprenticeship training, increase training capacity of small firms, correct information problems, and reduce the negative impacts on training by deterring the operations of underground (non-training) firms and projects. These policy directions, supported by case studies of programs in other jurisdictions, suggest two alternative policy approaches to increase the participation of small, non-unionized firms in apprenticeship training. First, apprentice-share arrangements similar to that of the Canadian Electrical Joint Training Committee (EJTC) and Australian Group Training Organizations (GTOs) will provide firms with access to a pool of readily available labour on demand and should prompt small firms to participate

<sup>4</sup> Examples of 'underground' practices include: styling employees as subcontractors to avoid paying into income taxes, Canada Pension Plan (CPP), Employment Insurance (EI), and workers compensation insurance (i.e. WorkSafeBC premiums) Insurance, avoiding sales taxes, building permits, etc.

at some level. Second, an user-supported industry web platform that provides accurate industry and firm-specific information to other firms, workers, prospective workers, and consumers should create efficiencies in the industry's allocation of labour by connecting labour demand and supply, correcting information problems with regard to skill quality assessment, and deterring underground work by exposing 'fly-by-night' operators.

### ***Recommendations***

By improving the availability and reliability of labour market and consumer information and establishing a training framework that enables smaller firms to overcome issues related to low training capacity, the Province of British Columbia can help overcome market failures and information problems in the trades. Policy measures targeted at the sub-set of firms that are currently not training apprentices should increase the number of apprentice completers and regularly training firms. This study recommends implementing both Group Training and a user-supported industry web platform. While Group Training should increase the participation of smaller firms, the web platform should resolve some of the information problems associated with skill and quality assessment in the labour and consumer markets, and should help suppress the activities of the underground economy. Both options would work best implemented and conducted collaboratively between federal and provincial governments, colleges and existing private training providers, industry associations, trade unions—all have mutual interest in improving apprenticeship outcomes. There is definite role for government in ensuring training that meets general needs of the economy. Overcoming the market failures affecting the trades will help reverse the 'race-to-the-bottom' in terms of skills and training, worker and public safety, work quality and consumer protection in the trades, and instead prompt a 'race-to-the top', fuelled by better information and smarter consumer and firm hiring decisions.

# 1. Introduction

The skilled trades make an important contribution to the Canadian economy and constitute 15 per cent of the its workforce. Industries depending on skilled trades workers are key drivers of the economy and contribute over half of Canada's GDP (approx. \$550 billion), according to Statistics Canada (2011a). In the decade leading up to the 2008-2009 recession, the main concern among stakeholders and policy-makers with respect to the trades was with claims of skilled labour shortages.<sup>5</sup> If labour shortages were to occur, the effect would be an increased cost of goods and services, reduced productivity, constrained economic growth, and decreased economic competitiveness of Canadian firms.

Although evidence shows that Canada experienced tight labour markets and 'shortage pressures' in certain trades pre-recession, economists tend to refute the existence of widespread shortages in the skilled trades pointing to flat wage growth, and relatively higher periods and levels unemployment between 1990 and 2010 (Institute for Competitiveness and Prosperity, 2010). This stands contrary to the conditions one would expect to see if there were widespread shortages such as strong job growth, low unemployment and upward pressure on wages, according to Gringras and Roy (1998). However, Human Resources and Skills Development Canada (2007) indicates that some temporary shortages did occur pre-recession, but were concentrated in very

<sup>5</sup> News headlines frequently reported similar stories: "Firms fear shortage of skilled trades"; "Lack of skilled trades will batter economy"; "Shortage of skilled tradespeople near crisis" Toronto Star (Mar 27, 2000); Toronto Star (Sep 13, 2005); Globe and Mail (Jun 06, 2008). In addition, the Canadian Federation of Independent Businesses (2003) conducted a survey which showed that nearly 50 per cent of businesses said a shortage of qualified labour was one of the most important issues facing their businesses; 56 per cent of firms said they were forced to hire people even though they were not suitable and almost 30 per cent said that, as a result, they had foregone business opportunities.

specific trades, regions, and projects, namely due to the energy boom and specific large-scale oil and gas projects in Western provinces and resulting population growth. Thus shortage signs were the result of regional disparities—low growth in the east versus high growth in the west—which compounded pre-existing labour market tightness.

Concerns of shortages quickly switched to concerns over joblessness following the 2008-2009 recession, but there remains cause for concern among industry and governments about more serious, future labour shortages. Canada has an aging skilled trades workforce and as baby-boomers begin to retire, they will be replaced in the labour force by a much smaller cohort of younger workers. The median age in trades is steadily rising, with a significant number of retirements expected over the next decade, which poses a problem for training new apprentices.

The 2008-2009 recession prompted the 'cooling off' of hot labour markets, as shortage pressures and labour market tightness lessened; however, industries employing skilled tradespeople shed nearly 300,000 workers across Canada, and lost a significant pre-recession human capital investment. Although many firms have started hiring workers once again, Canada's value-added manufacturing and construction sectors have not yet recovered, and countless potential new labour market entrants currently sit on the side-lines, jobless and untrained. This has resulted in a much lower 'starting point' in terms of human capital in the trades, making it all the more difficult to cope with future labour market demand for skilled trades labour. The sustainability of Canadian industry depends on a highly-skilled and productive skilled trades workforce, and this, in turn, depends on the developing and retaining human capital investments produced by high-intensity workforce training that sends clear signals to, and meets the needs of the economy.

As the traditional source of training for the trades, policy-makers and industry have looked to the apprenticeship system to provide the required skilled labour. However, it appears that the apprenticeship system has not kept pace with future demand for tradespeople, despite government programs to encourage apprenticeship training (e.g., apprenticeship grants). Recent Statistics Canada (2008) data from the Registered Apprenticeship Information System (RAIS) reveals that apprenticeship completions (certifications) remain flat for decades; meanwhile, based on the 2006

Census, Meredith (2010) finds proportion of skilled journeypersons has dropped to less than one-third of all tradespeople in Canada. Statistics Canada (2011b) reveals that between 1996 and 2006, employment in the construction trades in British Columbia increased over 40 per cent, whereas certifications decreased by 40 per cent over the same period, according to BC-Yukon Territory Building and Construction Trades Council (2006). While perspectives vary on the severity of these issues by trade and by province and territory, the concern is that there will not be sufficient numbers of certified tradespeople to meet labour market needs in coming years.

Studies that examined barriers to apprenticeship registration and completion found the following issues arose: economic volatility, the need for long-term training commitment, cost of training and return on investment (ROI) perceptions, and wages issues such as 'who pays?' for training. O'Grady (2004) suggests that the pool of eligible or likely apprentice employer-sponsors may be drying up in the construction trades with the rise of 'fly-by-night' independent operators engaged in underground work, a subset of firms that generally do not engage in training. These findings support the notion that there may be forms of market failure at play, given that the market has produced a situation where skill and accreditation levels are on a continuous decline.

At least part of the problem rests with firms, with only an estimated 20 per cent of skilled trades firms currently training apprentices, though participation rates vary from trade to trade. Apprenticeship is a unique form of post-secondary education because apprentices spend the majority of their training as paid employees in the labour market, unlike college and university students. Most trades exist in the construction, manufacturing, and transport sectors, which are highly pro-cyclical, meaning that employment—including journeypersons and apprentices—expands and contracts regularly with market conditions, shifting consumer demand, and changing seasons.

Considering the long-term commitment required of an apprentice employer-sponsor, economic volatility poses challenges for a firm's participation in apprenticeship, both initially, and over the average four years of an apprenticeship. This is especially true of small firms and independent owner-operators since fluctuating workloads will often mean that a firm inevitably experiences periods of too many, or too few workers, which either way will translate into costs for the firm, and may involve shedding

apprentice trainees during periods of downturn. Indeed many apprentices never complete the required hours, and many take a long time to complete. Historically, it was trade unions that ensured continuous employment and training during periods of unemployment by collectively 'pooling' apprentices to take advantage of economies of scale.

In the construction trades, the decline in apprentice completers over the past twenty-five years correlates with the decline of union firms and relative increase in independent owner-operators. The increasing prevalence of independent operators in the building trades has in turn has been associated with the increase in size of the underground economy in Canada's construction sector over the same period. Underground activity in the building trades carries numerous negative implications that include evasion of taxes and worker benefits, consumer protection, public safety and non-compliance with building codes, and adverse impact for above-board firms. Most relevant to this discussion is the assumption that 'underground operators' do not participate in apprenticeship training, since this involves a form of reporting activities to government.

These observations suggest that apprenticeship no longer contributes a significant number of skilled workers to the trades. Expansion in the number of college and technical school graduates accounts for some new entrants, while the majority of new entrants to the trades are uncertified, informally trained, and/or semi-skilled workers, and many work and receive pay 'under-the-table'. The decreasing skill level of new trades workers over the past two decades may help explain the perception of skill shortages in the trades.

Building on this information, this study examines why some and not other skilled trades firms participate in apprenticeship training programs. It examines the factors affecting a firm's decision whether to participate and explores potential policies to increase the number of participating firms. This study uses semi-structured qualitative interviews with skilled trades firms to test the relationship between variables drawn from the literature, and participation in apprenticeship. The study focuses on the electrical trades operating within the Greater Vancouver Regional District (GVRD) and, as larger

or unionized electrical firms already tend to participate in apprenticeship, narrows further to explore only smaller, non-union firms.

Section 2 defines key concepts, contextualizes the problem, provides a historical overview of the skilled trades, and discusses the body of literature on apprenticeship. Section 3 explains the study methodology, including survey variables and semi-structured interview approach, question selection, and structure. Section 4 analyses interview data and presents findings. These data show the participation of electrical trades firms in apprenticeship is primarily dependent on the availability of steady work contracts. In this view, the question for business owners is not so much *whether* to hire apprentices, but *at what point* in a firm's development in terms of capacity (i.e. the relationship between workload and number of employees), since larger firms are better able to balance workload and contracts against workers over time.

Moreover, interviews with firms reveal the current policy framework of directly subsidizing apprenticeship has had little to no effect on their hiring decisions. In order to make gains to apprenticeship in terms of the number of continuous trainers and therefore apprentices receiving continuous training, policies will need to focus on producing additional work opportunities conducive to training, by targeting issues of training capacity with small firms, correcting information problems impeding labour market efficiency, and curbing the operations of underground, non-training firms and projects. Section 5 outlines criteria and measures for evaluating policy options. Section 6 presents some alternate policy directions including an Group Training system similar to that of the Canadian Electrical Joint Training Committee (EJTC) and Australian Group Training Organizations (GTOs), and an user-supported industry web platform to correct information problems and increase the availability of flexible labour. The final sections present analysis results and recommended actions.



## 2. Background

This section defines the skilled trades and reviews their historical development in Canada, with particular emphasis on British Columbia. It then explores the relevant characteristics of the skilled trades labour market. Finally, it reviews the theoretical and empirical evidence concerning the performance of the apprenticeship system.

### 2.1. The Skilled Trades Defined

The skilled trades are a diverse set of occupations spanning a number of sectors, linked by common defining characteristics such as skill type, workplace activity, and education level. The term 'skilled trades' has become preferred to simply 'trades', though both terms are used interchangeably. 'Skilled trades' has a range of meanings in media and among industry associations. The term refers either generally to all *apprenticeable* occupations, including service sector occupations such as hairstylists, chefs, and early childhood workers, or specifically to only a select number of occupations traditionally thought of as 'the trades' such as electricians, carpenters, plumbers, mechanics, and welders. Depending on which definition is used, the number of skilled tradespeople in Canada can range from 1.1 million to 2.7 million.<sup>6</sup>

Apprenticeship is an agreement between an apprentice, who wants to learn a trade, and a firm, who needs a skilled worker. It combines on-the-job experience (80 per cent) with technical classroom training (20 per cent) and should take two to five years to complete (average 4 years), depending on trade and jurisdiction; each province and

<sup>6</sup> 1.1 Million according to Pyper (2008) and 2.7 Million according to the Canadian Council of Directors of Apprenticeship (CCDA) and Canadian Apprenticeship Forum (CAF) definition with Statistics Canada and HRSDC computations.

territory has its own training and certification policies. Firm cooperation is required to complete an apprenticeship as apprentices need sponsoring by an employer to complete the required hours. An employer-sponsor is an individual who is a certified tradesperson, or a legal entity (e.g. a company or organization) that employs one or more certified tradespersons, and registers with the Industry Training Authority (ITA) to employ an apprentice.<sup>7</sup> An employer-sponsor must be willing to assume specific responsibilities including the provision of work-based training under the direction or supervision of a certified tradesperson, who incorporates the full scope of the apprenticeship program, reporting training hours, and releasing the apprentice as necessary to attend technical training. Most apprenticeship programs also require completion of a pre-apprenticeship or entry level training at a recognized educational institution such as British Columbia Institute of Technology or Camosun College.

According to the Canadian Council of Directors of Apprenticeship (2007), a 'skilled trade' refers to the "type of occupation that typically includes complex activities and requires skills and account knowledge of the subject." This definition refers to all occupations for which there is an apprenticeship available and is therefore quite broad. Such broadness illustrates the diversity of skilled trades occupations; the similarities between a hairstylist and an electrician are difficult to identify beyond the common characteristic that both occupations are apprenticeable.

Human Resources and Skills Development Canada (HRSDC), in partnership with the Canadian Council of Directors of Apprenticeship (CCDA), lists all apprentice training programs and the corresponding occupations in Canada using the Ellis Chart. This chart reflects the thirteen provincial and territorial apprenticeship systems in Canada and more

<sup>7</sup> In general, an apprentice can only be employed by a certified journeyman, however, the ITA can issue special permissions to recognized entities such as training organizations as apprentice trainers. The apprentice is therefore indentured to the entity, rather than the employer-sponsor. Very few special permissions are granted by ITA, amounting to less than 1% of employers across all trades, according to ITA staff interviews.

than four-hundred designated apprenticeable trade programs.<sup>8</sup> According to Statistics Canada (2010) data from the 2006 Census, under this categorization there are 2.7 million Canadian workers employed in apprenticeable occupations, mostly throughout four major sectors: construction, industrial, transport, and service. Studies examining all apprenticeable occupations in aggregate invariably mask important differences between individual occupations and sectors. For example, goods-based sectors suffer far more than service sectors during periods of employment and economic volatility, according to Pyper (2008) and the BC Government (2010). To provide another example, although childhood educators are technically tradespeople in that they work in an apprenticeable occupation these workers have less in common with other trades than they do with other educators.

Apprenticeship has been the dominant learning model for trades occupations for centuries in European cultures, acting as the primary vehicle for gaining proficiency in those apprenticeable occupations. In most countries with apprenticeship systems and in common usage, the term 'trades' or 'crafts' generally refers only to construction, manufacturing, and some transport occupations.<sup>9</sup> A few studies have focussed on this more limited, homogeneous cohort of occupations; for instance, Pyper (2008) excludes the service sector occupations (e.g. hairdressers, chefs, and florists), and selects eight specific occupations for study including plumbers, electricians, carpenters, metal forming trades, and mechanics.<sup>10</sup> Together these occupations represent over 60 per cent of the 'traditional' skilled trades workforce in Canada, according to statistics Canada (2010).

<sup>8</sup> Many of these 400 programs overlap occupations (i.e. BC construction electricians are counted separately from AB construction electricians). Matching these apprenticeship programs to occupations according to the National Occupational Classification (NOC) system produces a list of over one-hundred trades-related occupations.

<sup>9</sup> With a few notable exceptions such as mechanics, many of who are considered to be part of the service sector, for instance. Also many service sector occupations have been considered a craft or trade for centuries; bakers, for example.

<sup>10</sup> NOC grouping 'H – Trades, Transport, and Equipment Operators and Related Occupations'.

For the purposes of this study, the treatment of the skilled trades is limited to the 'traditional trades'. Here, the concept 'skilled trades', refers to apprenticeable occupations in the construction, transportation and manufacturing sectors.<sup>11</sup> Workers employed in these occupations are known as tradespeople, which includes both journeypersons and non-certified trades workers.

## **2.2. Study Focus: BC Electrical Trades Firms**

An electrician is a person who installs, constructs, alters, repairs, maintains, services, tests, calibrates, and operates related electrical and electronic systems in any building or structure for an extensive variety of purposes including lighting, power distribution, transportation, climate control, security, communications, etc. Electricians ensure that the entire electrical installation is safe and satisfies the requirements of the Canadian Electrical Code.

To work as an electrician in BC, it is mandatory to either hold a Certificate of Apprenticeship or Qualification in the trade, or register in an apprenticeship that leads to certification or work under the supervision of a certified electrician. Unlike other trades, helpers are restricted in the electrical trades under current regulation; all workers must be either a journeyperson or apprentice, with some minor exceptions in residential construction. An electrician apprentice must complete a four-year program, including 6,000 workplace hours and 1,200 in-school hours of training. The apprenticeship wage is generally half of the journeyperson's wage in the first year, usually set to increase annually. After completing training, a passing grade on the inter-provincial exam will result in the BC Certificate of Apprenticeship, BC Certificate of Qualification, and the Inter-provincial 'Red Seal' Standard.

