THREE ESSAYS IN PUBLIC ECONOMICS

THREE ESSAYS IN PUBLIC ECONOMICS: FLAT TAXES, FOUNDATION OPERATIONS AND GIVING

By

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Abstract

This thesis empirically investigates two distinct themes in public economics: tax policy and the economics of the charitable sector. The first chapter of the thesis examines the first theme of tax policy and focuses on how a change in the income tax affects labour market behaviour in Russia. The second theme of the economics of the charitable sector is explored in the final two chapters of the thesis. These chapters analyze the role of Canadian foundations in the provision of charitable goods.

The first chapter examines the effect of Russia's flat tax reform on two employment dimensions: primary vs. secondary and official vs. unofficial. The chapter shows that individuals respond to lower taxes by devoting less time to primary and secondary employment. Official and unofficial employment, however, remain unaffected by the flat tax reform.

The next two chapters depart from tax policy and study the role of foundations in the Canadian charitable sector. The second chapter of the thesis provides new evidence on the size-based operation of foundations and their financial structure in Canada. A third of foundations operating in Canada are quite small, with assets of less than \$25,000. The remaining foundations can be classified as medium (with assets more than \$25,000 and never more than one million dollars in a given year) or large (with assets of one million dollars in at least one year). Over the last 20 years, there are only small differences in the

growth and use of funding between public and private medium-size foundations. For the large-scale foundations, we observe distinct differences in the expenditures of private and public foundations. Private foundations distribute more of their expenditures to other charities whereas public foundations devote more of their expenditures to internal activities.

The final chapter of the thesis explores the impact of foundation grants to charities on the private donations received by these charities. Theoretically, foundation grants have two competing effects on private donations: a negative crowd-out effect and a positive information effect. An overall positive effect prevails only if the positive effect of signaling information about charity quality outweighs the negative crowd-out effect. With data on Canadian social welfare and community charities matched to their specific foundation donors, this chapter empirically examines the overall effect and finds that an additional dollar of foundation grants to Canadian charities crowds-in private giving to these organizations on average by 3.70 dollars.

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List of Abbreviations and Symbols

- CRA Canada Revenue Agency
- FSA Forward Sortation Area
- PSU Primary Sample Units
- RLMS Russia Longitudinal Monitoring Survey

Introduction

In the three chapters of this dissertation, I investigate two separate fields in public economics: tax policy and the economics of the charitable sector. Tax policy is a field that covers a wide range of questions pertaining to labour market behaviour. In the first chapter, I focus on analyzing flat tax responses by employed individuals. The economics of the charitable sector is a younger field that has generated considerable research in the recent past. The final two chapters of my thesis study foundations as key players in the charitable sector and their role in financing the provision of charitable public good and services.

The interest in studying flat taxes has sparked in the past five years because many post-soviet countries have adopted a flat tax design. This movement occurred for two reasons. First, governments had to respond to demands of the market-based economy and establish its healthy development, which was stalled by outdated centrally-planned tax structures. Second, the presence of high tax rates implemented after the collapse of the Soviet Union created favourable grounds for individuals to find 'untaxed' employment. Under these circumstances, individuals were facing two problems: a traditional problem of labour-leisure choice and a problem of time allocation between regulated and unregulated employment.

Existing theoretical research that analyzes the decision to hold multiple jobs with tax evasion implications is fairly rich. Yet, empirical literature that

combines tax evasion, labour supply and decisions about work places is not very large. Amongst a few are Lacroix and Fortin (1992) and later Lemieux, Fortin and Frechette (1994) who explore the effect of taxes on labour supply decisions in the informal sector of Quebec City. Moreover, most of the papers on this topic use the data on countries that initially have relatively low degree of tax evasion. The main argument in the case of developing countries, while too extreme, may be that for them tax evasion is their 'status quo'.

In the first chapter, I empirically analyze the effects of the flat tax on individual labour supply using Russia as an example. In 2001, Russian tax administration replaced the three-band progressive tax structure with the personal income tax rate of 13 percent. Two earlier empirical studies (Ivanova, Keen and Klemm, 2005; Gorodnichenko, Martinez Vazquez and Sabirianova Peter, 2009) that analyze the effect of the Russian flat tax reform use household-level data. Since individual responses to tax changes may be diffused at the household level, I use individual-level data to carry out my empirical analysis.

The first chapter relies on data from the Russia Longitudinal Monitoring Survey (RLMS) for the period from 1999 to 2004. Its key feature is that the effect of the flat tax can be explored along two employment dimensions: primary vs. secondary and official vs. unofficial. The need for this distinction arises from a popular misconception that secondary employment is in fact unofficial employment. I find that total labour supply in primary and secondary jobs has declined after the tax reform. Official and unofficial employment, however,

remains unaffected by reduction in flat taxes. This finding confirms that secondary employment is different from unofficial employment.

In the next two chapters I switch gears from tax policy and focus on understanding the role of foundations in the charitable sector. When the Terry Fox Foundation organizes its annual run to promote the legacy of Terry Fox and raise money for cancer research, the event gets national publicity. It may be the general perception that the foundation sector is expanding, however, little is truly known about how foundations operate, what policies govern their operations and why, if at all, foundations benefit the charitable sector. My research on foundations contributes to the emerging academic literature in this area by providing valuable insights into these questions.

Foundations are important in the purpose they serve for their primary donors and the charitable sector in general. Primary donors can make tax-free investments and define their philanthropic priorities according to their visions. Income from investments can then be distributed to support charity operations. Moreover, foundation grants can offer quality assurance to individuals about charity operations, which may help charities in attracting more private donations (Rose-Ackerman, 1980; Payne, 2001; Andreoni, 2006).