<sup>11</sup> However, some data in this study is from the Canadian Apprenticeship Forum which aggregates the data for all apprenticeable occupations including the service-sector.

Based on the 2006 Census, there were 9,535 electricians employed in British Columbia with only 55 per cent working full-time, all-year, according to Statistics Canada (2010).<sup>12</sup> As a share of occupational employment, 90 per cent of electricians work in the construction industry. Employment spans evenly across the province in relation to the distribution of the population, with 57 per cent working in the Lower Mainland-Southwest region. Since this study seeks to understand the factors affecting decisions of firms regarding apprenticeship training, the unit of analysis is therefore not the skilled trades workers themselves, rather the firms that employ them.

Electrical trades firms operate in all subsectors including residential, commercial, industrial, and institutional. Electrical contractors and maintenance departments of buildings and other establishments employ electricians, or they may be self-employed. According to BCStats (2011), in 2010, there were 51,926 businesses in the province's construction sector, 59 per cent were self-employed owner-operators, 38 per cent had 1-19 employees, and 3 per cent had 20 or more employees. Self-employment is much more common in construction than in most other industries at twice the average for all industries in the province, (BCStats 2006). In the construction sector, an estimated 75 per cent of the labour force (including owner-operators) is employed with small firms (<20), based on data from Statistics Canada (2010) and BCStats (2011). Unfortunately, specific data regarding the characteristics of electrical trades firms was unavailable from BC Stats or Statistics Canada. The ITA collects data on the number of registered sponsors of apprentices in British Columbia by apprenticeship program. In 2010, there were 1505 registered firm-sponsors in BC's electrical trades, up just 1 per cent over the previous year.<sup>13</sup>

<sup>12</sup> NOC 7241—Electricians (Except Industrial and Power System).

<sup>13</sup> ITA data on firm-sponsors was available only from 2007-2010. There may be some over- and double-counting as data represents both construction and industrial electricians; the count is unique within training program but not across programs and sponsors is allowed to manage apprenticeships in multiple programs at the same time.

## **2.3. Historical Overview of the Trades in Canada**

This section reviews the historical development of skilled trades in Canada, and particularly British Columbia, and addresses a number of relevant factors related to the nature of the industry.

### **2.3.1. *Consecutive Recessions and Fallout (1980s and 1990s)***

Canada experienced economic recession in the early 1980s and again in the early 1990s. These recessions slowed the growth of employment in goods-based sectors such as construction and manufacturing. Baldwin, et al (1997) shows that many builders went bankrupt and thousands of workers became unemployed. In times of recession in Canada, construction and manufacturing sectors have always lost the lion's share of workers because of those sectors' strong dependence on consumer demand. Tapp (2009) reports that in Canada, the 1980s recession (Jul 1981 – Oct 1982) saw the loss of 106,000 (-14.8 per cent) construction sector workers and nearly 300,000 workers (-14.2 per cent) manufacturing sector workers, compared with 550,000 total jobs lost (-4.8 per cent). In the 1990s recession (Apr 1990 – Apr 1992), the construction sector lost 120,000 workers (-14.5 per cent), and manufacturing lost 252,000 workers (-12.1 per cent), compared with 427,000 total jobs lost (-3.2 per cent). Although many workers who lost their jobs may have only been temporarily unemployed, many became 'discouraged' with not finding suitable work for suitable pay and permanently exited the labour force. According to Blakely (2002), Canada essentially lost a generation of apprentices in the 1990s, as relatively very few started an apprenticeship due to the economic slowdown. Following the recession, the existing supply of skilled workers exceeded the demand, according to Statistics Canada (2011) data.

### **2.3.2. *Economic Expansion (1994-2008)***

During the most recent economic boom (1994-2008), Canada's skilled trades sectors experienced unprecedented growth. During the early 1990s, BC had the fastest growing population in Canada. Record numbers of people were moving to BC from other provinces and countries providing a stimulus for economic growth and boosting the population by nearly 15 per cent between 1990 and 1995, according to BCStats (2006).

The whole country's population was increasing, resulting in a booming housing market. Pyper (2008) reports that the skilled trades experienced steady employment growth since the mid-1990s averaging 2.2 per cent annually, compared with 2.0 per cent for non-trades. In 1997, faced with tight labour markets, claims of shortages, and stagnant apprenticeship completions, the BC Government created the Industry Training and Apprenticeship Commission (ITAC) to revitalize apprenticeship and ensure input and participation between stakeholders, business, labour, education, and government. Employment in the industry doubled between 2000 and 2008, outpacing real GDP growth, as investment in new buildings and infrastructure soared. Construction is the third largest employer in the province at nearly 10 per cent of the workforce.

### ***2.3.3. Deregulation of BC Skilled Trades (2000-2004)***

In 2002, the newly elected BC Government dissolved ITAC and placed apprenticeship under an industry advisory committee to transition to a new model that focuses on producing outcomes for industry. In 2003, the BC Government eliminated the 'compulsory trades' designation, which required electricians, plumbers, gas-fitters and other trades to be certified in order to work in their trade. In 2004, the government created the Industry Training Authority (ITA), implementing a 'New Model' of apprenticeship training premised on neo-liberal market principles to meet industry's need for more flexible and accessible trades training programs (Meredith, 2008).

### ***2.3.4. Recent Recession and Continued Downturn (2008-2012)***

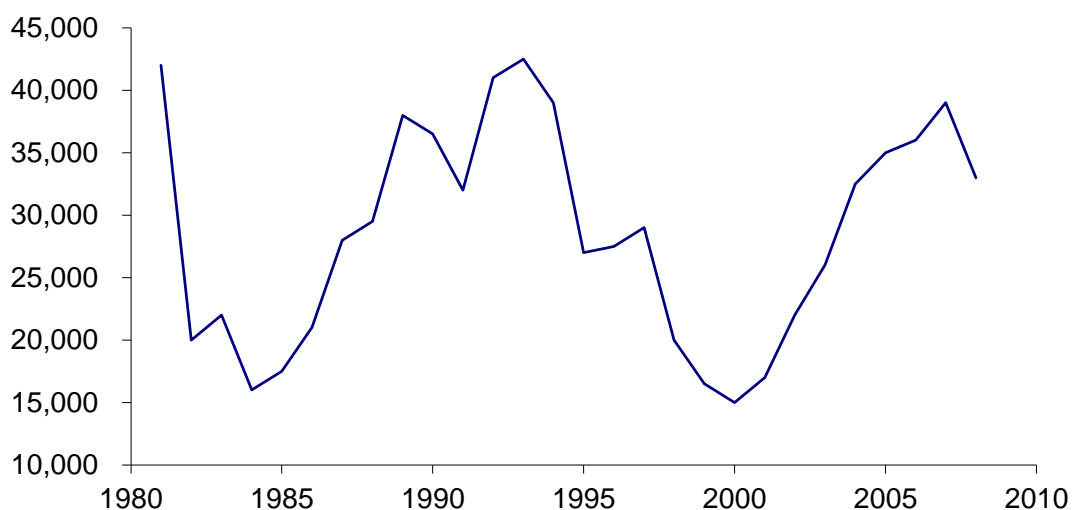
As in the rest of Canada, the 2008-2009 recession (Oct 2008 – May 2009) resulted in significant job losses to British Columbia's construction and manufacturing sectors, with the loss of 110,000 workers (-8.8 per cent) and 186,000 workers (-9.4 per cent) respectively, compared with a total loss to industry of 362,500 workers (-2.1 per cent). Tapp (2009) demonstrates that as in the previous two recessions, the two sectors experienced the majority of job losses at 82 per cent of the provincial total over that period. Though the recession and prolonged economic downturn has resulted in a temporary surplus of workers in the trades, it has caused many workers to exit the workforce, by retiring early, changing sectors or occupations, or by becoming discouraged and simply not working. This has resulted in a significant loss of human

capital investment and therefore a much lower starting point for the trades considering future labour market demand.

## 2.4. Skilled Trades Labour Market Issues and Trends

Most trades are found in the construction and manufacturing sectors, which are highly pro-cyclical, meaning that employment—including journeypersons and apprentices—expands and contracts regularly with market conditions, shifting consumer demand, and changing seasons. When the economy is growing, these industry tend to do very well, but when the economy contracts, times are tough for firms and workers alike. In the construction industry, builders often borrow money to finance large projects, so changes in consumer confidence and the cost of borrowing can have a significant impact. BC's residential construction industry has gone through two boom and bust cycles in the last 30 years (see Figure 2.1). Construction work involves at least some time spent outdoors, which means that employment in this industry is quite seasonal, with the demand for workers typically peaking in the summer months, and dropping off at the beginning of the year. Temporary employment is therefore quite common in this industry, normally accounting for about 20 per cent of workers (BC Government, 2011).

**Figure 2-1: BC Construction Sector—Number of housing starts (1981-2008)**



Source: Statistics Canada (2011)



### **2.4.1. Human Capital Retention and Development**

The 2008-2009 recession and current economic downturn created both short and long-term unemployment for thousands of skilled trades workers across Canada as noted above. Although many workers were only temporarily unemployed, others became discouraged from looking for work and exited the labour market. Other workers registered businesses after losing employment; some may have a genuine desire to make a go of self-employment, but many others are 'involuntarily self-employed' and may earn very little income from their new businesses (if any at all), but prefer to be perceived as self-employed as opposed to the socially stigmatized status of unemployment. Many involuntarily self-employed will therefore suffer from poor labour market outcomes and low wages comparable to unemployment or casual employment. Meanwhile, youth joblessness is high, with actual joblessness estimated at about 20 per cent, according to Jackson (2012), as thousands of potential new labour market entrants have been standing at the side-lines waiting for their chance to enter the trades. Studies show that prolonged youth joblessness can have lasting negative effects; when the economy 'picks up again', young people accustomed to life without work typically have difficulty adjusting to work, hold a weaker attachment to the labour market, and will experience a life of relatively poorer outcomes, according to Hammer (1993), Mroz and Savage (2003), and the United Nations (2007).

Numerous studies conclude that a loss of employment, even temporary, can have lasting negative effects for individual workers, families, communities, and the economy as a whole. The consequences of long-time joblessness include a plethora of negative socioeconomic outcomes such as life crisis, alcoholism, drug abuse, depression, mental illness, spousal abuse, child poverty, household bankruptcies, depletion of savings, and other societal ills, ultimately placing hefty costs on public services such as health care, child and family services, and law enforcement and justice, according to Atkinson, et al. (1986), Furaker (2010), Goldsmith, et al. (1996), McClelland and Macdonald (1998), Muller, et al. (1996), and the OECD (2002).

Möller (1990) and Korpi (2002) finds that even a short period of unemployment can result in a significant loss of human capital as skills are unused and become outdated as product knowledge wanes, resulting in lower wages and other labour market

outcomes. Indeed many discouraged workers never return to the labour force and their human capital is lost to the economy forever, rather than retained and put to use, or transferred to younger generations. The consequences of sidelining entire cohorts of potential workers extend beyond the immediate opportunity costs associated with not reaping the benefits of the productivity of their labour.

#### **2.4.2. Skill Shortage Signs and 'Decredentializing' Issues**

Some studies suggest that the persistent inability of firms to find suitably skilled workers in a labour market with a surplus of unemployed skilled workers is due to a 'talent mismatch'. There may be a specificity of skills that firms are now seeking that is creating a sense of talent shortage amidst an overabundant pool of available workers. The Conference Board (2002) suggests that perceived shortages in the skilled trades exist more because the economy, technology, and the skills required are changing so quickly that firms genuinely may be having difficulty finding qualified individuals who have the right combination of technical and employable skills. For instance, electricians are perhaps the most technology-intensive of all the trades. Recent developments in areas like fibre optics and information technology have increased the demand for, and the complexity of the work, though these technological advances are not quick to appear in the content offered in the apprenticeship programs; in effect, 'qualified' electricians can graduate from the apprenticeship system while at the same time not possessing the skills which industry demand. By the same token, many uncertified workers may be suitably skilled but have no means of signalling those skills because of a lack of accreditation. Forced to settle for a less skilled worker than is needed, a firm therefore perceives a shortage of skilled labour. This explanation also accounts for why such skills shortages do not produce increased wages; the wage is being set by the level of available skill in the market.

Sharpe, et al. (2008) find that shortages in the manufacturing sector are more due to the inability of manufacturers to attract workers at wages they can competitively sustain. "Thus, the observed lack of wage growth may still coincide with shortages, at least in that sector" (Institute for Competitiveness and Prosperity, 2010, p.24). Gringras and Roy (2001) similarly observe that perceived shortages may reflect recruitment difficulties internal to firms, as opposed to a genuine lack of people with appropriate

skills in the market. Some jobs simply go wanting because job seekers do not want to take them because they involve hard physical work, lack full-time hours and benefits, or pay to little.

Insomuch as certification and accreditation in a trade is a valid indicator of a highly-skilled tradesperson, the level of skill in the construction trades has actually declined over time. Certification is low in the construction trades and is declining, especially among voluntary trades but also in trades where certification is compulsory such as electricians (Construction Sector Council, 2003, p.50). The Conference Board (2002) finds that younger workers are far less likely to engage in training to work in the skilled trades, and generally do not seek certification. A Construction Sector Council (2003) study reveals that, on average, over half of the workers in the construction trades have no formal post-secondary training such as a trade certificate or diploma, likely contributing to the characterization of the industry as 'low tech' and 'low skill'. However, it may be the case that the industry is simply less 'credentialized', and that there are skills gained elsewhere, outside of the apprenticeship program. Much learning is informal and based on practical skills demonstrated by fellow workers and on-the-job and on-site experience, according to the Construction Sector Council (2003).

Currently, apprenticeship is no longer the main contributor to the trades at only one-third total entrants (Construction Sector Council, 2003; Meredith, 2010). The majority of new entrants to the trades are uncertified, informally trained, and/or semi-skilled workers. Indeed, the decreasing skill level of new trades workers over the past two decades seems to explain much of the perception of labour shortages in the trades. In this view, claims of shortages have less to do with a shortage of labour, than a shortage of the right kind of labour – skilled, experienced, and certified.

### **2.4.3. *The Underground Economy***

Under BC's *Safety Standards Act*, all electrical work must be performed by a licensed and certified electrician. Although all provinces have legislation making certification for electricians mandatory, according to the 2006 Census, only about 75 per cent of electricians are either certified or working toward certification (Meredith 2010). Since certification is compulsory in every jurisdiction in Canada, there is an expectation

that a higher proportion of the workforce ought to be certified (i.e. 100 per cent). One explanation is that some firms are increasingly engaging in 'underground' practices (i.e. evading taxes, building permits, licenses, and certifications, for example).

If indeed 25 per cent of working electricians are operating without a certificate and are performing tasks for which they do not meet even the most basic safety licensing requirements, it is at least on this basis that are operating illegally. However, this is only the tip of the iceberg of the underground economy in the skilled trades, particularly the construction industry. In an examination of Ontario's underground construction economy O'Grady (2004), concludes that it encompassed approximately 25 per cent of the total construction workforce. The proportion ranges from a low of 4 per cent in the civil sub-sector, to 56 per cent in renovations, and 67 per cent in repairs. While underground practices are much more prominent in the residential sector, the study found that underground practices had become a serious issue for the Industrial, Commercial, and Institutional (ICI) sector where underground work makes up around 15 per cent of the total.

In 2007, the BC Safety Authority found that 30-80 per cent of residential electrical installations go to underground operators, depending on the region. Some construction firms style their workers as sub-contracted 'independent operators' rather than as employees to avoid the costs that arise from a conventional employment relationship such as paying taxes and benefit entitlements (i.e. CPP, EI, WorkSafeBC). Prism Analytics (2010) argues that the increasing scale of the underground economy in the construction sector continues to be a serious threat to a level playing field, since in styling workers as independent operators rather than employees, contractors realize an unfair and illegitimate competitive advantage of between 20 to 50 per cent savings on labour costs. According to Armstrong and O'Grady (2004), the underground economy is so large that it contaminates the competitive environment by shifting the competitive advantage to those contractors who evade their responsibilities as firms. By shifting costs onto others, the underground economy increases the operating costs of workers and contractors who follow the rules. Armstrong and O'Grady (2004) argue that "turning a blind eye to underground practices rewards the cheaters, while penalizing those who pay their fair share." (p.6) As long as this imbalance remains, it will continue to entice

honest firms to cut corners and make up for the unequal advantage available to independent contractors.

Those working the underground economy tend to be independent operators and are far less likely to hold a certification (O'Grady, 2001; Ontario Construction Secretariat, 2010). Entering the industry as an independent operator is easier and less costly, requiring less training and experience. These workers generally avoid pursuing training, fuelled in part by fears that certification will put them 'on the grid' and result in government detecting their activities. The underground economy detracts from the amount of work that goes to above-board firms. What proceeds from this is essentially a race to the bottom in terms of skills development and training, and therefore construction quality and standards across the industry suffer as a result. The underground economy poses significant impediments to the achievement of a number of critical policy objectives, including: consumer protection, public safety, workplace safety, skills development, and public finance (income and sales taxes, EI, CPP, WorkSafeBC premiums) (Mirus 1994; Bartlett, 1998; Giles, 1998; O'Grady and Lampert, 1998; Armstrong and O'Grady, 2004; Prism Analytics, 2010a).