Understanding the role of foundations has important implications for both applied research and public policy. On the applied side, the quality of the data on foundations is improving. For example, Canadian tax administrative data compared to similar US data includes richer financial information on foundations

and spans a longer time period. This creates more opportunities for in-depth quantitative analysis of foundations. On the policy side, foundations for the most part are excluded from government's policy choices. By redistributing their wealth through charitable organizations, foundation money can more readily finance a wide range of public goods than the conventional tax system intends.

The last two chapters rely on data from annual returns filed by foundations and charitable organizations with Canada Revenue Agency (CRA). In the second chapter, I describe the size, composition and financial structure of the foundation sector in Canada between 1992 and 2008. Officially, foundations are designated as public and private. The key difference between these two foundation types is the relationship between the sources of funding to the foundation and the number of donors related by family or marriage. Throughout this chapter, I compare and contrast between these two foundation types. Moreover, I frame the descriptive analysis by dividing foundations into small, medium and large according to their assets to explore implications of size-based operations.

In the past twenty years, foundation sector in Canada has notably expanded. The number of foundations has doubled, their assets have tripled and they became active supporters of charity operations. Evaluating foundations according to differences in their assets, I find that the foundation sector is comprised predominantly of foundations with modest operations, while the majority of assets is concentrated within a relatively small group of foundations. Interesting dynamics are observed particularly for these large foundations with

total assets greater than one million dollars. Total assets between private and public foundations are fairly similar. Large public foundations, however, raise greater revenues and distribute a higher volume of gifts to other charities than do private foundations. At the same time, I find that private foundations are more committed to financing outside charitable programs than public foundations. These differences in giving may be linked the government's differential treatment of how the two foundation types disburse a portion of their revenues and assets on charity gifts. After the 2010 disbursement reform, the treatment of disbursements for public and private foundations has equalized.

In the final chapter of my thesis, I analyze the growing role of foundations in supporting charity operations and explore their interactions with individuals as the two sources of charitable funding. Foundation giving, together with private giving, can achieve extraordinary results as seen by the near eradication of polio. For example, grant incentives from the Gates Foundations encouraged Rotary International to raise 170 million dollars in individual donations to help achieve this goal. I question whether the relationship between foundation giving and individual donations can be complementary.

Most of the literature focuses on studying the relationship between government grants and individual donations to charities. With only a few exceptions, the prevailing consensus of this literature is that government grants crowd-out private donations. This relationship arises because individuals reduce their voluntary contributions since they treat government grants as a pool of tax-

financed donations. I argue that a different giving dynamic may exist between foundations and individuals if individuals look to foundations for information about charity quality. Individuals may face time and financial constraints to learn about charities. Foundations, on the other hand, can more easily absorb the cost of gathering such information. Moreover, foundations have better access to information about charities from reviews of charity grant applications.

Theoretical framework, outlined in the third chapter, explicitly models the relationship between foundation grants and private donations where foundation grants act as signals of charity quality. It shows that foundation grants can have two competing effects on private donations. A positive information effect arises because information conveyed through foundation grants to individuals about charity programs is likely to be of better quality than that available to individuals. A negative crowd-out effect on private giving can occur if foundation grants simply act as substitutes to individual donations as postulated by standard economy theory.

The direction of the overall effect is clarified through extensive empirical analysis. It is based on a panel of social welfare and community charities in Canada from 1997 to 2006. The unique feature of this dataset is that these charities are matched with their specific foundation donors. Empirical findings confirm a positive impact of foundation grants on private giving. An additional dollar of foundation grants, on average, increases private donations by 3.70 dollars. The robustness of this effect is ensured by testing it across various

specifications and subjecting it to several sensitivity checks. These findings suggest that private donors may look to foundation grants for information about charities to make informed giving decisions.

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Chapter 1

The Effect of the Russian Flat Tax Reform on Official and Unofficial Employment

1.1 Introduction

How do individuals modify their labour market behaviour in response to changes in the tax schedule? Understanding the effect of taxes on labour supply is one of the central themes in research on public policy. Existing literature highlights the following activities that individuals may undertake to reduce their tax burden: underreport income (Allingham and Sandmo (1972), Yitzhaki (1974)); reduce work hours in their primary jobs and/or increase work hours in their secondary jobs (Cowell, 1981, 1985); switch employment from the public sector to the private sector where tax evasion may be less difficult (Kesselman, 1989), and finally, reduce work effort or quit altogether.

In Russia, after the collapse of the Soviet Union, individuals undertook secondary employment because they perceived it as the place where they could not be easily traced for tax purposes (Kolev, 1998; Duncan and Sabirianova Peter, 2010). In addition, individuals negotiated personal deals with tax authorities to mitigate their tax burden (Owen and Robinson, 2003). Ignorance of government's statutory and tax collection regulations were contributing to the breakdown of a tax system. To avoid its further deterioration, government officials

embarked on a bold reform of the tax code. On January 1, 2001 the Federal Tax Department of Russia adopted a flat personal income tax rate of 13 percent, which put an end to its progressive tax structure.¹

In this paper, I study the implications of the flat tax reform for labour supply in Russia. I utilize micro-level data from the Russia Longitudinal Monitoring Survey (RLMS), which provides information on incomes, employment characteristics and other household and individual attributes. A key feature of the RLMS is that it can be used to study the effect of the tax change along two employment dimensions. The first dimension considers the supply of hours at both primary and secondary jobs. In the survey, individuals employed at a primary job are also asked whether they hold secondary employment. The reason for analyzing this dimension is the fact that secondary employment is often used as a proxy for hidden "unofficial" work, while primary employment is treated as occurring in the "official" sector (Kolev, 1998; Namazie, 2003). It is of interest to establish how the flat tax reform affects the decision of undertaking a second "unofficial" job, which is reflected in the change of secondary work hours.

In addition to classifying workers by their place of employment (primary and secondary), the RLMS also uniquely identifies whether employment is in fact official or unofficial. The survey specifically asks workers "*are you employed at this job officially, in other words, by labor book, labor agreement or contract?*"

¹ During the late 1990s and early 2000s many Eastern European countries were adopting flat personal income taxes to encourage pro-growth behaviour. Baltic countries (Estonia, Latvia and Lithuania) were the first amongst the transition economies to begin the "flat tax revolution", which was later joined by Ukraine, Romania, Slovakia, and others (Mitchell, 2005).

Individuals with negative responses to this question are considered unofficially employed. In the literature on tax evasion, official employment is defined by a contract and earnings are subject to taxation, while employment in the unofficial sector is unregulated and occurs outside of the tax system. Classifying individual employment along this second dimension guarantees consistency with existing theoretical formulations. It also leads to the improvement over previous studies where employment in a second job or self-employment is used as a proxy for unofficial employment. This is where the contribution of my approach is distinct from other studies that use the RLMS to analyze the effect of the tax reform.

Understanding the effects of the flat tax reform on individuals working in the unofficial sector is important from a policy standpoint. Do individuals adjust their unofficial hours after the reform? Offering additional insights into this question allows the policy makers to view the tools of the tax-transfer system as performing multiple tasks. While the reduction in the individual tax burden has direct outcomes such as increased take home pay, indirectly it can motivate individuals to leave the high-risk unofficial jobs.

Adopting the Cowell (1981,1985) theoretical framework to reflect the actual tax-transfer system in Russia, I show that the effect of taxes on unofficial labour supply is ambiguous except under specific assumptions on risk preferences and labour supply function. Therefore, by performing an extensive empirical analysis I can determine the actual change in labour supply in response to the introduction of the flat tax.

For the empirical exercise I use a panel of 3,490 employed individuals that are observed multiple times before and after the tax reform. The time period consists of five years (1999-2004) with the exclusion of the year of the flat tax reform (2001) since individuals may require time to adjust and modify their choice set. The pre-reform period consists of two years – 1999 and 2000, while the three post-reform years (2002-2004) are likely to capture the full extent of the reform. The chosen empirical specification is based on a simplified difference methodology that considers the before and after analysis. I include the postreform indicator, the pre-reform employment status dummy variable and the interaction between the post-reform indicator and the pre-reform employment status. The interaction term is the policy coefficient which measures how labour supply responds to tax rate changes for individuals with a certain pre-reform employment status (primary vs. secondary or official vs. unofficial).

The empirical analysis demonstrates several interesting connections between labour supply and tax rates. Exploring first primary and secondary employment as proxies for official and unofficial employment respectively, I find that the flat tax reform leads to a reduction in total hours for individuals always holding a secondary "unofficial" job. These findings provide some insight into a traditional labour supply story with multiple jobs. The flat tax reform can lead to lower total hours for workers with a second job if work hours are constrained at the primary place of employment.

Second, I analyze labour supply responses to the tax reform for individuals with pre-reform official or unofficial employment status. The results suggest that the tax reform did not have an effect on labour supply for workers unofficially employed. One potential explanation is that for countries with historically weak tax mentality such as Russia, a significant increase in enforcement is crucial for deterring individuals from tax evasion and although tighter enforcement was legislated in Russia it was not implemented. Consequently, the tax change did not affect unofficial employment. Alternatively, the income and the substitution effects of the tax change may be offsetting one another. Finally, since the majority of unofficially employed in the pre-reform period faced the lowest tax rate of 13 percent, they were simply unaffected by the tax change as they continued to face the same tax rate after the reform.

The remainder of the paper is organized as follows: the next section provides the background on Russia's tax reform and outlines the theoretical framework. Section 3 describes the data and Section 4 presents the empirical analysis and results. Section 5 concludes.

1.2 Background

1.2.1 Russian Tax Reform

The progressive tax structure in Russia prior to the reform was as follows: 12 percent for annual incomes from 4,800 to 50,000 rubles, 20 percent for annual incomes between 50,000 to 150,000 rubles and 30 percent for annual incomes

exceeding 150,000 rubles.² In addition, individuals were responsible for one percent contribution to the pension fund. Significant nonpayment of taxes due to weak administration coupled with high tax rates severely eroded the tax system at the time. Tax collections declined from 39 percent in 1992 to 33 percent in 1998 (Chua, 2003). As part of its major reform, the government undertook substantial revisions to the Russia's tax system with an ultimate goal of attracting foreign investment and promoting growth. The tax reform was implemented in two stages. The first stage consisted of applying new tax rates, which considerably simplified the tax design. Complete restructuring of the tax administration was part of the second stage with an objective to address the issue of non-compliance.

On January 1, 2001 the Federal Tax Department of Russia adopted a flat personal income tax rate of 13 percent, replacing the three-band progressive tax structure. In addition, the one percent individual contributions to the pension fund were rolled into employer's unified social tax.³ By the end of 2001, collections from personal income tax revenues increased by 26 percent in real terms.⁴ They continued to grow by 21 percent in 2002 and almost 12 percent in 2003 (Gorodnichenko et al., 2009). Figure 1.1 summarizes Russia's tax structure before and after the reform.⁵

² Annual income of 50,000 rubles amounts to 1,785 US dollars based on the 1\$=28 rubles exchange rate in 2001.