#### ***2.4.4. Immigrant and Migrant Workers in the Trades***

There are a growing number of reports of immigrant and migrant workers (i.e. Temporary Foreign Workers) displacing or crowding-out local tradespeople. Credential recognition issues and the requirement of apprenticeship for even experienced (im)migrant workers can act as a barrier to pursuing local certification, many avoid the process altogether. It has been suggested that the increasing use of (im)migrant labour in the skilled trades may be a result of firms offering jobs which domestic workers will not 'settle for' in terms of either poor working conditions and substandard wages (Prism, 2010c; BCYT-BCTC, 2006). It is suggested that the arrival and the retention of a number of unqualified TFWs, if continued, will gradually undermine the effective mentoring and on-the-job training of apprentices (Prism, 2010c).

### **2.4.5. *The 'Race-to-the-Bottom'***

These trends have serious implications for employment standards in Canada, as workers lack basic coverage against injury or unemployment and employers lack proper incentives or legal responsibilities to provide safe workplaces. Independent operators are allowed to determine their own minimal Workers Compensation Benefits (WCB) coverage and are expected to 'opt in' and self-insure at the appropriate level, but rarely do. This was confirmed in 2001 by the Joint Compliance Team (JCT), a federal-provincial initiative which found that 34 per cent of BC workers were without WCB coverage and 50 per cent were non-compliant with other employment standards regulations, estimating over \$40 million annually in unpaid premiums and assessments to WorkSafeBC (ESBO, 2001, p.11). Additionally, the JCT assessment only included new home construction, whereas the underground economy is far more prevalent in home renovations. In case of injury, underground workers have no WCB coverage or employment status and thus no legal recourse to make a claim against their 'employer'. Because underground employers have no risk-based WCB premiums to worry about and no legal responsibility in case of accident, they have little incentive to provide safe working conditions for workers.

Moreover, the trends noted in this section amount to a downward spiral in terms of a number of public priorities such as skills development, workplace and public safety, quality of work, and consumer protection. According to Brisbois et al. (2009), financial or regulatory incentives to invest in training, or even direct provision by government, may be justified when there are "externalities"—both positive benefits to society that cannot be captured by private actors in the market, and negative outcomes that cannot be resolved by the market. Billet and Smith (2003) argue that there is a role for government in funding training that meets general needs of the economy. Government intervention may be required to curb the 'race-to-the-bottom' trend in the trades and instead encourage a 'race-to-the-top'.

## **2.5. Apprenticeship: "An Institution in Crisis"?**

As the traditional source of training in the trades, industry groups and policy-makers look to the apprenticeship program to facilitate skills development and keep pace with the demand for skilled tradespeople by producing a sufficient number of journeypersons. The Canadian apprenticeship system is often described as an "institution in crisis", because despite supposedly strong demand for trades labour, apprenticeship certifications across the country have remained stagnant (Meredith, 2010). Sharpe and Gibson (2005) find that between 1991 and 2002 the apprenticeship completion rate actually declined by about 5 per cent. Concerning British Columbia's construction trades specifically, whereas employment increased over 40 per cent between 1996 and 2006 (from 120,000 to 170,000 workers), according to Statistics Canada (2011b), apprenticeship certifications dropped 40 per cent. In 1996, the BC Industry Training Authority (ITA) issued 4,471 certificates, compared with just 2,378 in 2006 (BCYT-BCTC, 2006).

The Canadian apprenticeship literature has attempted to account for the apprenticeship system's persistently poor performance, largely attributing it to a number of factors and barriers among both apprentices and firms that can affect apprenticeship enrolments (registrations) and/or completions (see Gunderson, 2009). Apprenticeship training is often framed according to labour market concepts of supply (apprentices) and demand (firms) because it involves paid workplace training.

### **2.5.1. *Supply-Side: Apprentice Registrations and Completions***

Several studies follow the logic of low completions to low enrolments (registrations), which are attributed to a number of factors including: negative attitudes towards apprenticeship and the trades, a lack of information and counselling on apprenticeship as a career pathway, a lack of integration with the education system, and wage issues related to complexities over cost-sharing for paid training (CAF, 2004; Conference Board, 2002; Gunderson, 2009).

Other studies point to difficulties finding employment as an apprentice as the primary barrier to enrolment. The Canadian Apprenticeship Forum (2010) finds that in

2006, 37 per cent of first-year apprentices had taken four months or more to find their firm sponsor, with an average search time of 7 months. However, it should be noted that these findings refer to successful registrants and says nothing of the potentially many would-be registrants who fail to find employment as an apprentice. Indeed, there is very little known about these would-be apprentices.

However, numerous studies suggest that it is the completion rate, rather than the registration rate that is the key issue.<sup>14</sup> A sharp increase in apprenticeship registrations beginning in the late 1990s did not coincide with an increase in completions, even over a decade later (Statistics Canada, 2008). Sharpe and Gibson (2005) note that between 1991 and 2002, while the completion rate declined by about 5 per cent, the number of registrations grew by about 91 per cent. They find that this is partly due to the lag-time between registration and completion, which is an average time-to-completion of five years. Although apprenticeship registrations have risen steadily, completion rates have fallen substantially, from 63 per cent in 1982 to 46 per cent in 2009. Prasil (2005) finds that of apprentices that registered in 1992, only about half had completed within 11 years, while the remainder had dropped out or were still continuing.<sup>15</sup>

A number of studies seek to explain low completions relative to registrations by investigating the reasons for discontinuing apprenticeship, (CAF, 2010; Cadieux, 2010). For apprentices, some of the same issues which inhibit registration can also inhibit completion, particularly with regards to wages. The relatively low training wage may not be sufficient for some apprentices, given that the average starting age is 27, and many apprentices are married with families (Gunderson, 2009). Inasmuch as a low apprenticeship wage reflects a training cost-sharing of sorts, apprentices may not be

<sup>14</sup> These studies have drawn primarily on Statistics Canada surveys including the National Apprenticeship Survey (NAS) and the Registered Apprenticeship Information System (RAIS). See Gunderson (2009) for an extensive review of the literature on apprentices.

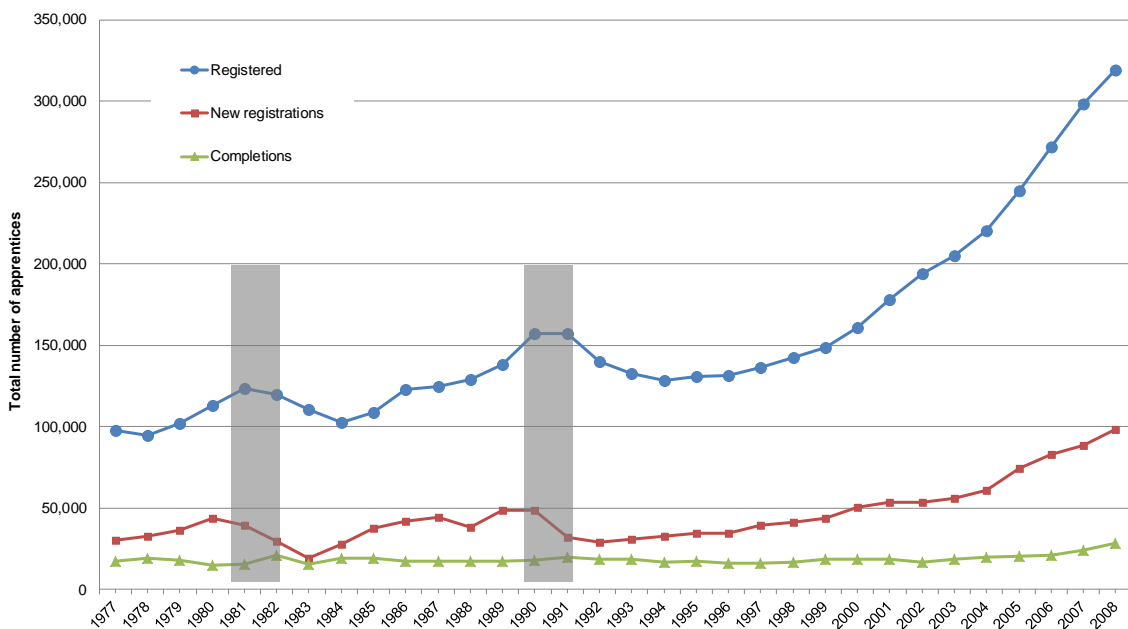
<sup>15</sup> Although an apprenticeship agreement may become more or less irrelevant once an employer-sponsor dismisses an apprentice, the apprentice remains registered in the system until completion or formally declaring discontinuation. Indeed, there are likely many registered apprentices who do not plan on completing.



willing to continue working at a wage perhaps significantly lower than their marginal productivity and higher wages may lure some apprentices away from completion in firms who pay a lower wage (ibid).

A number of studies estimate an average completion rate of 50 per cent, varying by trade and province (Prasil, 2005; Morrisette, 2008; Laporte and Mueller, 2010). Figure 2.2 illustrates the relationship between the registration and completion rates from 1977 to 2008, and shows that the completion rate, despite increasing employment in all skilled trades sectors over the same period, has remained stagnant for over three decades.

**Figure 2-2: National Apprenticeship Registrations and Completions (1977-2008)\***



Note: shaded areas indicate periods of recession

\*All apprenticeable occupations

Source: Statistics Canada (2008) – Registered Apprenticeship Information System (RAIS)

### 2.5.2. Demand-Side: Firm Participation in Apprentices

Although registration and completion are two points of significance for an apprentice, this distinction is less important considering firm demand for apprentices. From a firm's perspective, participation in apprenticeship often involves employing a number of apprentices, and includes everything from the initial registration and

employment, to continuous employment, ultimately resulting in completion. From this perspective, once a firm decides to participate in apprenticeship and commits to hire an apprentice, participation should continue and the apprentice should remain employed continuously through to completion. However, Stoll and Baignee (1997) find that 41 per cent of male non-completers indicated a lack of work was their main reason for not continuing.

Sharpe and Gibson (2005), Coe (2010), and Laporte and Mueller (2010) find that in downturns, a lack of continuous employment can prevent apprentices from acquiring the required hours to complete. Sharpe and Gibson (2005) observe that apprenticeship is strongly pro-cyclical, expanding rapidly with economic growth and contracting during recessions. They note that since apprentices must retain employment with a firm over the average four years of apprenticeship, high unemployment rates will have a strong negative impact on registration trends. Furthermore, they find the long duration of apprenticeship commitments make firms and employees sensitive to risk, as layoffs deprive firms of their return on training investments and leave employees unable to complete their certification.

Similarly, Prasil (2005), Sharpe and Gibson (2005), and Coe (2010) find that favourable economic conditions make it is easier to find an employer-sponsor to complete the on-the-job training part of the program, and will therefore improve completion rates. On the other hand, Laporte and Mueller (2010) suggest that economic expansions may actually decrease completion rates, since it is possible for many apprentices to find well paid work without completing their program. If they are correct in their assumption, it means that training make discontinue for many apprentices both during a boom as well as a bust.

Moreover, the literature points to the business cycle as perhaps the single most significant barrier to apprenticeship completion. In times of economic downturn, firms lay off apprentices, and thus the extent of a firm's participation decreases with decreases in overall employment demand. Volatile markets can therefore inhibit firm participation insomuch participation is reduced by laying-off apprentices along with other journeypersons. For small firms (< 20 workers) and independent owner-operators, reduced participation may involve employing no apprentices.

Although few empirical studies have sought to explain firm non-participation in apprenticeship, the theoretical literature indicates that a number of barriers exist to firm participation such as wages issues (apprentice wage may be too high), a perceived riskiness of the apprenticeship investment and concern over 'poaching', or a perceived negative return on investment for apprenticeship (Sharpe and Gibson, 2005; Gunderson, 2009). Many of these explanations infer that what determines firm participation is whether the result of a cost-benefit calculation vis-à-vis apprenticeship turns out to be positive or negative.

Meredith (2010) refutes the so-called 'barriers thesis' and contends that skilled trades are not a system of uniform investors in training that would normally hire apprentices were it not for market distorting barriers. Instead, he argues that firms are economic actors employing diverse strategies to interact with the institutional structure that is apprenticeship (i.e. wage strategy, indenturement, etc.), and that it is labour market demand alone that determines the level of apprenticeship training. In this view, attempting to incentivize firms to participate in apprenticeship is futile, since 'the market wants what it wants'.<sup>16</sup>

### **2.5.3. Policy Responses: Federal and Provincial Supports for Apprenticeship**

In 2007, the Governments of Canada and British Columbia both acted to address some of the pressures on the trades, including the provision of tax credits for firms and grants for apprentices. There are various financial incentives for both apprentices and employer-sponsors to incentivize continued training of apprentices and help offset the assumed financial burden of such training (Canadian Council on Learning, 2006). Federal apprenticeship grants provide taxable cash grants to apprentices and refundable income tax credits to firms registered in designated Red Seal trades including: the

<sup>16</sup> Attempting to influence the employment decisions of firms may appear futile (particularly through an economist's lens where 'the market simply wants what it wants'); however, as this study attempts to demonstrate, there may be ways to increase firm participation by influencing certain labour market conditions and addressing market failures and information problems.

Apprenticeship Job Creation Tax Credit (AJCTC), the Apprenticeship Incentive Grant (AIG), and the Apprenticeship Completion Grant (ACG), and also the extension of Employment Insurance (EI) to support eligible apprentices during in-school training (HRSDC website).

The same year, the BC Government introduced the BC Training Tax Credit to provide refundable income tax credits to firms and apprentices engaged in programs administered by the Industry Training Authority (ITA) including the Basic Training Tax Credit (up to \$4,000 per apprentice), and the Completion Training Tax Credit (up to \$3,000 per apprentice) for the completion of level 4 or higher (BC Ministry of Finance). In a national study, Meredith (2010) finds that the system of government apprenticeship grants have not been effective at increasing firm participation in apprenticeship.

**Table 2-1: Financial Incentives for Apprenticeship (Federal and Provincial)**

<b>Financial Incentives for Apprenticeship Industrial &amp; Construction Electricians (Red Seal)</b>		
	<b>Federal</b>	<b>Provincial (BC)</b>
<b>For Apprentices:</b>		
Level 1	\$1,000	
Level 2	\$1,000	
Level 3		\$2,000
Level 4 or higher		\$2,500
Completion	\$2,000	
	<b>\$4,000</b>	<b>\$4,500</b>
<b>For Employers:</b>		
Level 1	10% Max \$2,000	
Level 2	10% Max \$2,000	
Level 3		15% Max \$2,500
Level 4 or higher		15% Max \$3,000
	<b>\$4,000</b>	<b>\$5,500</b>

Source: BC Ministry of Finance & HRSDC

## **2.6. Policy Problem: Low Firm Participation in Apprenticeship**

This section explores the nature of the policy problem at hand—*Too few skilled trades firms participate in apprenticeship training*. An extensive literature review reveals that the empirical data concerning firm participation in apprenticeship is severely lacking.

The bulk of skilled trades research focuses only on apprenticeship participants, altogether excluding non-participant firms. The Canadian Apprenticeship Forum (2009) attempts to quantify firm participation in apprenticeship and reports that only 19.7 per cent of skilled trades firms participate in apprenticeship, though participation rates vary from trade to trade. The prospect that over 80 per cent of firms who presumably depend on journeypersons to support their industries are not engaged in apprenticeship training strongly suggests a problem. It suggests that most skilled trades firms either do not employ journeypersons and therefore are not eligible to train, have no need for apprentices for specific types of work or business models, or that they are essentially free-riding off the human capital investments of other firms.

Insomuch as skills and knowledge acquired by an apprentice potentially transferable to other workplaces, it can be difficult for employers to see a return on training investments. Apprentices may quit and use their skills with a new firm, or a firm may actively 'poach' the training investments of employer sponsors. "The market is likely to under invest in the provision of training for generic, portable skills." (Brisbois, et al., 2009, p.5). Insomuch as apprenticeship training investments produce "externalities—benefits to society that cannot be captured by private actors in the market" (ibid), non-investment in training is a market failure and becomes a public concern that justifies government intervention (Billet and Smith, 2005). Without intervention, the ongoing 'race-to-the bottom' in trades sectors will continue.