³ Employers were responsible for paying a unified social tax which consisted of contributions to a pension fund, a social insurance fund and a health insurance fund.

⁴ Governments of other Eastern European countries that adopted the flat personal income tax rates have also experienced significantly higher tax revenue (Mitchell, 2005).

⁵ Personal income taxes in Russia are subject to an automatic withholding by employers.

In addition to the new tax rate, the federal government was eager to battle pre-existing issues of non-compliance. According to the Institute for Economies in Transition, Russia's tax and collection laws were extremely outdated and treated as irrelevant by the working class population. As a result, new enforcement laws were put in place in support of the overall tax reform. In 2001, the Tax Code was modified to incorporate higher penalties and more extensive tax audits. For instance, penalties for missing the deadline for filing taxes increased from 100 rubles in 1999 to 300 rubles in 2001, while penalties for not submitting all documents at the time of filing jumped to 155 rubles per document in 2001 from 50 rubles in 1999. Given that monthly average wage incomes in Russia were around 4,038 rubles in 2001, the new level of penalties were significant. Moreover, under the new guidelines timely follow-up actions were established for non-payment such as telephone calls within three to four days of nonpayment. If no response was established, computer-generated payment demands were sent to taxpayers within seven to 14 days after the statutory due date (Chua, 2003).⁶ However, the penalty for non-payment of taxes remained unchanged after the reform at 20 percent of the amount of evaded tax in addition to the full tax payment.

While individuals may respond to changes in both the tax rate and enforcement, evidence collected by Gorodnichenko et al. (2009) suggests that legislated changes in enforcement were barely implemented. Only the number of

⁶ Some additional enforcement also took place through advertising by Tax Police (currently the Ministry of Internal Affairs). The main message was encouraging individuals to be diligent citizens and to pay taxes: "*If you paid taxes, sleep well*", "Come out of the shadow", etc.

blocked bank accounts for tax-related violations and additional payments due to tax audits increased after 2000. The number of on-site tax audits and total amount of charges, however, noticeably declined after 2001. Even though the federal government introduced new laws and necessary measures to deal with non-compliance, actual enforcement remained practically unchanged after the reform.

1.2.2 Theoretical Framework

The literature on tax evasion begins with the seminal paper by Allingham and Sandmo (1972). It sets out a simple theoretical framework for analyzing the effects of the tax and penalty rates on declared income assuming fixed labour supply. They show that the effect of the tax rate is ambiguous because a higher tax rate leads to greater evasion on the margin and at the same time an increase in the tax rate makes individuals less wealthy and reduces evasion.

Cowell (1981) extends the Allingham and Sandmo's framework by incorporating a labour supply decision and borrows from portfolio theory to derive his results on the effect of taxes on labour supply. In his analysis an individual decides between three activities: official work, unofficial work and leisure.⁷ Derivation of official and unofficial labour supply functions is based on a functional separability assumption that is often used in studies on portfolio

⁷ According to Cowell (1981) unofficial (illegal) work are activities performed outside of the tax law ("off the books"), while official (legal) work is work conducted "on the books" (pg.20).

decisions.⁸ Under certain assumptions, Cowell finds that the increase in the tax rate encourages individuals to devote more time to unofficial activities. More generally, however, the effect of changes in the tax rates is ambiguous.

To study the effect of the tax change on official and unofficial labour supply, I propose a slight modification to the Cowell's model to more closely reflect the tax-transfer system in Russia. First, I exclude the lump-sum grant and second, I link the penalty rate to the marginal tax rate. As previously mentioned, if an individual is unsuccessful in cheating then tax authorities in Russia impose a penalty of 20 percent of the amount of evaded tax in addition to the full tax payment.

Consider the economy where the total work time *H* is composed of official h_o and unofficial h_u labour supply. An individual is endowed with one unit of time which is divided between leisure and work l = 1 - H. The wage that the individual earns in official employment is w_o while the unofficial wage is w_u . Let *t* be the marginal tax rate. Also, suppose α is the probability with which the person does *not* get caught and λ is the penalty rate. The individual maximizes the expected

⁸ See, for example, Dreze and Modigliani (1972).

utility function $U(c,1-H)^9$ subject to the time constraint $H = h_o + h_u$, where consumption is:

$$c_{\alpha} = (1-t)w_o h_o + w_u h_u \tag{1}$$

with probability α in case of successful evasion and

$$c_{1-\alpha} = (1-t)w_o h_o + (1-t-t\lambda)w_u h_u$$
(2)

with probability $(1-\alpha)$ in case of unsuccessful evasion. The optimal labour supply in the unofficial sector is denoted as

$$h_{\mu} = \phi_{\mu}((1-t)w_{\rho}, H[(1-t)w_{\rho}], w_{\mu}, t, \lambda, \alpha)$$
(3)

where ϕ_u is the "time portfolio" function.¹⁰ Consequently, the official sector hours are determined as:

$$h_{o} = H[(1-t)w_{o}] - \phi_{u}((1-t)w_{o}, H[(1-t)w_{o}], w_{u}, t, \lambda, \alpha)$$
(4)

The primary goal of this analytical exercise is to determine the *total* effect of the tax rate t on official and unofficial labour supply. Equation (3) suggests that the total change in the unofficial labour supply with respect to the decline in the tax rate is overall ambiguous. This ambiguity results from potentially competing effects of the total work time and the official after-tax wage as they depend on the

⁹ I make four identifying assumptions about preferences: 1. U(c,1-H) is real-valued, continuous and continuously differentiable; 2. consumer's preferences are convex; 3. U(c,1-H) is strictly concave, which implies that $U_1 > 0$, $U_2 > 0$, $U_{11} < 0$, $U_{22} < 0$ and $(U_{11}U_{22} - U_{12}^2) > 0$; 4. U(c,1-H) is assumed to be non-additively separable and satisfies the condition that the second derivative of the marginal rate of substitution with respect to consumption is zero, $\frac{\partial^2 (U_2/U_1)}{\partial c^2} = 0$. This is a necessary condition for the total work time H to be well defined and yield component labour supply functions in the official and unofficial sectors.

¹⁰ Borrowing from Cowell's (1981) analysis, ϕ_u is a solution to the maximization problem $max_h EV(c)$.

individual's risk preferences (decreasing/increasing absolute risk aversion) and on the form of the total labour supply function (backward bending/forward rising). The response of the official sector hours to the tax decline is also ambiguous for the same reasons.

Additional ambiguity may arise from competing forces of income and substitution effects on labour supply. The reduction in the tax rate increases individuals' real incomes and, assuming leisure is a normal good, results in lower labour supply (income effect). At the same time, the decline in the tax rate reduces the price of leisure relative to work leading to an increase in labour supply (substitution effect). The objective of the subsequent empirical exercise is to establish the overall response of official and unofficial labour supply to changes in the tax rate.¹¹

1.3 Data

The Russia Longitudinal Monitoring Survey (RLMS) is a series of nationally representative surveys designed to monitor the effects of Russian reforms on health and economic welfare of households and individuals in the Russian Federation. The RLMS incorporates information on over 4,000 households and over 10,000 individuals for the period from 1992 to 2008. The interviewers gathered information on the same dwellings every year. In the case when a

¹¹ The empirical analysis focuses only on establishing the *total* impact of the change in the tax rate on official and unofficial labour supply without attempting to generate explicit estimates for the three separate effects: the effect of total work time H, the effect of the after-tax official wage and the direct effect of the tax rate. Casting light on these effects from an empirical perspective is a task for future research.

household moved away from its dwelling, attempts were made to obtain its new address. Adult questionnaires were obtained from 97 percent of individuals listed on household rosters and were completed by individuals 14 years of age and older. The survey provides detailed information on incomes, employment characteristics and individual attributes.

The empirical exercise is performed using the time period from 1999 to 2004 with the exclusion of the year of the flat tax reform (2001) since individuals may require time to adjust to the new tax regime.¹² The panel structure of the sample is useful for implementing the before and after analysis while controlling for unobservable individual characteristics. The pre-reform period consists of two years - 1999 and 2000, while the three post-reform years (2002-2004) allow to capture the full extent of the reform.¹³

I impose several restrictions on the sample to arrive at the final dataset. First, I include only individuals that were observed multiple times before and after the reform. This is an essential restriction since the survey also includes individuals that appear only pre-reform or only post-reform.¹⁴ Next, I include only working age (18 to 60 years old) individuals who always report being employed. Finally, I exclude individuals for which there is a missing response to the identifying question about official and unofficial employment. This leaves a sample of 3,490 individuals and 13,681 observations. Table 1.1 summarizes the

¹² This type of adjustment has been utilized in previous works on labour supply and policy changes, e.g., Baker, Gruber and Milligan (2008) who study the implications of the price change in child care services on maternal labour supply in Quebec. ¹³ Note that year 1999 refers to round 8 of the survey, which was finalized in January of 1999.

¹⁴ Table 1.A1 in the Appendix illustrates the panel structure of the data.

socio-economic characteristics of individuals in the final dataset. These characteristics also serve as control variables in the regression analysis.

Panel A in Table 1.1 reports the gender, marital status and education of the sample before and after the tax reform. Just over half of the sample consists of women and their proportion increases slightly in the post-reform period. I observe some minor changes after the reform in marital status. The proportion of individuals that change their marital status, however, remains unchanged. Just over 70 percent of the sample report having a college degree before and after the reform. A typical college in Russia is a technical or a trade school that offers two-year degree programs and individuals can submit their applications after either grade 9 or grade 11. In order to enter a university one is required to have a high-school diploma. A bachelor degree at a university can be obtained after four years of full-time studies. The percentage of individuals in the sample with a university degree is around 11 percent before and after the tax reform. Finally, in Panel B, I report the average age (39 years) and average years of work experience (8 years) of the sample over the entire time period as well as before and after the tax reform. On average, individuals are older after the reform and they gain more years of experience in the post-reform period.

The key feature of the survey is that it allows one to study the effect of taxes on labour supply along two dimensions. The first dimension considers the supply of hours at primary and secondary jobs. In the survey, individuals who are

employed at a primary job are also asked whether they hold a secondary job.¹⁵ For carefully capturing all potential employment types, I construct three groups of individuals. The first group includes individuals who are employed at a primary job without secondary employment (primary only). The second group includes workers who are employed at a primary job with some secondary employment (primary & sometimes second). Finally, individuals that are employed at the primary job and always report holding a secondary job throughout the given time period comprise the third group (primary & always second).

Table 1.2 illustrates the change in the composition of these groups before and after the reform. I observe several interesting changes. First, more than half of second job holders (either sometimes or always) in the pre-reform period have left secondary employment altogether in the post-reform period. Of the remainder, about 20 percent keep their pre-reform status, while the other 20 percent switch from sometimes holding a second job to becoming continuous second job holders or vice versa after the reform. Second, a small proportion of individuals who only hold a primary job before the reform take on secondary employment in the post-reform period. Flows in and out of secondary employment are suggestive of the transitional nature of second jobs. Researchers argue that secondary employment has fewer constraints on the

¹⁵ The survey question about primary employment is: "Let's talk about your primary work. If you are employed at several jobs, describe the one you consider primary." The survey question about secondary employment is: "Let's talk about your secondary work. If you are employed at several jobs, describe the one you consider second in importance."

work-hour schedule than primary employment.¹⁶ Determining whether the change in secondary employment is a result of the tax reform is subject to an extensive empirical analysis provided in the next section.