However, the CAF finding of 20 per cent participation is an underestimate in the context of this study for three reasons. First, it is based on the broadest possible definition of skilled trades and aggregates all apprenticeable occupations; firm participation in apprenticeship can vary greatly from trade-to-trade. For example, service sector occupations participate in apprenticeship less than construction or manufacturing trades, and regulated trades (i.e. electrical trades and gas-fitters) are more likely to see greater firm participation than in any other trade. Data on specific trade occupations is

necessary to avoid issues with aggregation in estimating the participation rate of skilled trades firms.<sup>17</sup>

Second, estimations of the number of skilled trades firms requires the complicated task of matching skilled trades occupations (identified by National Occupational Classification [NOC] code), with firms employing trades occupations (identified by North American Industry Classification System [NAICS] code). Certain skilled trades firms fall under industries not typical of the trades and are not included. For example, the City of Vancouver employs approximately two hundred journeypersons, but is not associated with employing skilled trades under the NAICS code. Similarly, non-trades firms fall under typical skilled trades sectors like construction or manufacturing. For instance, some firms employing graduate-level engineering professionals are included among other construction firms.<sup>18</sup>

Third, estimating the participation rates of firms using industry and Census information ignores a key aspect of apprenticeship training—in order for firms to participate in apprenticeship, they are generally required to employ at least one journeyperson in that trade.<sup>19</sup> Not all firms identified as employing apprenticeable occupations in the construction and manufacturing sectors employ certified journeypersons. In many trades, particularly those without any regulatory requirements such as with carpenters, certification is less common than with regulated occupations (i.e. electrical trades, pipefitters). Many companies are comprised of experienced and skilled, yet uncertified, tradespeople. For the skilled trades firms that do not employ journeypersons and are therefore generally ineligible to train, their non-participation in

<sup>17</sup> Such data is not publically available and due to cost constraints, the attainment of regionally or occupationally specific data from Statistics Canada was not possible.

<sup>18</sup> Properly sampling 'skilled trades firms' can be extremely difficult and can adversely affect the reliability; many firms that are skilled trades firms may not appear in industry sub-sectors where one would expect to find skilled trades workers, and also many firms in sectors assumed to contain mostly skilled trades firms may include many firms that are not skilled trades firms.

<sup>19</sup> The ITA can make exceptions by granting 'special permission' (i.e. equivalency) to train apprentices, but rarely ever do. Less than 1% of the total sponsors are equivalencies, according to ITA staff.

apprenticeship training relates to a different, yet related policy question. This question would be 'why do some and not other skilled trades firms employ journeypersons?', or directed to the worker, 'why do some and not other tradespeople seek certification?' Although these research questions are interesting, they are separate from that of this study.<sup>20</sup>

This study concerns only those skilled trades firms eligible to participate in apprenticeship training. Again, because of the lack of available data, there is no reliable estimate of the size of this (eligible) cohort. The population of particular interest lies within the cohort of eligible skilled trades firms—those who could train but do not. In order to determine why some and not other firms train, this study compares eligible non-training firms to the firms that do participate in apprenticeship training. What are the factors influencing their demand? Why do some and not other firms participate in apprenticeship training? A few studies discussed in the next section, help to answer these questions. A review of the literature reveals a number of factors affect firm participation in apprenticeship, including: (1) specific trades and regulations, (2) firm size and 'training capacity', (3) unionization, (4) degree of economic volatility, (5) conduciveness of business model to apprenticeship, (6) recruiting difficulties, (7) firm's return on investment (RoI) perceptions, (8) journeyperson-apprentice training ethos, and (9) competition with underground firms. The next section explores each factor in turn.

### **2.6.1. *Specific Trades & Regulations***

Firm participation in apprenticeship varies from trade to trade. Despite the removal of trade qualification requirements in 2004, other standing regulations require certification for employment in a few occupations. For example, the electrical trade is

<sup>20</sup> In fact, the process for gaining one's certification is simple for an uncertified worker with years of experience in their trade. The process is known as 'challenging', wherein a tradesperson with at certain number of years' experience can pay a fee of and write a written test for most trades. The only real disincentive to 'taking the test' and becoming certified is the time and money it takes to write the test, so increasing certification this way should be achievable with a moderate incentive, perhaps simply waiving the fee may work.

regulated so only journeypersons or apprentices can perform electrical work in BC.<sup>21</sup> For industrial electricians performing work on transformers with BC Hydro, the use of apprentices is restricted for safety reasons by WorkSafeBC. Unregulated trades such as carpenters and welders have lower participation rates.

### **2.6.2. Firm Size & 'Training Capacity'**

According to the Canadian Apprenticeship Forum (CAF), a common reason for not investing in apprenticeship is that the business is too small and has no need for additional workers (25 per cent of respondents) (CAF, 2006). A review of the apprenticeship literature from Australia reveals that smaller firms are far less likely to train than larger firms, often attributed to the need for economies of scale (Kapusinski, 2000, Ball and Freeland, 2001, Ridoutt, et al., 2002). As Schömann and Siarov (2005) point out, underinvestment in training is particularly likely on the part of small- and medium-sized enterprises, because larger firms are better able to pool the risks associated with such investments and better able to avoid poaching by offering opportunities for career advancement within the firm.

### **2.6.3. Unionized or 'Open Shop'?**

The literature and personal interviews with industry leaders reveal that highly unionized skilled trades workplaces almost all train apprentices. In BC, nearly all union firms train apprentices as per their collective bargaining agreements, which stipulate that a certain proportion of every dollar spent on labour is used to training apprentices. Most unions only allow the hiring of journeypersons or apprentices, and therefore certification is a necessary condition of membership in most unions (ECABC interview). Over the past twenty-five years, the proportion of the construction workforce that is unionized has declined steadily, from 31 per cent in 2000 to 24 per cent in 2010, while the unionized

<sup>21</sup> In certain circumstances, the use of helpers is permitted for strictly labour functions (i.e. pulling wire) for larger residential firms.



proportion of the manufacturing sector declined from 33 per cent to 29 per cent over the same period (Akyeampong, 2001).

#### **2.6.4. Degree of Economic Volatility**

Employment in the construction trades is strongly pro-cyclical; this, combined with a relatively long training period (average 4 years), can result in a high degree of attrition—a gradual wearing down of potential completers—resulting in a high drop-out and high postponement rate (Gunderson, 2009). As mentioned, during periods of economic downturn, lack of continuous employment can prevent an apprentice from completing training. Even during economic expansion, firms may pause training to divert both trainer and trainee toward production rather than training. From a firm's perspective, unfavourable economic conditions can greatly increase the risk of investment in apprenticeship; if temporarily laid off, apprentices will pursue employment at other firms, who, in theory, will capture the firm's human capital investment. According to the CAF (2006), the most common reason reported by firms for not hiring an apprentice (30 per cent of respondents) was that their business did not have enough continuous contracts to support hiring an apprentice.

#### **2.6.5. Conduciveness of Business Model to Apprenticeship**

Skilled trades firms are a diverse set of economic actors, each employing one of a number of business strategies. According to the CAF (2009), over 40 per cent of firms indicated that they would hire an apprentice if there were a need for them in their lines of business. There are a number of reasons why a firm's business model may be not be conducive to the training of apprentices, for instance a firm may be so highly specialized that the majority of their work does not require a journeyman, though they may have one or two on staff. Again, regulatory restrictions may not permit the employment of apprentices on-site for certain firms, as is the case with some heavy-industrial electrical firms, where WorkSafeBC does not cover apprentices on government contracts involving heavy electrical transformers.

### **2.6.6. *Recruiting Difficulties: Apprentice Supply not Finding Demand from Firms***

The Canadian Apprenticeship Forum (CAF, 2009) found that approaching the height of the economic boom in 2006, 30 per cent of firms without apprentices indicated that they would hire apprentices if they could find them, suggesting that firms may be having difficulty getting access to apprentices. According to the CAF (2006), 14 per cent of firms who hired journeypersons, but did not hire apprentices, indicated that they would be willing to hire an apprentice, except that there were few or no apprentices applying to their organization. The CAF (2010) also found that in 2006, 37 per cent of first-year apprentices had taken four months or more to find their firm sponsor, with an average search time of seven months. Additionally, although these findings refer to successful registrants, they say nothing of the potentially many, would-be registrants who fail to find employment as an apprentice. Clearly the supply of potential apprentice hires is not meeting firm demand for apprentices.<sup>22</sup>

### **2.6.7. *Return on Investment (RoI) Perceptions***

Perhaps the most cited market-distorting barrier to apprentice registration and/or completion pertains to human capital investment and Return on Investment (RoI) issues, such as complexities over 'who should pay' for apprenticeship training, and the poaching problem. Evidence shows that firms are reluctant to bear the cost of apprenticeships because of 'poaching' concerns (Gunderson, 2009). The Construction Sector Council (2006) explains that poaching occurs because "margins on contracts are thin and so it is easier to attempt to lure an existing worker from a competitor than spend time and money training someone else up" (p.18). In theory, because skills developed from apprenticeship are fully transferable across firms, firms are reluctant to pay for general training because they may not appropriate a return on their training investment. Without true indenturement (i.e. slavery), other firms that do not provide training may simply "poach" the trainee by paying them a higher wage. Apprenticeship training is therefore

<sup>22</sup> Unfortunately, no data could be found on these would-be apprentices.

more similar to other forms of *general training* (e.g. university and college), as opposed to *firm-specific training*, in that it produces training externalities that cannot be captured by any one firm, making apprenticeship more of a public, rather than a market good (Becker, 1964; Billet and Smith, 2005; Brisbois, et al., 2009)

To the extent that they are appropriating the returns, the expectation is that apprentices should be willing to 'pay' for the training by accepting a lower apprenticeship wage during the training period, which reflects their marginal productivity to the firm during the training period (Bhaskar and Holden, 2003). However, Gunderson (2009) shows that there are factors that may inhibit apprentices from paying for such training such as minimum wage legislation, apprenticeship wage, or credit constraints. The starting apprenticeship wage (generally around \$12/hr), if set too high, may also become too expensive for some firms (Gunderson, 2009). Meredith (2010) finds that whatever their actual levels of workplace training investment, firms are generally able to manage and minimize training-related risk by assuming one of several distinct business strategies.

### **2.6.8. *Journeyman-Apprentice Training Ethos***

Meredith (2010) observes a significant mistrust among some tradespeople of the journeyman certification, which may preclude their participation. In contrast, firms that employ one or more journeymen may also have a training ethos or journeyman culture. International evidence indicates that the institutional embeddedness of apprenticeship training has an effect generating a sense of pride and tradition associated with the skilled trades. Gunderson (2009) describes that in Germany, Journeymen and Masters are by-law members of their regional Chamber of the Skilled Crafts, which is a self-governing public body that organises technical vocational educational training and oversees the examination of the masters examination. Many companies outside the trades prefer a master craftsman instead of a university graduate as a technical manager as the education is more practical and they are supposed to possess excellent theoretical skills and business knowledge. Another source of recognition for German tradespeople is the *Handwerksrolle*, a local trade register of all master tradespeople that tends to support the feeling of pride and accomplishment of the

skilled tradesmen, as well as provide consumers with a complete list of qualified firms and labour (Gunderson, 2009).

### **2.6.9. *Competition with Underground Firms***

Underground activity in the building trades carries numerous negative implications concerning tax and benefit evasion, consumer protection, public safety, non-compliance with building codes, and stifled competitiveness of above-board firms (Mirus 1994; Bartlett, 1998; Giles, 1998; O'Grady and Lampert, 1998; Armstrong and O'Grady, 2004; Prism Analytics, 2010a). Those in the underground economy tend to be independent operators, and are far less likely to hold certification, while the legal, or 'above-board, construction industry, by contrast, is comprised of firms that generally require or prefer accreditation standards among workers be maintained (O'Grady, 2004). At least a part of low apprenticeship completions is due to the rise in the underground economy; the decline in apprentice completions across Canada corresponds directly to the rise in independent operators over the same period (Armstrong and O'Grady, 2004). Entering the industry as an independent operator is easier and less costly, requiring less training and experience, workers generally avoid pursuing training, fuelled in part by fears that certification will 'put them on the grid' and result in government detecting their activities. The underground economy poses problems for apprenticeship training as it detracts from the amount of work that goes to above-board firms. What proceeds from this is essentially a race to the bottom in terms of skills development and training, and construction quality and standards across the industry suffer as a result.

## **2.7. Summary**

An extensive literature review reveals a number of factors that may impede or otherwise influence whether a firm participates in apprenticeship either initially or continuously. Economic volatility appears to be the most significant factor in determining a firm's participation in apprenticeship. Given the long-term commitment involved with training an apprentice, unpredictable workflows will tend to deter the participation of many firms. This suggests that there may be opportunities to increase firm participation by offering firms more flexible apprenticeship arrangements.

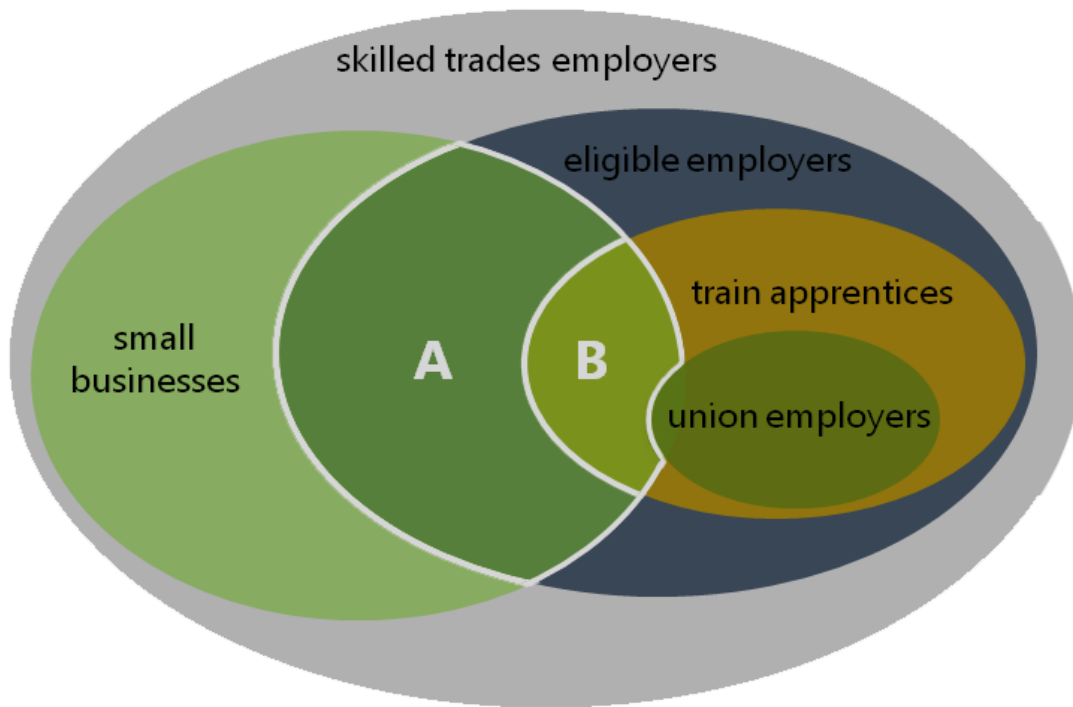
### **3. Study Parameters and Methodology**

The goal of this study is to examine factors affecting the participation of firms in apprenticeship training, and in turn, develop policy alternatives to increase the number of firms training apprentices. This study's methodology consists of two components. First, a survey of the population confirms assumptions used to narrow the sample and qualify firms for in-person interviews. Second, semi-structured interviews shed light on why some and not other skilled trades firms participate in apprenticeship training programs. The next section identifies the specific cohort that is experiencing issues of non-participation in apprenticeship, followed by study details.

#### **3.1. Narrow the Focus: Eligible, Small, Non-Union Firms**

Because electrical trades employers or owners must themselves either be a journeyperson, or employ at least one journeyperson to enter into an apprenticeship agreement, this study focuses on only 'eligible skilled trades firms'. For the purposes of this paper, 'eligible skilled trades firms' is defined as businesses operating in the construction, manufacturing, or transport sector whose owners either are themselves a journeyperson, or employ at least one journeyperson. The subject of this study is 'eligible, small, non-union skilled trades firms', as illustrated by Figure 3.1—*Target Population*. Area 'A' represents all eligible, small, non-union, non-training firms, and area 'B' represents all eligible, small, non-union, training firms. The policy goal is therefore to convert As to Bs. A complete look at all skilled trades firms in British Columbia was not possible given practical limitations on time and funding. This study therefore focuses on firms that employ a single trade—electricians, and focuses geographically only on firms registered in the Greater Vancouver Regional District (GVRD).

**Figure 3-1: Target Population**



### **3.2. Survey and Interview Candidate Selection**

I selected survey and interview candidates by convenience sampling from a compiled list of over 400 registered electrical contractors in the Vancouver Census Metropolitan Area (CMA). The list was compiled from four sources: the membership directories of three industry associations—the Vancouver Regional Construction Association (VRCA), the Greater Vancouver Home Builders Association (GVHBA), and the Electrical Contractors Association of British Columbia (ECABC)—and from the 'Reference Canada' business directory produced by InfoGroup Inc. All of the VRCA, GVHBA, and ECABC offered to assist in this research by approaching their own membership to describe the project and call for interview participants. "Reference Canada" provides data, used to produce a list of business to cold-call in order to generate additional participants. The list had to be refined as it contained a number of firms that were not skilled trades employers such as suppliers, distributors, engineering firms, lighting retailers, and law firms.