Average total monthly hours for individuals by their pre-reform primary/secondary employment status, before and after the tax reform, are reported in Table 1.3. Regardless of the type of employment, individuals work higher average monthly hours after the reform. Workers who report only primary employment before the reform contribute slightly higher average monthly hours after the reform compared to their pre-reform mean. I observe the same pattern for individuals that sometimes hold a second job in the pre-reform period. Workers who always report holding a second job before the reform, on the other hand, have lower average monthly hours after the tax reform compared to their pre-reform mean. Also, the standard deviation of the total monthly hours is higher for second job holders. This observation is consistent with work hours at second jobs being more flexible.

Modeling unofficial employment empirically has been a challenge as one requires elaborate data on actual and hidden incomes, evaded tax amounts, etc., which generally do not exist. Consequently, previous studies rely on strong assumptions when constructing a measure of unofficial employment. For instance, Kolev (1998) has treated individuals employed at primary jobs as officially employed, while those working at secondary jobs to be unofficially

¹⁶ For further discussion on inflexibility in the work-hour schedule at the primary place of employment see Altonji and Paxson (1992), Hunt, Hill and Kiker (1985), and Kahn and Lang (1991).
employed. The main flaw of this definition is that one cannot claim with certainty that individuals with secondary jobs will automatically conceal their income and become unofficially employed. In this paper, I characterize unofficial employment in a way that is consistent with existing theoretical formulations. In addition to classifying workers by their type (primary/secondary) of employment, the RLMS also uniquely identifies whether individual employment is official or unofficial.

The main contribution of this approach is that I can directly observe individual responses about official and unofficial employment.¹⁷ Individuals who report having at least one job are specifically asked about each job "*Are you employed at this job officially, in other words, by labor book, labor agreement or contract?*". In order to better capture whether individuals switch between official and unofficial employment, I assign workers into the following three groups.¹⁸ The first group includes workers who report only official employment over the given time period. Since individuals can hold two jobs I treat workers as purely official if they report being officially employed at both primary and secondary jobs.¹⁹ The second group is composed of individuals who report only unofficial employment. For a worker to be classified as purely unofficial, an individual has

¹⁷ Considerable efforts were made to generate truthful responses. Interviewers were trained to emphasize before each interview that gathered information would be highly confidential and for academic purposes. The survey response rate was approximately 80 percent from participating households.
¹⁸ There are 139 individuals for whom the official/unofficial status is missing for all years that they appear in

¹⁸ There are 139 individuals for whom the official/unofficial status is missing for all years that they appear in the survey. For these individuals I was unable to extrapolate the status based on the years for which the status was reported. I used the following rules to assign individuals into official and unofficial employment if their status was missing in some of the years: 1) if individuals reported the same status for all the years with one year missing, I assigned that status to the missing year; 2) if the status was observed in 1999 and 2000, but missing in 2002, I kept it as missing because 2002 appears after the reform.

¹⁹ The following individuals are also considered 'only official' if: 1) they report official employment at the primary job and a missing status at the secondary job in a given year; 2) they report a missing status at the primary job in a given year and official employment at the secondary job.

to be unofficially employed at both primary and secondary jobs.²⁰ The remaining group, which I call 'official and unofficial mix', comprises of individuals that switch between official and unofficial employment. More specifically, individuals that belong to this group in the pre-reform period can have various combinations of official and unofficial employment over the two years as long as they are not only official or only unofficial. For example, a few possible combinations are: an individual holds an official primary job and an unofficial secondary job in both years or an individual holds both official jobs in 1999 and both unofficial jobs in 2000, or an individual holds an unofficial primary job and official secondary job in both years, etc.

Table 1.4 illustrates the change in the composition of the three groups before and after the tax reform. I observe that more than half of the employed (partially or fully) in the unofficial sector before the reform become exclusively official in the post-reform period. However, some individuals keep their prereform unofficial status (partial or full) in the post-reform period. In addition, some exclusively official individuals in the pre-reform period shift into either being completely or partially unofficial after the reform. In general, these trends provide little evidence of the movement between official and unofficial employment that result from responses to the tax decline. Therefore, I turn to the empirical exercise for greater insight on whether the reform affected labour supply of those individuals that were officially or unofficially employed before the reform.

²⁰ As with officially employed, 'only unofficial' are those that 1) report unofficial employment at the primary job and a missing status at the secondary job in a given year; or 2) report a missing status at the primary job in a given year and unofficial employment at the secondary job.

In Table 1.5 I present average total monthly hours before and after the reform for individuals who are either only officially employed, only unofficially employed, or both in the pre-reform period. Individuals who are exclusively officially employed before the reform appear to have higher average monthly hours after the reform and the difference between pre- and post-reform means is significant at 5 percent level. Average total hours for workers who are purely unofficially employed decline in the post-reform period but the difference is statistically insignificant. For individuals who were both officially and unofficially employed before the reform, the average total hours are also lower after the reform. Theory suggests that the change in the tax rate may have offsetting effects on labour supply and these summary statistics potentially point in this direction.

Another interesting observation is that workers with either some or only unofficial employment contribute on average higher hours in the pre- and post-reform periods than those individuals with only official employment. This difference may be driven by the ability of workers to adjust their unofficial hours while official hours may be constrained. A much higher standard deviation for unofficial hours compared to the official hours also suggests that unofficial work hours are more flexible.²¹

²¹ Lemieux et al. (1994) provides some evidence on hour flexibility in unofficial (underground) employment.

1.4 Empirical Analysis

1.4.1 Empirical Specification

The empirical literature combining tax evasion and labour supply decisions is not very large and the analysis is often performed using data on countries that initially have a low degree of tax evasion.²² As data on transition economies are becoming widely available researchers have begun analyzing the issue of tax evasion for these countries.²³ To the best of my knowledge, there are only two papers that attempt to analyze the change in the degree of tax evasion in response to the Russia's flat tax reform.

The work by Ivanova, Keen and Klemm (2005) focuses on changes in tax compliance as a result of the 2001 tax reform using the RLMS at the household level for 2000 and 2001. A thorough study of the effect of Russia's flat tax reform on tax evasion was performed by Gorodnichenko, Martinez-Vazquez and Sabirianova Peter (2009), who also use data at the household level. With the income-consumption gap as a measure of tax evasion they attempt to explore how, if at all, the implementation of the flat 13 percent income tax rate affected the degree of compliance.

Analysis performed in this paper contributes to the literature on tax evasion and labour supply along several dimensions. First, I choose the time period such that I avoid the effects of the one-time shock by excluding the year of

 ²² See, for example, Lacroix and Fortin (1992), and Lemieux, Fortin and Frechette (1994).
 ²³ See Kolev (1998), Ivanova et al. (2005) and Gorodnichenko et al. (2009) for Russia; and Namazie (2004) for Kyrgyz Republic.

the financial crisis (1998), and account for any time adjustments individuals may require to respond to changes in the tax structure by excluding the year of the tax reform (2001).

Secondly, unlike the two earlier studies on Russia's flat tax reform that exploit the household-level data, I use the individual-level data since it reveals individual responses to tax declines, which may be diffused at the household level (Duncan and Sabirianova Peter, 2010). The main concern is that two individuals in the same household may have different responses to the implemented tax change, but when aggregated to the household level these responses may not be properly reflected. Alexander and Feinstein (1987) in their microeconometric analysis of individual tax evasion express a similar concern that aggregate data are likely to introduce biases if one uses them to analyze micro-level responses. At the end of the day, it is the *individual*, not the household who evades taxes.

Even though Duncan and Sabirianova Peter (2010) also employ individual-level data from RLMS their study is different in several respects. First, their primary goal is to contribute to a traditional literature on labour supply and participation in the labour market by exploring the effect of the tax reform on work hours by gender. The objective of the current study, on the other hand, is to establish the total effect of the flat tax reform from a tax evasion perspective. Second, Duncan and Sabirianova Peter assign individuals into groups based on their employment in primary and secondary jobs; however, it remains unclear

whether an individual holds a primary job for all the years that he appears in the survey or only in some years. I later show important differences in terms of responses to the reform for individuals that ever report having secondary employment and for those that always hold two jobs. Finally, since the authors define the treatment and control groups on the basis of the after-tax income, there is some risk of switches that can occur between the two groups that introduces some potential bias into results. To avoid potential biases resulting from movements in and out of the treatment and control groups, I employ a different empirical methodology. In particular, I depart from the standard differences-in-difference approach with explicit treatment and control groups and focus on the effect of the flat tax reform on individuals with a particular pre-reform employment status. For example, if individuals were always holding an unofficial status before the reform, how does their labour supply change after the tax reform? My approach is distinct from previous studies that use the same data to analyze the effects of the tax reform. Since RLMS can uniquely classify individuals into official and unofficial employment, I can also explore the effect of the tax reform on workers in the official and unofficial sectors.

I identify the effect of the flat tax reform on total labour supply for individuals with a pre-reform employment status that corresponds to the two dimensions discussed earlier: primary and secondary employment, and official and unofficial employment. I use an empirical methodology that is based on the before and after analysis and includes a dummy variable that identifies

individual's pre-reform employment status, a tax-reform indicator and an interaction term of the tax reform dummy with the employment status dummy variable. The resulting model specification is:

$$h_{ait} = \alpha_i + \beta \operatorname{Pre} - \operatorname{Reform} \operatorname{Employment} \operatorname{Status}_{it} + \phi \operatorname{Post} - \operatorname{Reform} + \phi \operatorname{Post} - \operatorname{Reform} + \varphi \operatorname{Pre} - \operatorname{Reform} \operatorname{Employment} \operatorname{Status}_{it} \times \operatorname{Post} - \operatorname{Reform}) + \psi x_{it} + \varepsilon_{it}$$
(5)

where h_{ait} represents total hours worked in the last 30 days for individual *i* in year *t*, α_i denotes individual fixed effects, Post – Reform is a tax-reform indicator corresponding to the post-reform period, x_{it} represents socio-economic characteristics such as age, marital status, education, and work experience, and ε_{it} is the random error term.

То dimensions of the analysis, capture the two Pre – Reform Employment Status _{it} refers to either primary and secondary employment or official and unofficial employment before the tax reform. The interpretations of the coefficient of interest, γ , depend on the analyzed dimension. The results of the earlier analytical exercise suggest that the sign of the total effect of the flat personal income tax on labour supply is ambiguous. In the next section, I present the findings of the empirical exercise that aims to determine the direction of the total effect.