### 3.3. Survey of Electrical Contractors in the GVRD

In order to narrow the sample for interviews, I conducted a preliminary survey while recruiting for interview candidates. The 10-minute telephone survey asks firms qualifying questions to determine their eligibility to participate in the survey and interviews (i.e. whether the firm is generally eligible to participate in apprenticeship). The purpose of the survey was to: determine firms' eligibility to participate in the survey (i.e. type of business and trade); determine firms' eligibility to participate in interview (i.e. eligible to train apprentices); determine the extent of the dependent variable—firm participation; gather data on three key independent variables—sector, firm size, and unionization; request firms' participation in a face-to-face interview. Interview questions are as follows:

1. **"What kind of work does your firm primarily engage in?"** – Ensure the firm is an electrical trades firm (eliminate improperly listed electrical suppliers etc.);
2. **"How many journeypersons do you currently employ?"** – Firms must generally either be themselves a journeyperson or employ at least one journeyperson to enter into an apprenticeship agreement;
3. **"How many apprentices do you currently employ?"** – Reveals the dependent variable—'participation in apprenticeship training'. If response is 1 or greater, the firm participates in apprenticeship training. If response is 'none', the firm does not participate in apprenticeship training;
4. **"How many other employees does your firm employ?"** – Questions 2, 3, and 4, combined establishes total firm size and qualifies firms for participation in in-person interviews;
5. **"Would you describe your company as a union, or non-union firm?"** – Further qualifies firms for participation in in-person interviews.

### 3.4. Interview Details and Participant Characteristics

In total, ten in-person interviews with electrical contractors include four firms who currently employ apprentices, and six firms who currently do not employ apprentices. Interviews went between 30-60 minutes in duration and were conducted either 'on-site' or firm's office. Interview cases are a fairly good depiction of the survey population both in terms of sector and firm size. Table 3.1 shows the basic details of the ten cases.

**Table 3-1: Interview Cases**

Firm	Sub-Sector*	Participation	Journeypersons ^	Apprentices
A	C, I	training	14	17
B	R, C, I	training	20	18
C	R	training	6	6
D	C, I	training	2	1
E	C	non-training	6	-
F	R	non-training	1	-
G	C	non-training	2	-
H	R	non-training	1	-
I	R	non-training	1	-
J	R, C, I	non-training	1	-

\* (R)esidential; (C)ommercial/institutional; (I)ndustrial

^ including owner

### 3.5. Factors Influencing Firm Participation in Apprenticeship

In-person interviews are semi-structured around a number of key variable themes, with additional open-ended questions. Participation in apprenticeship training is defined as firms who currently employ one or more apprentices. Prior to the interview, all firms were identified as either training or non-training, as was the extent of their involvement in apprenticeship training (i.e. number of apprentices). Respondents were asked about the nature of their participation in apprenticeship if any. Considering the possibility that some firms may normally be avid participants in apprenticeship training, but simply not employ any currently (especially considering the prolonged economic



downturn during the time of writing), participants were also asked about the nature of any past participation. Themes of independent variables served to guide the interview process. Each variable theme was initially modeled on the various factors and barriers drawn from the literature, including: (1) business model, (2) economic volatility, (3) recruitment difficulties, (4) journey-person-apprenticeship training ethos, and (5) return on investment (RoI) perceptions, and (6) competition with underground firms.

### **3.5.1. *Business Model***

The conduciveness of a firm's business model to apprenticeship relates to factors concerning a firm's business plan and whether the business is expanding and therefore needs workers, or are facing attrition due to retirements. Some firms operate under a model of expansion where the company grows over time and therefore the demand for apprentices will be greater. Other firms may operate with a business strategy that does not involve growth in number of employees and therefore does not need to regularly train new workers. For example, a two-person firm that maintains a steady contract with no need to continuously train; because it takes 4 years to train a journey-person who then works for 40 years, training needs to occur only 10 per cent of the time.

### **3.5.2. *Economic Volatility***

Stability and expectations of the future are key determinants of firm participation. Because apprenticeship training is a long-term investment and a minimum four-year commitment on the part of the firm, uncertainty regarding the future as far as the continuity of work contracts is a key barrier to training apprentices. Firms with fluctuating demand for workers due to a lack of continuous contracts or long-term volatility will be less likely to participate in apprenticeship.

### **3.5.3. *Recruitment Difficulties***

The inability for firms to locate a supply of apprentices to meet their needs is a demand-side issue, because despite an ample supply of potential apprentices, many firms claim they are unable to find applicants. This variable explores why some firms are able to find apprentices and others not, and also if firms have ever considered hiring apprentices, or they have considered it, but have decided not to. The strategies of firms

may involve hiring other types of workers such as trade-helpers or labourers. Many firms may not desire apprentice applicants; such firms' responses indicate the availability or preference for alternatives (fully trained journeypersons, semi-skilled workers, temporary foreign workers, etc.).

#### **3.5.4. *Journeyperson-Apprenticeship Training Ethos***

The initial hypotheses guiding this variable theme was that the more positive the firm's own personal experience with the apprenticeship system, the more likely they will be to train (additional) apprentices. Also contributing to assessment of training ethos is the proportion of employees who are journeypersons. The hypothesis being that the greater the proportion of a firm's workers who are journeypersons, the more likely the firm is to train apprentices. Many firms may be predisposed to participate in apprenticeship as they feel a connection or obligation to the system that provided them with opportunities. Alternately, some firms who did not go through the apprenticeship system themselves, or did go through the system but had a negative experience, would feel no such connection or obligation.

#### **3.5.5. *Return on Investment (RoI) Perceptions***

The initial hypotheses guiding this variable theme was that if firms either face, or perceive they face, a negative return on human capital investment, they will be less likely to hire apprentices. Conversely, if firms receive, or believe they receive a positive return, they will be more likely to hire apprentices. The longer to an apprentice's pay-off the less likely the firm is to train. The rationale for this question comes from the literature, which largely attributes firm non-participation in apprenticeship training to financial barriers preventing a more substantial investment (i.e. do the benefits outweigh the costs? is apprenticeship training a worthwhile investment?).

#### **3.5.6. *Competition with Underground Firms***

The hypothesis is that firms that are in direct competition with underground operators will be less likely (or able) to participate in apprenticeship training. Firms operating in the residential sector where underground activities are more common

should therefore have greater difficulty training apprentices, compared with firms operating in the commercial or industrial sectors.

### **3.6. Possible Policy Directions**

Interview participants responded to policy questions to testing their knowledge and exploring their involvement with the status quo, and to discuss a number of potential policy directions. Participants responded to a number of hypothetical policies, and whether those policy direction would motivate them to hire additional apprentices. The first policy direction is the status quo. The second direction was an extension of the first, and involved increased subsidization. The third direction was that of an apprentice-share program; wherein businesses could hire apprentices on a short-term, temporary, or probationary, with no obligation to consistently train an apprentice. The fourth direction involved the use of on-line resources to recruit and hire workers even on a temporary on-demand basis, and where they could access labour market information and information about government programs. Respondents answered questions about various aspects of the hypothetical website, and ultimately, whether access to the site would motivate their taking on additional apprentices, even if on a short-term basis.

## 4. Survey Findings

In total, the survey generated 76 complete responses. It is unclear to what degree this sample is as an accurate representation of the whole population. Survey findings support the assumption that the problem of non-participation in apprenticeship is especially, if not entirely, that of small, non-union firms. Survey respondents are from various municipalities across the Greater Vancouver Regional District (GVRD) or Vancouver Census Metropolitan Area (CMA). Table 4.1 provides the distribution of respondents and their primary location of business operation.

**Table 4-1: Geography**

Municipality	Responses	%
Vancouver	16	21%
Burnaby	7	9%
Surrey	15	20%
Richmond	10	13%
North Vancouver	11	14%
Other	8	11%

Respondents were largely non-union firms (83 per cent of firms surveyed) which is consistent to what the literature suggests. Union firms are a minority compared with non-union firms at 14 per cent of respondents. 3 per cent of firms describe themselves as mixed, meaning that the firm employs some union and non-union workers. (See table 4.2).

**Table 4-2: Workers Union Status**

Union Status	Responses	%
Non-union	63	83%
Union	11	14%
Mixed (coded as union)	2	3%

## 4.1. Participation in Apprenticeship

In general, apprenticeship training is highly prevalent in the electrical trades, with 75 per cent of firms surveyed participating in apprenticeship.<sup>23</sup> (See Table 4.3) This confirms the literature, which indicates that the participation rates are among the highest for the electrical trades, compared to unregulated trades such as carpentry.

**Table 4-3: Participation in Apprenticeship Training**

Status	Responses	%
Participates in Training	57	75%
Does not Participate in Training	19	25%

### 4.1.1. Participation by Sub-Sector

Training is more prevalent in the commercial, industrial, and institutional sectors, with 80 per cent of non-trainers operating primarily in the residential sector, but also the commercial to a lesser extent. (See table 4.4)

**Table 4-4: Participation by Sub-Sector**

Primary Sub-Sector	Total Cases	Participating		Non-participating	
		#	%	#	%
Residential	35	20	57%	15	43%
Commercial/institutional	21	19	90%	2	10%
Industrial	20	18	90%	2	10%

<sup>23</sup> The CAF reports that 19.2% of skilled trades firms participated in apprenticeship training, although recognizing that it was higher for the electrical trades and pipefitters. This is due largely to their highly technical nature and because of regulations which require certification through apprenticeship.

### 4.1.2. *Participation by Union Status*

As expected, participation in apprenticeship is consistently the practice of union firms; of firms surveyed, only one union firm did not employ apprentices because the firm worked on transformers where WorkSafeBC does not insure apprentices. Aside from this one exception to the rule, 100 per cent of union firms surveyed participate in apprenticeship training. Among 'open shops' or non-union firms, 71 per cent participate. (See table 4.5)

**Table 4-5: Participation in Apprenticeship (Non-Union v. Union)**

	Participation Status	Responses	%
Non-Union	Participating	45	71%
	Non-Participating	18	29%
Union	Participating	12	92%
	Non-Participating	1*	8%

\*Not permitted to employ apprentices under WorkSafeBC regulations

### 4.1.3. *Participation by Firm Size*

Training was far more likely among larger firms; the existence of non-training in the electrical trades is highly localized to firms of a very small size. 89 per cent of firms that do not participate in apprenticeship have three or fewer employees including the owner and (42 per cent of firms that do not train have only one—the owner operator. The remaining 2 cases that do not train apprentices, had unique circumstances that precluded or otherwise dissuaded them from participating in apprenticeship which are exceptions (See table 4.6)

**Table 4-6: Participation by Firm Size**

Firm Size	Participation		Non-Participation	
	#	%	#	%
>3	50	88%	2*	11%
3	4	7%	4	21%
2	3	5%	5	26%
1	-	-	8	42%

## **4.2. Summary**

The preliminary survey demonstrates that the problem of non-participation in apprenticeship is one of smaller, non-union firms. If all union firms train and all large firms train, then they are not a part of the industry the research question focuses on. There is therefore no need to include large or union firms in the sample for interviews. This study focuses only on eligible, small, non-union electrical trades firms (<20) employees.

## 5. Interview Findings

In-person interviews were semi-structured around a number of key themes of variables that were determined to be likely to affect a firm's participation in apprenticeship. As indicated by interview respondents, a number of noteworthy market conditions have affected the human capital decisions of firms. The 2008-2009 recession significantly affected the volume of jobs. Large firms halved their workforce, small firms told their workers to go on EI, or cut hours back to part-time. Most have only begun to hire again, though the pace is slow-moving. The slowdown in terms of hiring and training illustrates human capital investment problems discussed in this section, as training efforts are hindered by economic downturn. The so-called 'Olympic Shock' drew many workers away from firms and attracted workers from across Canada. When the Olympics concluded, the market was (and still is) swamped by excess labour. In addition, the projects involved with the Olympic bid did not support the hiring of apprentices to a large degree. The introduction of the HST in BC is believed to have caused residential construction projects to decline for about four months following its introduction.

Conversations permitted a significant degree of freedom so as to avoid leading responses. As a result, conversations went in a number of interesting directions which revealed much about the industry and the various business strategies and challenges of firms, particularly in light of recent events. For example, Bridge Electric, a well-renowned commercial electrical firm since 1939, was forced to downsize in mid-2009 due to lack of work from 170 to 90 employees, laying off an approximate even mix of 40 journeypersons and 40 apprentices. The lingering economic slow-down continues to negatively affect their industry with the top challenge for every firm a resounding "Not enough work!" These are some of the themes that emerged from the discussions, which should provide context to following sections.



## **5.1. Factors Affecting Firm Participation**

Interview findings are according to the following independent variable-themes: business model and economic volatility, ability to recruit and hiring strategy, journey-person-apprenticeship training ethos, cost-benefit assessment, ability to compete with the 'fly-by-nights'. For all firms interviewed, determining how many apprentices to employ depends solely on the amount of work, volatility of work, and nature of work.

### **5.1.1. *Business Model***

The initial presumption was that only a firm that needs more journeypersons to satisfy the growing demand of an expansive business model or replacement demand (i.e. retirements) would be likely to train apprentices. In reality, apprentices are a crucial component to the labour needs of most firms as they handle lower skilled tasks that would be too costly to leave to a journeyperson. Most firms employ apprentices based on the regular amount of tasks available that are a level commensurate with the apprenticeship wage. Some firms prefer to employ only apprentices and junior journeypersons as the work is simpler and is remunerated at lower wages than a top-level electrician's wage. Some jobs require one person, whereas others require two, three, and so on. For example, electrical repair will usually involve installing lighting fixtures, generally a one person job. A firm has no need for workers that it cannot send out to work independently. On the other hand, many firms require teams of five to twenty electricians and apprentices to 'wire up' an entire house, and under strict time constraints, where, quite literally, the more apprentices, the better.

One firm in particular, prefers to hire apprentices because the nature of work is highly specialized in home automation and he prefers to train workers to his own standards, as opposed to hiring an experienced journeyperson who would still require training on specialized systems, but would do so at a much higher wage. In this firm, it is common that a worker will start as a new apprentice, work for seven years (five as an apprentice, two as a journeyperson) then move on to pursue other opportunities for more diverse work, highly-skilled work, with a wage that comes along with such work. Both journeypersons and apprentices are required for most electrical firms to operate because the nature of work involved involves both high skilled and low skilled tasks be

performed. Apprentices are less knowledgeable and are therefore less productive as they are learning.

A firm will employ as many workers at various levels of skill and wage dependent upon the nature of tasks required by work contracts. This will generally determine the ratio of journeypersons to apprentices, or rather the ratio of high-skilled, high-cost workers to low-skilled, low costs workers. In reality this is not so simple; skill levels increase over time, as do wages, and no company is ever static in terms of either. Also, the skill levels and corresponding wages may not always relate directly; some workers are bound to earn more than their productivity and others to earn less, depending on the worker and the nature of tasks. In general, firms seem to be quite successful at managing their human capital resources efficiently.

For some firms, the nature of work may not permit or be conducive to the training of apprentices. For example, one company is a fire and safety equipment installer and service provider. The few electricians that employed are required for installs, but these installs are often one-person jobs, as are the service calls, which generally do not require the services of a journeyperson or apprentice but a technician, who performs service work on low-voltage systems. The business model is not set up in a manner that is conducive to the training of apprentices. The tasks are highly specialized and there are few opportunities to train electricians.

Another company is a large home electrical repair company that does service calls to install lighting fixtures, change outlets and switches, and even change light bulbs. All tasks the company performs involve one-person jobs; having an apprentice on site is difficult because their contribution to the labour mix is rarely ever required. As mentioned earlier, some companies cannot employ apprentices by law. One such company is an electrical transformer (>750W) installer. For this kind of work, current WorkSafeBC regulations does not cover apprentices under Workers Compensation Board insurance. Employing apprentices is difficult as they cannot be on-site without exposing the company to undue liability.

Participation in apprenticeship is, in part, determined by the conductivity of a firm's business model to apprenticeship in terms of the nature of the tasks, being either

one-person or multi-person, the level of skill required for those tasks, being that there be enough of an appropriately low level to justify employing an apprentice, and the stability and quantity of work contracts. In short, a firm's business model is conducive to apprenticeship based on the amount of continuous work involving tasks requiring multiple workers.

### **5.1.2. *Economic Volatility***

By far the most significant determinant of whether a firm trains and how many apprentices they train is the amount and stability of work contracts. Although not a perfect continuum, this variable relates to the nature of big and small firms. More specifically, a firm's propensity to train apprentices depends on their amount of consistent work that involves more than one worker. As expected, firms operate under a model of expansion with a greater demand for workers are more likely to train more apprentices, firms with a non-expansive business model will likely not train, and, firms who are uncertain about the future will be less likely to train apprentices.

Firms that participate in apprenticeship training either had an expansive business model or were only rehiring to pre-recession levels. Firms expressing confidence in the number of apprentices they would be hiring over next six months also expected stable work contracts. These firms tend to be larger, dealing with a number of work contracts and are able to cope better with temporary market fluctuations in terms of making productive use of their employees by juggling their various jobs. Smaller firms facing a temporary lack of work are more affected and may lay-off or reduce to part-time hours their workers "until more work comes in". For firms facing volatility, when more comes in suddenly, practises include doubling-up on hours, getting help from a colleague, diverting work to other firms, or borrowing workers from other firms, rather than hiring an additional full-time apprentice.

As expected, larger firms with plans to expand are far more likely to participate in apprenticeship to a larger degree than small firms with no plans to expand. 'Plans to expand', however, was an almost universal expression among firms because "things are slowly picking up" both in terms of work contract flow and in terms of the slow but sure post-recession, post-Olympic economic recovery in the region. Firms with greater

certainty in workflow were far more likely to train apprentices in expectation of future work. Some medium-size firms are 'built to compete' with a fifty-fifty split of apprentices and young journeypersons with commensurately low wages that allows them to express such confidence in their ability to compete and grow in the market, despite its current quagmire.

Questions aimed at uncovering a firm's business model and need for workers over the next five years always went back to the amount of work available (again probably because of the recession) as the sole factor of consideration in determining how many apprentices to employ. With a few notable exceptions, firms generally all expressed that employing apprentices is a necessary and usually beneficial practise for any electrical contractor. This is largely because the nature of most electrical work contracts involves tasks that are too simple for the higher-cost journeyperson to perform. However, this view is probably quite cynical as it ignores the reality of most skilled trades workplaces where training is occurring constantly and at all levels. Most firms expressed that the real training begins once an apprentice becomes a journeyperson.

Among firms that do not train apprentices, most are independent operations that would like to take on apprentices, but do not have enough continuous and stable work to justify employing an apprentice. A few have only recently let their apprentice go during the recession. For companies that intend or expect to grow their business, the question is not *whether*, so much as *when* to employ an apprentice. Two independent owner-operators discussed the possibility of an expansion during the summer increase in residential renovations and new constructions. The strategy was the same in both cases: hire one full-time journeyperson and one full-time apprentice. One owner-operator hesitated to choose that option based on an uncertainty of future work contracts, and a desire to avoid hiring someone for a month, then letting them go. For the other, there was more than enough work available, but the hesitation was because of the expected stress level that would result from taking on two employees from none.

### **5.1.3. Recruiting Difficulties**

The assumption guiding this variable is that if firms are unable to find appropriate candidates for apprenticeship, they are less likely to hire apprentices. Evidence points to

an inability for firms to locate a supply of apprentices to meet their needs despite an ample supply of potential apprentices. Interviews revealed that there is currently no shortage of applicants and every firm big or small receives dozens of unsolicited resumes and phone calls of journeypersons, apprentices, and prospective apprentices looking for work. Firms claimed this was even the case, but perhaps to a lesser degree, between during the construction boom between 2006 and 2008.

In general, most firms said that even during the boom, there were always enough workers available. Many firms operate within a network of other companies and ask to borrow workers on a short-term, even daily basis. Some firms bill the other company directly to avoid putting the worker on the pay roll, whereas other firms will place a worker on the payroll, even for short-term jobs. There is a perception among some firms that there is no such thing as too much work: "You can never have too much work, we'll find the guys. We make it work. I've got access to more than enough skilled workers."

However, when asked if this was always the case, that they do not turn down work because of a lack of workers, all firms admitted that of course that occurs from time-to-time. A firm's ability to find workers on short-notice directly relates to the size of their network of firms they can borrow workers from. Most times, this occurs quite informally, where business owners will call up a friend the day before and the friend will try to juggle his/her schedule. Although most firms expressed confidence in their ability to locate and attract appropriately skilled workers, smaller firms, particularly owner-operators admitted they rarely use apprentices in such impromptu situations.

Although an inability to locate and attract potential workers may have an impact on the number of apprentices that a firm employs, among those one and two person firms that do not participate in apprenticeship, even at the height of the construction boom, this was not a significant factor to participation. However, on a day-to-day basis, a firm's ability to immediately satisfy those needs is a significant factor, as firms have varying needs for workers, (i.e. busy days and slow days). A firm's ability to produce the most efficient mix of its owner's and workers' time depends on having the right human capital on hand to satisfy these needs at a moment's notice, although most small firms can turn to a network of friends, colleagues, and competitors to satisfy these needs to a certain extent. In this regard, a firm's ability to efficiently allocate labour to tasks depends

on the size and responsiveness of its network. Inefficiencies are unavoidable and firms likened their practices to a juggling act of sorts.

#### **5.1.4. *Journey-person-Apprenticeship Training Ethos***

Based largely on preliminary interviews, the assumption is that some firms that participate in apprenticeship training are predisposed to participate because they feel a connection or obligation to the system that provided them with opportunities in the past. Other firms may employ journeypeople while the owner has not gone through the apprenticeship system themselves, or did go through the system but had a negative experience and feel no such connection or obligation. In theory, for many employers their own apprenticeship was a formative experience that shaped them as a journey-person and then as a trainer, and their career as a trainer has produced a sense of pride that motivates their participation in apprenticeship training. This variable was perhaps the most difficult to illicit responses to.

Training firms spoke of the importance of loyalty and relationships in their companies, and expressed a sense of joy in experiencing an apprentice learning first-hand. All trainers generally perceive training apprentices to be a "great experience that keeps you sharp". Most trainers are proud of the training they have provided and, in most cases, are confident that the skills developed represent the diversity of tasks required for well-rounded training. A sense of obligation runs deep in most trainers—"Someone gave me a chance when I was young, I'm going to do the same." Some relatively new journey-person owner-operators still perceive their past trainers as their mentors, maintaining that training in the electrical trades does not really end with the issuing of the Certificate of Qualification. Some firms expressed that although there are many highly skilled tradespeople in British Columbia and a lot of pride amongst most journeypeople, there is a generally lack of recognition of trainers as post-secondary educators.

Enthusiasm for apprenticeship came from trainers that stressed workmanship. One firm, when he was an apprentice, developed a sense of pride in his craft from the recognition he would receive from "government inspectors" expressing that inspectors do not point out what is good about the quality of work anymore. One did not complete

an apprenticeship and instead challenged the exam does not think very highly of Certification of Qualification and doubts the exam's ability to show skill level. A number of interviews revealed "some companies don't really train", but rather use apprentices as "cheap labour, without actually teaching apprentices anything." A common sentiment is that "sometimes with journeypersons, you never know what you're going to get."

Small residential firms all spoke of unscrupulous fly-by-night contractors, operating "out of their trunk". When asked how these firms affect their business, interviewees admitted regretfully that *price* is the only factor consumers seem to care about when selecting a contractor, rather than experience, qualifications, or reputation. "Consumers don't know what quality is, or who's good or even qualified... [underground operators] cut corners, and they make us look bad." The result, according to one firm is that there is "No pride among many in the industry. It's a shame."

### **5.1.5. *Return on Investment (RoI) Perceptions***

The literature largely attributes firm non-participation in apprenticeship to financial barriers preventing a more substantial investment. Asked about the amount of time before the return on an apprentice becomes positive, responses ranged from "a few weeks" to "three years before a profit is made off apprentices. A few non-trainers expressed the belief that "you can't make money on an apprentice." Larger firms expressed an ability to engage their apprentices in productive work right away—"They're engaged in productive work from the get go. First few weeks are a wash then they're bringing in benefits—one and a half months tops."—whereas other firms have extensive in-firm training where apprentices do not produce for over a month as they are exclusively in training functions. At the beginning of the apprenticeship, the apprentice is unlikely to be productive. The first day is certainly a wash, and how much longer will depend only on the individual and the availability of productive work and task at a level that is appropriate to the apprentice. However, some firms and some apprentices can make use of the apprentice's skill to involve him in productive work immediately.

Firms indicate that the benefits of hiring an apprentice include a lower wage (i.e. cheaper labour) and the work-training commitment for long period (i.e. indenturing). Most trainers expressed the importance of home-grown employees trained to their standards.

Those who train perceive low risk and costs involved with employing apprentices, whereas smaller firms expressed concern over the costs of paying workers for whom you have no continuous work. Other costs identified include the costs of an apprentice's mistakes, the risk of lost training investment as workers their leave firms or change careers. One firm expressed that 'poaching' is a normal and acceptable part of competition in his business and it happens with a quarter of his employees, but that these risks are all a "part of the business". Non-trainers perceive more costs and risk involved with training and concerns that productivity might be lacking in new apprentices. One owner-operator expressed "Not wanting to babysit"—referring to the supervisory and training time costs that they would endure should they train.

### **5.1.6. Competition with Underground Firms**

Conversations with small residential firms and owner-operators invariably covered the subject of underground work and 'fly-by-night' firms. Small residential contractors, particularly owner-operators, expressed that they must cut costs anywhere they can, in order to compete with underground firms. A few interviewees admitted that 'cash-in-hand' is common even for legitimate, tax-paying firms, as is the practice of fashioning workers as sub-contractors in order to avoid "paying double CPP and EI". Most firms expressed empathy for their competitors, and admitted that the reality of cost-cutting "lowers everybody's standards" including their own. Two firms even told stories of "some really dangerous stuff that some of these guys are into", including improperly grounded electrical systems, installed by unqualified 'electricians', responsible for electrocuting workers.

## **5.2. Summary**

Interviews with skilled trades firms, industry experts, and stakeholders revealed much about the determinants of firm participation in apprenticeship training and about industry hiring and training practises in general. Those findings indicate that the industry employs apprentices to a more-or-less efficient level based on the amount of steady work contracts and the nature of tasks involved with that work. Whether in times of



economic boom or the current post-recession quagmire, firms hire apprentices according to the amount and nature of work, regardless of any wage incentives that may exist.

In order to deal with work-flow fluctuations that can occur day-to-day for some firms, larger firms manage with their own employees and are able to spread labour across a number of on-going projects, whereas smaller firms tend to engage in various practices such as borrowing workers from other firms, employing friends, sub-contracting out, or turning down work contracts. Whereas these solutions may at times create efficiencies in the allocation of human capital, they can also create inefficiencies where those solutions fail. Moreover, few of the above practices tend to create circumstances that are conducive to employing apprentices. This is particularly true with owner-operator electricians in the residential sector, who will often form impromptu teams of journeypersons and work excessive hours to complete jobs. Whereas these owner-operators admit that having an apprentice on the job would help with work, they do not feel they can commit to employing a full- or even part-time employee, given the instability of workflows. In many cases, helpers or labourers fulfil the lower-skill functions rather than apprentices, despite regulations restricting such substitution.

Interviews with residential, and even light commercial sector electrical firms also revealed a number of complications presented by the underground economy. Firms strive to compete with firms that cut-corners, operate 'off the books', and employ uncertified workers, all of which provides them with a substantial cost savings, allowing them to offer better prices, in a sector of the industry where price is the primary determinant of the awarding of work. The existence of the underground economy in construction creates a race-to-the-bottom effect in terms of wages, skills, and workmanship, and creates many situations where apprentices could, or would be employed, but are not, as underground firms seek to remain 'off-the-grid'—a strategy which is not compatible with the training of apprentices.

Interviews reveal that firm participation in apprenticeship training is primarily dependent on the availability of steady work contracts. In this view, the question for business owners is not so much *whether* to hire apprentices, but *at what point* in a firm's development. Interview data reveals issues with capacity that present challenges for the participation of small businesses in apprenticeship and indicate that a targeted policy

response to support small business may result in apprenticeship gains. Interviews with firms also reveal that the current policy framework of directly subsidizing apprenticeship has had no effect on their hiring decisions. Furthermore, interviews with firms indicate a number of policy directions that may increase their participation. In order to make gains to apprenticeship, policies will instead need to focus on producing more work opportunities conducive to apprenticeship training, by targeting issues of capacity with small firms, correcting information problems, or by deterring the operations of underground, non-training firms and projects.

## 6. Policy Options

Interviews test the effectiveness of existing policies and of potential new policy directions to determine what can achieve the dual objective of increasing the number of firms that train, and the number of apprentices they train to completion. Interviews support the findings of Meredith (2010) that the existing policy framework involving government financial supports to firm-sponsors has had little to no effect on firms' decisions to train apprentices in the electrical trades. Firms stressed repeatedly that it is not a question of *whether* to train apprentices—they see this as both desirable and inevitable for any electrical contractor—but of *when* to train, in terms of capacity that depends solely on the amount and nature of stable work contracts. Deeper investigation into the nature of the human capital management strategies of firms reveals that gains are possible in terms of both increasing the *number of firms* that engage training, and increasing the *number of apprentices* that the industry trains as a whole, beyond the status quo. This study finds that there are two areas for such gains, including increasing flexibility and networking among firms and workers; and countering the underground economy to provide more opportunities where above-board firms can work and train. Before discussing how to achieve these gains through a number of policy options, the next section discusses the existing policy framework and investigates its effectiveness to provide a base case for evaluating policy options.

### 6.1. Existing Policy Framework – Status Quo

Interview participants responded to a number of questions regarding existing tax-credits that are available for training apprentices. First, they answered whether they are aware of any government grants or credits to support apprenticeship. In general, firms had little or no specific knowledge about either provincial or federal grants or credits. Most firms "remember hearing something about them" but tend to refer such matters to their accountants. When asked whether they have ever been the recipient of one or

more of these grants or credits, most responded that they did not know for sure, and others said that they think they receive them, but again stated that their accountants handle such matters.

Then, after discussing the details of the various apprentice grants and credits, firms explained to what extent these grants and credits have affected their decision to whether to hire apprentices, or whether to hire additional apprentices. Although initially, some firms expressed that the grants are certainly a bonus, firms were unanimous in their positions that such financial incentives have had, and continue to have, no effect on their decisions whether to hire apprentices, or on the number of apprentices to hire. Using probing questions, the reasons that financial incentives would not affect their decisions to hire on some level was determined. Firms were again unanimous in their assertion that it is the amount of steady work that determines the number of workers they employ, apprentices included. Questioning determined if the existence of the credits might prevent them from laying-off an apprentice during downturns. The rationale being that the credits and grants may make it more likely that firms will continue to train existing apprentices through to completion because the point at which they would lay-off workers may be put off by the subsidies. Firms were again confident in their responses that the incentives had no effect on whether to hire or fire an apprentice, but that this is determined by the volume of work contracts alone. In nearly every case, the firms' accountants handle the grants and subsidies. When asked if the accountants ever

**Example responses regarding the apprenticeship grants and tax credits:**

- *“We hire our apprentices based on need, not on how cheap we can get workers. We need who we need. The mix we have works best.”*
- *“No effect. It’s the amount of work that determines how many apprentices. Nothing else. I never consider them when hiring.”*
- *“They probably help the industry... I’m sure at the end of the year it helped my business. But no, I won’t hire more because of them.”*
- *“The credits are not a factor. I need a guy, the company puts up an ad, I interview, I hire.”*

suggest whether to hire or fire and apprentice for any reason, the responses were all negative. The perception is overwhelmingly that the incentives are only a nice bonus, and do not affect their employment decisions. When asked if the issue is that subsidies were insufficient to incentivize their participation, all interview respondents answered in the negative.

Firms were also posed a number of scenarios for policies the government could implement to support apprenticeship training. Firms were presented with a hypothetical scenario that the government wishes to increase the number of firms that train apprentices. They were then asked to suppose that the government were to make a law that requires that all skilled trades firms employ and train a certain number of apprentices, depending on firm's size. Firms were asked what is the minimum compensation that they would demand you received in order to train additional apprentices.

Eliciting responses for this question was difficult in general, as most respondents struggled to consider what, if anything could get them to hire additional apprentices. Some respondents refused to answer, again reiterating, "If I don't have the work, I can't hire any workers, no matter how cheap they are". Some firms, along this same reasoning, stated that they would demand 100 per cent of the wage. Most others stated that a minimum 50 per cent wage subsidy would be required to employ someone they did not need; "What happens if you don't have the work? They'd just be standing around all day!"

Overall, existing subsidies do not work at increasing the number of firms that take on apprentices, or at increasing the number of apprentices that each firm takes on, and do not prevent firms from laying-off apprentices during downturns. Even increasing incentives to very high levels would be generally ineffective at increasing the number of apprentices that are receiving training. Moreover, the number of apprentices that a firm employs is related only to the human capital needs of that firm. It is the market demand that causes firms to hire on apprentices. The current lack of jobs, economic volatility and market uncertainty is preventing firms from taking on more workers, in general.

## **6.2. Alternative Policy Directions**

Interview data suggests a number of potential policy directions which are likely to produce opportunities to increase the number of active firms and apprentices engaged in training, including: (1) increasing the amount of work available to industry, and specifically to potential firm-sponsors, (2) creating labour market efficiencies and flexibility in the allocation of human capital, and (3) curbing underground practises and firms. Contributing to the previous two directions is a fourth—(4) correcting information problems among firms, workers, and consumers.

### **6.2.1. *Increase the Amount of Work Conducive to Training***

Public investment (i.e. construction and infrastructure projects) is probably the most obvious and effective way to increase the amount of work to industry, although this would be an expensive option. Tax-credit stimulus, if targeted to legitimate firms, would increase the amount of work available to above-board construction firms will most likely produce additional opportunities for apprenticeship, while targeting benefits to the legitimate firms would serve to decrease the relative attractiveness of underground practises. However, given the high-cost involved with continuously subsidizing projects for the purpose of increasing apprenticeship outcomes is an unrealistic option. Therefore, this direction is not considered a viable policy alternative.

### **6.2.2. *Increase Labour Market Flexibility and Efficiency***

Deeper investigation into the nature of human capital management strategies of firms revealed that gains are possible in terms of both increasing the number of firms that engage in training, and increasing the number of apprentices that the industry trains as a whole. Currently, smaller firms use their networks and engage in informal worker-sharing, though not providing any opportunities for prospective apprentices under the circumstances where worker-sharing occurs. This study finds that apprenticeship gains can be achieved by increasing flexibility and networking among firms and workers. Efficient labour markets where apprentices are more easily factored in to a small firm's operations will increase the number of apprentices that industry can sustain.

### **6.2.3. Deter the Underground Economy**

Interview participants expressed recognition for the seriousness of underground practises and generally perceive these problems as getting worse. Concerning the impact of the underground economy and 'fly-by-nights' on their businesses, participants were divided based on subsector and firm size, where larger commercial firms say they are not impacted at all, while smaller home renovations firms feel such practises makes it incredibly difficult to compete, to charge a fair price, or to pay a fair wage. A few participants were quite knowledgeable about underground practises and were aware of the significant cost advantage to these firms. One firm expressed that consumers, and even commercial businesses, select a trades firm by price alone, without any consideration given to experience, skill, qualification, insurance, or even quality.

Despite government attempts to curb underground construction by increasing the *costs* of underground work through enforcement, and increasing the *benefits* of attaining certification through financial incentives, the underground economy continues to grow, seemingly unmoved by supply-side measures, most likely because of the enormity of cost savings involved with non-reporting. An increased enforcement approach would likely be too expensive relative to other measures, and political pressures exist to deter government from being too harsh with entrepreneurial construction tradespeople. Current approaches to generating compliance in the construction sector generally include public education initiatives to appeal to homeowners and businesses to not support the underground economy, stressing the moral consequences.

A homeowner's decision to participate in the underground economy may be subject to information problems; the choice between a certified/un-certified, registered/unregistered, or above ground/underground contractor is not always clear. A communication approach involving an information campaign that educates the public about the dangers of hiring uncertified contractors to perform work in their homes could have a positive effect. However, there may still be information problems as contractors might lie about certification. Whereas most people do not know to ask if their contractor is above-board, licensed and certified, even if they do know enough to ask, they might still not have accurate information on which to base their decision.

#### **6.2.4. Correct Information Problems**

Interviews and discussions with firms, journeypersons and apprentices reveal significant information problems with regard to skills, experience, and reputation of businesses and workers alike. These issues contribute further to inefficiencies in the labour market, and to the ability of underground 'fly-by-night' businesses to operate. By supplying accurate information to workers, firms, and consumers to guide their decisions, all actors will presumably make better (i.e. informed) choices, such as contracting or working for reputable companies, or employing qualified and experienced workers, for example. More appropriately, firms need to know whom they are hiring, workers need to know whom they are working for, and consumers need to know whom they are contracting.

As mentioned, consumers (generally homeowners and small businesses) can often lack good information relating to the qualifications of the tradespeople they hire and the quality of work that tradesperson will produce. In reality, homeowners are largely ignorant of the many complexities of construction work, regarding, not only the work, but also the laws and regulations relevant to that work. Thus the determination of which contractor to hire is by word-of-mouth and price. Homeowners generally have but two options for selecting a contractor: word-of-mouth and referral, or using the Google, Craigslist, or Yellow-page approaches. In either case, the choice between a certified/un-certified, registered/unregistered, or above ground/underground contractor is not always clear. This lack of information creates an advantage to contractors who would otherwise suffer if that information were known, in terms of losing work, and a disincentive for firms to maintain legitimate practises, high quality workmanship, and high-intensity training, since the lines between a 'bad' company and a 'good' company are blurred.

For firms, information problems exist in determining the initial skill level of prospective hires. As mentioned earlier, there is some distrust in the Certificate of Qualification (CQ) as a determinant of skill or qualification. Unless a firm personally knows a journeyperson's trainer, there is no real way of determining worker competence. Although firms have stated that this does not really concern them, as they will learn quickly enough whether the worker is competent, there is still a significant deterrent from 'trying out' new workers, and inefficiencies when firms hire by trial and error. Of the firms



interviewed, the most common source for attracting applicants is Craigslist; previously believed to be a source of less than legitimate, underground employment, is now used by some of the most reputable firms. Firms often expressed disappointment in many of their hires, with one saying: "you never know what you're going to get", referring to the shockingly absent skill of many certified journeypeople.

For workers, information problems exist when seeking employment, as the costs of seeking out firm at a time to apply to, often blindly, yields poor results in terms of actual job opportunities. Aside from job postings, (many of which are by companies not actually hiring, but as a practice to maintain a supply of potential workers) workers often express that it can be difficult to find companies that are actually hiring, and that most jobs are found through word-of-mouth. Indeed, skilled trades workers have few other opportunities to market themselves to prospective firms. In addition, there is also a lack of information about many firms and businesses, in terms of firm practices and reputation. Will this company provide a positive work environment? Will my firm pay me on time? Are their opportunities to advance? These are just some of the questions workers tend to have about the businesses to which they are applying. Again, the trial-and-error approach produces significant inefficiencies in the matching of firms with employees.

There is a definite public good aspect to the provision of information pertinent to investment in training such as labour market trends, availability of training programs, and employment searches. All have economies of scale in production and minimal incremental cost in making the information available to an individual or organization once it is produced. According to Brisbois, et al. (2009), "one would expect such information to be under-provided by the market...[which] implies a role for government in producing and disseminating such information". (pg. 5).

### **6.3. Policy Alternatives**

A review of the literature and examination of related policies and regimes both in Canada and abroad have contributed to the development of two distinct policy

alternatives that address the problems at issue, including: (1) Apprentice-Share (i.e. Group Training), and (2) Industry Web Platform.

### **6.3.1. *Policy Option #1 – Apprentice-Share (Group Training)***

As mentioned, apprenticeship completions are hindered by a lack of continuous employment, which can result either from economic downturn or expansion, as changing market conditions alter the human capital investment decisions of firm-sponsors. In Australia, in addition to a system of substantial financial supports, the government has developed a system of 'group training', an arrangement where a Group Training Organization (GTO) employs apprentices and hires them 'host firms', while they undertake their training. Group Training has been a successful option for many small and medium sized businesses that are unable to offer an apprentice a permanent position. Many businesses cannot guarantee on-going work, do not have the range of work available to ensure that an apprentice gains all the necessary job skills for that industry, or simply do not have the time to undertake all employment and training functions.

The GTO acts as the primary employer-sponsor and is responsible for administering wages, allowances, superannuation, workers compensation, sick/holiday pay, and other employment benefits. Because much of the risk associated with training an apprentice shifts to the GTO, this scheme serves to reduce firm inhibitions with regard to hiring apprentices, thus increasing firm participation. Group Training can contribute efficiently to the human capital of a number of firms with temporary demand for apprentices, thereby increasing the number of apprentices and firms engaged in apprenticeship.

In Canada, a similar system of training has existed for years—the 'union hall' model. Supports may be targeted to existing programs that already do this quite well. For example, the Electrical Joint Training Committee (EJTC), is partnership of the International Brotherhood of Electrical Workers (IBEW) Local 213 and the Electrical Contractors Association of BC (ECABC) to offer training solutions for their member organizations. The EJTC maintains a 84 to 91 per cent completion rate among its apprentices by maintaining their employment, even during economic downturn (ECABC

interview). Consistent with the Australian Group Training Model, incentives are needed for programs like the EJTC to become accessible to all firms and apprentices.

When asked if they would use such a service if it were available to them, firms were perfectly divided, with currently training firms indicating they had no interest in using such a service, and all non-training firms indicating at least some interest. Most non-training firms and owner-operators expressed genuine interest, some even excitement, over the possibility of such a program existing (with some subjects asking the interviewer if he personally was planning to start up such an initiative). Firms that do not currently train generally all expressed that the system would work well for their businesses. One firm responded: "If I got a month's worth of work, sure. That's a great idea. I would use it. That'd be perfect."

On the other hand, firms that participate in apprenticeship indicated that they prefer to "hire and grow [their] own workers", and that the system proposed would be "too impersonal". Some interviewees expressed a personal belief that the model goes against the very basis of apprenticeship training which is that the journey person and apprentice relationship should be a stable and personal one.

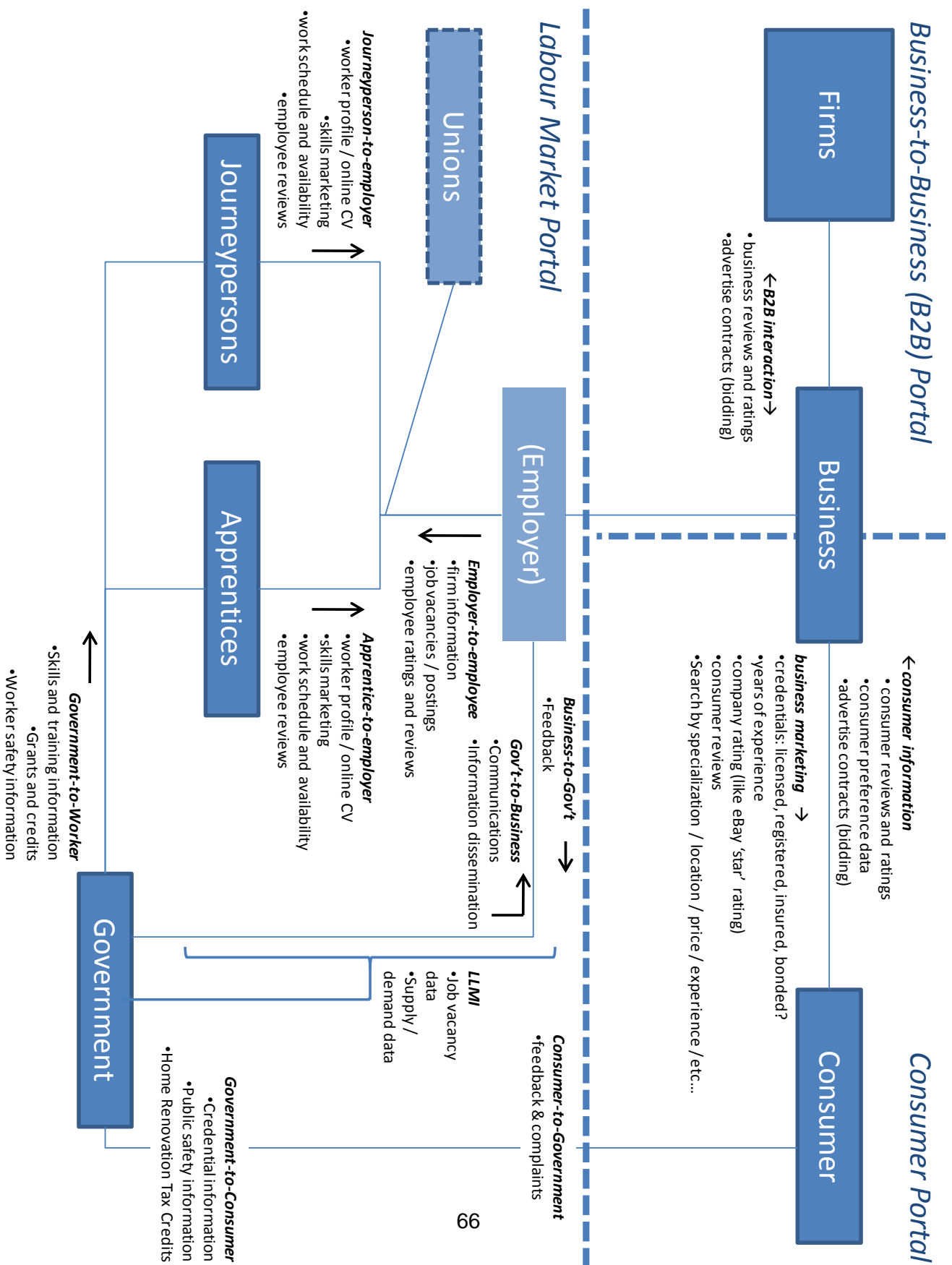
### **6.3.2. Policy Option #2 – Industry Web Platform**

This policy option involves a web-based industry portal, developed and managed by a third-party entity, which would connect workers with firms, and consumers with businesses, in order to facilitate interactions between networks of user groups and the dissemination of information relevant to all areas of the skilled trades. This would include: employment information, public safety information, trades certification validation for consumers, a business directory search engine with consumer reviews and ratings, job search and 'worker search' resources, and could feature an on-line 'apprentice-share' system that would allow apprentices to split their hours between multiple employer-sponsors. It would also provide a point of interaction and feedback mechanism between government and industry, and government and consumers. This option seeks to achieve a number of policy objectives including increasing flexibility and networking among firms and workers to contribute positively to labour market efficiency. This ultimately increases the amount of work available to industry, and suppresses the

underground economy by in effect directing non-financial benefits to above-board firms, while correcting information problems for firms, workers, and consumers alike. Functionality ensures the site's wide use among the various actors of concern, including consumers, business (firms), workers, and government. Certain parts of the site restrict access to certain users; one 'area' would be to connect consumers with businesses, another to connect workers with firms, and another to connect businesses with other businesses. Figure 6.1 illustrates the various interactions that would occur and the three main 'areas' of the website also called portals. Consumers could develop a basic 'User' profile to leave comments and reviews and interact with companies. Business owners can develop a 'Company' profile by supplying their GST number. Journeypersons can develop a profile by entering their certification number, and apprentices could develop a profile by entering their apprenticeship agreement number. Official confirmation of ID would allow for confirmation of legitimate users and a means for government input of information including, for example, the date a journeyperson received certification.

The functions of the website essentially emulate the features or concepts embodied by other monolithic online sources of interaction and information such as Craigslist, LinkedIn, Facebook, and employment search engines such as Monster, Workopolis, and Job Bank, and the reliability of market information from the Better Business Bureau (BBB), and individual industry associations such as the ECABC. The site would need to inject itself into the functional needs of the industry and successfully draw contractor and job searches away from Google, Craigslist, and Yellow-pages, by offering consumers, workers, and firms valuable information and considerable time-savings resulting from having all information and labour market interactions accessible from a single source. The information and functionality will draw consumers, which will draw firms, and workers.

**Figure 6-1: Industry Web-Portal Interaction Map**



## **7. Policy Evaluation**

This section evaluates proposed policies according to a number of key criteria. Section 7.1 lays out a qualitative evaluative framework. Section 7.2 describes how policy alternatives fare in terms of this study's evaluative criteria.

### **7.1. Policy Evaluation Framework**

This section discusses a policy evaluation framework for assessing policies to increase firm participation in apprenticeship. Policy alternatives are evaluated against relevant criteria including (1) effectiveness, (2) cost, (3) administrative ease, and (4) industry acceptability. Criteria are used to evaluate the outcome of each policy alternative in order to illustrate the trade-offs involved with each option. The following summarizes key considerations and the method of measurement for the relevant criteria (see Table 7.1).

#### **7.1.1. Effectiveness**

In the evaluation of policy options, the effectiveness criterion relates to the primary policy objective of increasing the number of firms participating in apprenticeship, but also to the secondary, over-arching policy goal of increasing the total number of apprentices employed. This criterion is therefore the most significant of all and is 'weighted' as such in the consideration of policy alternatives. Policy alternatives seek to increase the number of firms participating in apprenticeship either directly, by supporting apprenticeship sponsorship, or indirectly by producing circumstances in the market that will result in more opportunities for firms to participate in apprenticeship training. Similarly, the effectiveness of policy alternatives relates to: (1) the direct effect on firms—whether options will prompt more firms to participate in apprenticeship; and (2) the indirect effect on the market—whether options will encourage circumstances that prompt firms to participate in apprenticeship.

### ***Direct Effect on Firms***

The initial research question relates to the policy objective of increasing the number of skilled trades firms that employ apprentices. Effectiveness therefore refers to whether an option will result in new firms employing apprentices. Interviews reveal the effectiveness of each of a number of possible policy approaches on their employment decisions with respect to apprentices. Policy alternatives were then designed around those responses. Through careful analysis of interview data, the effectiveness of each option is assessed according to a yes/no metric.

### ***Indirect Effect on the Market***

Interviews with firms reveals a number of possible policy directions that would likely initiate or increase their participation in apprenticeship. Interview data, as well as informal discussions with industry professionals, and a review of the relevant literature reveals that targeting policy to certain aspects of the market in trades sectors can produce new opportunities for firms to participate in apprenticeship training. Therefore, the effectiveness of policy alternatives is evaluated based whether they produce such opportunities. Effects that are likely to provide more opportunities for apprenticeship training include: (1) increasing the amount of work conducive to apprenticeship, (2) creating labour market efficiencies, (3) suppressing the underground economy, and (4) correcting information problems among firms, workers, and consumers. Therefore, after careful analysis, the likelihood of a policy alternative to produce such apprenticeship-encouraging effects on the market is assessed according to a dichotomous 'yes/'no' determination of the following four questions: (1) Will the option increase the volume of work contracts to firms that do or could participate in apprenticeship training? (2) Will the option increase the availability and flexibility of work arrangements? and (3) Will the option deter the underground economy, either directly or relative to encouraging the above-board work? (4) Will the option correct information problems that prevent labour market efficiency?

### **7.1.2. Cost**

The adoption of policy alternatives will differ in cost incurred by governments. The evaluation process involves identifying all related costs, essentially 'pricing out' the

various aspects of each option, then quoting comparable policies either in Canada or international jurisdictions. All alternatives require some government support, from funding grants and tax-credits, to the dissemination of internally held information that would result in some costs incurred by government in terms of additional staff hours. Costs of comparable policies are determined through discussions with officials with the relevant government agencies and organizations. The estimated cost of each alternative is measured dollars.

### **7.1.3. *Administrative Ease***

Depending on the policy alternative, implementation and maintenance vary in terms of the administrative ease. Again, all alternatives involve some action on the part of government including the assignment of responsibilities to specific departments. Some alternatives require intergovernmental cooperation, or involve multiple stakeholders, while others may require only government directives. Consultations with government officials form the basis of this criterion according to a high, moderate and low metric, where high administrative ease represents no action required on the part of government, moderate ease represents action required of government only, with no involvement of outside actors and requiring a staff of less than ten, and low administrative ease represents actions involving multiple government departments and outside organizations and a staff greater than ten.

### **7.1.4. *Industry Acceptability***

Industry acceptability is central to the implementation of a policy alternative—will industry accept the option? Key considerations include whether stakeholders—workers, businesses, unions, associations, and educational institutions—are willing to accept the policy alternative. Qualitative data including informal conversations with industry leaders and formal interviews with firms themselves about the acceptability of certain policy directions determines the level of industry acceptance. A high, moderate, or low metric assesses the extent of industry feasibility, where high acceptability represents widespread agreement (i.e. no objections), moderate represents some objections, and low represents unacceptability (no agreement).



**Table 7-1: Criteria & Measures Evaluation Matrix**

Criterion:	Effectiveness				Cost	Administrative Ease	Industry Acceptability	
	Direct	Indirect 1	Indirect 2	Indirect 3				Indirect 4
<b>Measure:</b> Will the policy alternative...	...directly prompt firms to participate?	...increase the amount of work conducive to training?	...increase the availability and flexibility of labour?	...deter the underground economy?	...correct information problem?	How much will the option cost annually?	How easy will the policy be to administer?	Will industry accept the option?
<b>Metric:</b>	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Dollars (\$)	High-Moderate-Low	High-Moderate-Low
<b>Definition:</b>						H= no action required M= govt only, <10 staff L= outside orgs, >10 staff		H= no objections M= some objections L= no agreement
<b>Source:</b>	Interview data	Literature	Literature	Literature	Literature	Government consultations	Government consultations	Industry consultations/ Interview data

## 7.2. Analysis

This section describes how policy alternatives fare in terms of key criteria—multi-pronged effectiveness, cost, administrative ease, and industry acceptability. The trade-offs associated proposed policy alternatives is exhibited in *Table 7.2—Policy Alternatives Evaluation Matrix*.

### 7.2.1. Policy Option #1 – Apprentices-Share (Group Training)

This option would be effective at encouraging firms to participate in apprenticeship, at a moderate cost to government, with low administrative ease, and a generally high degree of acceptance among industry. Informing this assessment are interviews with firms themselves, and evidence from Australia, where the group-training system has allowed small firms to overcome barriers to the direct employment of apprentices.

#### **Effectiveness**

This option would be effective at directly encouraging firms to train apprentices. In Australia, group-training facilitated much of the recent growth in the number of active apprentices. Group Training Organizations (GTOs), acting as employers of Australian Apprentices, 'lease out' apprentices to companies thereby relieving companies both of the risk of taking on an apprentice for a lengthy period and of the paperwork associated with employing an apprentice or trainee (Bush and Smith, 2007). In 2004, group-training accounted for 24 per cent of all construction commencements in Australia and 19 per cent of all mechanical and fabrication apprenticeships, up from 1996, where group-training accounted for 20 per cent and 15 per cent, respectively (Toner, 2005). Increased reliance by firms on group-training is consistent with firms experiencing rising barriers to the direct employment of apprentices (Toner, McDonald, and Croce, 2004). Although there is no way to determine exactly how many of the participants in group-training would not otherwise be participating in apprenticeship, a number of studies suggest that most of the firms participating would otherwise not (Bush and Smith, 2007).

Interviews with firms reveal that this policy would be highly effective at compelling smaller, non-training electrical firms to participate in apprenticeship training, if only on a

short-term or part-time basis. All non-training firms and owner-operators expressed genuine interest, some even excitement, over the possibility of such a program existing, asking the interviewer if he personally was going to start up such an initiative. Firms that do not currently train, generally expressed that the system would work well for their businesses. This creates labour market efficiencies and flexibility of work arrangements, and corrects some of the information problems faced by firms and workers, though it does not necessarily increase the amount of work available to industry or suppress the underground economy.

### **Cost**

Although similar organizations already exist in Canada without any assistance from government, such as the EJTC, a group-training model would likely not be self-sustaining. Given that a few examples of similar organization exist in Canada, it may be that the mainstream viability of such organizations is only slightly out of reach. In Australia, the government provides an annual maintenance payment to GTOs of \$150 per worker, as well as a registration payment of \$2,500 for most trades, and a completion payment of \$1,500 (Group Training Australia, 2002). The remainder of the funding for group-training comes from firms themselves, through a percentage of apprentice wages. Minimal government funding aimed at apprentice completions may be sufficient to give rise to such organizations, in the context of a free market. Using the Australian figures of a 24 per cent capture of total apprentices and an average annual cost per apprentice of \$1150, the estimated annual cost for this option in BC would be approximately \$7 million.<sup>24</sup>

### **Administrative Ease**

The administration of this option is low ease—very complex to administer. In Australia, administration of Group Training involves oversight at the state level and

<sup>24</sup> Total active skilled trades apprentices in BC as of 2010: 25,467 (ITA interview). Calculation: \$7,000,000 = (25,467 \* 0.24) \* (\$150 + [\$2,500 / 4] + [\$1,500 / 4])

administration of quality assurance by government inspectors that work with GTOs. Evidence from Australia reveals that GTOs generally perform far better than they are even required to, often providing additional counselling services for apprentices and site visits for firms, without reimbursement by government. The reason for these additional services is that GTOs have had to compete openly for firms and workers, and so have had to offer better quality services. In BC, the implementation of a group-model would likely require the addition of at least ten employees to the Industry Training Authority (ITA).

### ***Industry Acceptability***

Industry acceptance for this option is high. In Australia, despite initial reservations among industry about the introduction of the Group Training, industry now recognizes the benefits that the group-training model offers, particularly to smaller firms with capacity issues (Bush and Smith, 2007). Existing Canadian group-trainers (i.e. training boards) would likely welcome additional funding. Apprentices themselves would welcome this option as it provides a safety-net to their completion. Educational institutions and unions would as well, as they would likely enter the newly established apprenticeship training market. Interviews with firms revealed possible mixed reactions. All non-training firms and owner-operators expressed genuine interest, some even excitement, over the possibility of such a program existing, expressing that the system would work well for their businesses. However, some training firms expressed that this type of training relationship goes against the very principles of apprenticeship, where the journey-person-apprentice relationship is key to the learning process. This perception may worsen the already poor perception of apprenticeship training. However, this was also a concern in Australia, until largely resolved by positive reviews from users, and evidence of high-quality, cost-effective training occurring among GTOs.

### ***7.2.2. Policy Option #2 – Industry Web Platform***

This option would be highly effective at directly encouraging firms to participate in apprenticeship, and indirectly by increasing market efficiency through increased availability and flexibility of work arrangements, and by correcting information problems. These effects, together with deterring underground practices, would increase the amount

of work directed to firms more likely to employ apprentices. Relative to other options this policy would result in a low cost to government, and low to moderate administrative complexity, as well as high industry acceptance.

### ***Effectiveness***

In terms of direct effectiveness, this option directly encourages firms to begin training apprentices. Informing this assessment are interviews with firms themselves, which indicate that smaller, non-training electrical firms would participate in apprenticeship training if such a service were available. The website achieves the same apprentice-share model, only 'without the middle-man'; apprentices would market themselves directly to firms, and firms to apprentices. Smaller firms unable to hire a full-time apprentice could essentially 'rent' one for a short-term or temporary work, though this would require some changes, possibly legislative, to change the requirement of indenturement of a single employer–sponsor, to allow apprentices and firms to enter into more flexible work arrangements. Even without this change, firms looking to hire permanent full-time apprentices could search for apprentices looking for work, and the site would enhance their ability to find suitable workers by removing many of the risks associated with the traditional trial and error hiring approach, contributing further to directly encouraging firms to participate in apprenticeship. The success of the option would depend on the level of its use, and what proportion of the trades integrate their activities with the site.

In terms of indirectly encouraging firms to participate in apprenticeship, this option targets, and would positively affect certain aspects of the market in trades sectors so as to produce new opportunities for firms to participate in apprenticeship training. This option would be highly effective at increasing market efficiency through increased availability and flexibility of work arrangements, allowing firms to more efficiently manage their workers' time against work contracts, which means greater labour market efficiency. Firms, journeypersons, apprentices, and uncertified workers could interact in an inclusive network of potentially thousands of companies and workers, in order to maximize work time and effectively match labour and skill supply with worker demand.

This option would be an effective deterrent of underground practises as the information relating to reputation and experience would be available to consumers. Consumer and business reviews would reveal unscrupulous firms, 'fly-by-nights', scammers, and frauds for what they are, with the reliability of information ensured by fact-checkers. There would be strong incentives, particularly for firms that interact with consumers to be good at what they do, and not scam consumers or other contractors.

This option would correct many information problems among firms, workers, and consumers. For firms, the site would provide useful information about workflows, wages, and benefits which would enable firms to make better hiring decisions. The site would aim to provide reliable information regarding skills and qualifications, making it less costly for firms to hire workers, avoiding to a certain extent, the traditional 'trial and error' approach to hiring, and instead hire with reliable information regarding skills, qualifications, and experience of prospective hires. For workers, the site would provide them with an up-to-date list of firms in any sector or region, searchable by a number of field including hiring status, so that finding a job, either short- or long-term, part- or full-time, would be an easier process with fewer information costs. In order for consumers and businesses to make informed choices, they must have access to accurate information relating to a contractor's certification status, and user-generated reviews of companies. Consumers could then verify first-hand whether their would-be contractor is certified, licensed, and/or insured deterring workers from lying about certification while providing credibility and exposure to above-ground contractors, and incentivizing the attainment certification.

### **Cost**

The estimated cost of developing a website of this nature is \$500,000 with annual servicing and site maintenance requiring about \$400,000.<sup>25</sup> With the initial cost spread over the first five years, this option would cost an average of \$500,000 per year. Beyond the initial start-up cost, website advertising would help to finance the project.

<sup>25</sup> Interview with WebpageFX, Inc., web-development service consultants.

This option requires government staff to prepare the data-feed for the third-party web administrator to design and manage the site, handle communications with users, and manage the back-end analytics. At minimum, the role of government could be to release the information required for a third-party to manage all aspects of the site. Government staff would therefore only be required to disseminate internally held information. This option may require a few dedicated government analysts in order to process information flows.

### ***Administrative Ease***

Administration of this option would be fairly complex; information inputs for the site would need to be set up with a number of government agencies, and levels of government including information on municipal building permits, and non-governmental organizations such as the Better Business Bureau (BBB). In order to release information of the status of contractors, provincial legislation may be desirable although not necessary; release of such information may be justified under existing consumer protection, public safety, and access to information laws. On balance, the administrative ease of this option is moderate.

### ***Industry Acceptability***

Interviews revealed that this option would generate not only acceptance, but excitement among smaller firms and owner-operators. Non-training firms expressed that the site would allow them to hire temporary work much in the way the group-training option would, and also benefit from the full-time worker search and industry information. The prospect of forming an online community of contractors and workers was of interest to a number of firms. There were some concerns that this option may further weaken the relationship between firm and worker. Industry associations, unions, and educational institutions are central to the facilitation of business and/or employment connections for the trades and it will therefore be critical to incorporate these stakeholders into the site's development early on. On balance however, this option is expected to produce high industry acceptance, particularly among small firms and workers themselves.

## ***Table 7-2: Policy Alternatives Evaluation Matrix***

Criterion:	Effectiveness						Cost	Administrative Ease	Industry Acceptability
	Direct	Indirect 1	Indirect 2	Indirect 3	Indirect 4				
<b>Measure:</b>	Will the policy alternative...	...directly prompt firms to participate in apprenticeship?	...increase the amount of work conducsive to training?	...increase the availability of flexible labour?	...deter the underground economy?	...correct information problems?	How much will the option cost annually?	How easy will the policy be to administer?	Degree of industry acceptance?
<b>Metric:</b>		Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Dollars (\$)	High-Moderate-Low	High-Moderate-Low
<b>Status Quo: Grants and Tax-credits</b>									
	No	No	No	No	No	No	<b>\$74M</b> (federal); <b>\$105M</b> (provincial)	<b>Moderate</b>	<b>Moderate</b>
<b>#1 - Apprentices-Share</b>									
	Yes	No	Yes	No	No	No	<b>\$7M</b>	<b>Low</b>	<b>High</b>
<b>#2 - Industry Web Platform</b>									
	Yes	No	Yes	Yes	Yes	Yes	<b>\$500,000*</b>	<b>Moderate</b>	<b>High</b>



## 8. Recommendations

The Province of British Columbia needs to act to overcome market failures and information problems in the trades. It can do so by improving the availability and reliability of labour market and consumer information, and establishing a training framework that enables smaller firms to overcome issues related to low training capacity. Policy measures targeted at the sub-set of firms that are currently not training apprentices should increase the number of apprentice completers and regularly training firms. Both options would help to achieve this policy goal. This study recommends implementing both Group Training and a user-supported industry web platform. While Group Training should increase the participation of smaller firms, the web platform should resolve some of the information problems associated with skill and quality assessment in the labour and consumer markets, and should help suppress the activities of the underground economy. Both options would work best implemented and conducted collaboratively between federal and provincial governments, colleges and existing private training providers, industry associations, trade unions—all have mutual interest in improving apprenticeship outcomes. There is definite role for government in ensuring training that meets general needs of the economy. Overcoming the market failures affecting the trades will help reverse the 'race-to-the-bottom' in terms of skills and training, worker and public safety, work quality and consumer protection in the trades, and instead prompt a 'race-to-the top', fuelled by better information and smarter consumer and firm hiring decisions.

## **9. Study Limitations and Suggestions for Future Research**

This study is limited in that it consists of only a small number of interviews, and of only electrical trades firms. As mentioned, this study's methodology is structured in this way due to constraints on time. Including other trades in the sample would have allowed for comparisons between trades, and the differences that arise would undoubtedly have had some bearing on this study's findings and conclusions. That being said, the conclusions reached with regard to the factors influencing firm participation in apprenticeship likely holds consistently across all trades, as those factors are related to the nature of the industries that employ electrical tradespeople, far more than to the trade itself. The primary difference between the electrical and other trades is the other trades where certification is voluntary are complicated by the ability to substitute with semi-skilled labour and trade-helpers.

Examining firm participation in apprenticeship must be done on a trade-by-trade basis as opposed to in aggregate in order to avoid the inevitable masking of important differences. Properly sampling 'skilled trades firms' can be extremely difficult and can adversely affect the reliability of these studies. Many skilled trades firms may not appear in industry sub-sectors where one would expect to find skilled trades workers, and also many firms in sectors assumed to contain mostly skilled trades firms may include many firms that are not skilled trades firms.

The underground economy also presents challenges for adequately surveying the population of skilled trades firms due to non-reporting. Drummond (2009) recognizes the importance for learning and labour market information (LLMI) that is regionally and occupationally specific in order to achieve greater efficiency in the Canadian labour market. Future research should continue to examine specific trades and regions in order to truly examine the problems associated with firm participation in apprenticeship. As this

study suggests, a 'monolithic' web platform presents vast potential for gathering labour market information and other data, much more inexpensively than conducting surveys.

In addition, although many studies have focused on apprentices and employer sponsors, there is very little known about the problem of skilled and qualified labour operating in the voluntary trades without the appropriate accreditation. This cohort now comprises the bulk of the construction trades, concentrated primarily in the residential sector and poses significant problems, not only for apprenticeship training, but also for effective labour market and skill signaling. As mentioned, this can adversely affect the information flows for consumers, firms, and workers alike.

The easiest gains in terms of apprenticeship certification lies with somehow incentivizing the many tradespeople who are not certified to attain certification. By increasing the number of eligible potential trainers (i.e. journeypersons), the room to increase the number of participating firms is increased. The mere fact that so many tradespeople choose not to attain certification despite the low cost and little effort, reinforces the notion that there is something wrong with the value placed on certification in the construction trades. Somehow, the credibility of the trade certification must be increased in order to motivate uncertified individuals to become certified. Future research in this area would answer the questions – "Why do some and not other tradespeople attain certification?", or "Why do some and not other firms employ journeypersons?"

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