1.4.2 Results

Baseline Regressions. I begin with baseline estimation to determine if the tax reform has any bivariate statistical relationship with total labour supply. Table 1.6 summarizes results from an ordinary least squares (OLS) estimation where the post-reform indicator is the main policy measure.²⁴ Column (1) presents the findings without including controls, district fixed effects or individuals fixed effects.²⁵ In column (2), I include covariates such as gender, age, marital status, education, and work experience. I also incorporate a time trend, district dummies and an interaction between the time trend and district dummies to control for time-varying local macro-level trends. In the remaining column (3), I add individual fixed effects to account for time-invariant heterogeneity. Across all three specifications, I observe a positive coefficient on the post-reform indicator suggesting an increase in total labour supply in the range of 5-8 hours after the tax reform. This is a fairly small increase given that, on average, individuals work 154 hours in a given month. Therefore, this finding leads one to conclude that the substitution effect slightly dominates the income effect causing only a small net effect on labour supply, on average, from the reduction in the tax rates.

Regressions with Employment in Primary and Secondary Jobs. The tax evasion literature suggests that individuals for whom tax payments are deducted at source can use secondary employment as the tax evasion channel (Cowell,

²⁴ This estimation is also performed with individuals that report ever being unemployed in some years during the given time period. We find that the magnitude of the coefficient on the post-reform indicator is the same. ²⁵ The survey spans 38 randomly selected districts in Russia.

1985). As this may be the case in Russia, some researchers argue that secondary employment is a reasonable approximation for unofficial employment (Kolev, 1998; Namazie, 2003). To explore this dimension, I estimate Equation (5) where the Pre-Reform Employment Status variable is constructed to, at first, include workers that are employed in the primary sector with some secondary employment before the reform and then those that always hold two jobs in the pre-reform period.

The first three columns of Table 1.7 provide estimation results for individuals that report some secondary employment before the reform. Column (1) presents a simple OLS regression without controlling for individual attributes and excluding individual or district fixed effects. In general, workers with some secondary employment in the pre-reform period contribute, on average, higher total hours. However, I cannot conclude that the tax reform had any impact on labour supply for this group of individuals. While the coefficient on the interaction term between those with some secondary employment pre-reform and the post-reform indicator is positive which reflects the observations in Table 1.3, its significance cannot be determined. In column (2) where I control for individual attributes and macro-level shocks with district dummies and then in column (3) in which I additionally account for individual fixed effects, the coefficient on the interaction term remains insignificant for individuals with some secondary employment before the reform.

In the next three columns, I report the estimates for individuals that always hold primary and secondary jobs in the pre-reform period. First, I find that these workers contribute, on average, about 32 more hours each month than individuals working only a primary job. Second, when I interact the dummy variable for this group of workers with the post-reform indicator I obtain a negative and a significant coefficient. This suggests that individuals who always hold a second 'unofficial' job before the reform contribute close to 19 hours less after the tax reform. I continue to observe a negative and significant coefficient on the interaction term when I include controls and district dummies as well as their interactions with the time trend. However, the coefficient's significance disappears when I account for individual fixed effects. Finally, in column (7) which incorporates both groups of workers with irregular and continuous pre-reform secondary employment, I again find that individuals who are always second job holders before the reform contribute lower total hours by working less at the second job after the reform.

Speculating about these results from the tax evasion perspective, I conclude that workers who are always unofficially employed (as proxied by secondary employment) before the reform tend to contribute lower total hours after the reform. This is consistent with the reduction in the tax rate creating an incentive for greater voluntary compliance. Since it is just an approximation and is subject to criticism, I analyze the effect of the tax reform for individuals who *directly* report official or unofficial employment in the next subsection.

I can also interpret these findings from a somewhat different angle. During the Soviet Union, employment contracts did not allow for any flexibility in terms of work hours for individuals (Lewinbuk, 2008). Since most of the soviet workplace design carried over to Russia, a simple intuition suggests that workers may be constrained by their employers in terms of how many hours they can supply at their primary place of employment.²⁶ The only way individuals can increase their total labour supply is by undertaking a secondary job. Interestingly, these results support the predicted impact of the marginal tax reduction for those who undertake a secondary job as a result of constraints at the primary place of employment (Hunt, Hill and Kiker (1985)). Specifically, since the take-home pay increases due to lower taxes, individuals can attain the same standard of living ultimately by reducing hours worked at the second job leading to the observed decline in total hours.

Regressions with Employment in Official and Unofficial Sectors. The decline in the marginal tax from a top rate of 31 percent to a flat rate of 13 percent introduced by the reform, in theory, creates an ambiguous effect on official and unofficial labour supply. However, if total hours are unchanged I can expect the reduction in the tax rate to be reflected in higher hours for individuals holding official employment and lower work hours for individuals in the unofficial sector. I test this theoretical prediction by estimating Equation (5) where the

²⁶ The argument that hours are determined by employers' preferences has found considerable theoretical and empirical support. See Altonji and Paxson (1992) for an extensive discussion.

Pre-Reform Employment Status variable takes the value of one if individuals are either exclusively official, exclusively unofficial or both official and unofficial in the pre-reform period. The interaction term between the post-reform dummy and a pre-reform employment status is adjusted accordingly. I present the results of the regression analysis that estimates the total effect of the flat tax on official and unofficial labour supply in Table 1.8.

For each group, I provide results from three regressions. The first set of regressions (columns (1), (4) and (7)) are performed without any controls. For the second set (columns (2), (5) and (8)), I include covariates such as, gender, age, marital status, education and work experience as well as district dummies, the time trend and their interactions to account for macro-level shocks. In the final set of regressions (columns (3), (6) and (9)), I exclude the district dummies, but keep their interactions with the time trend and allow for individual fixed effects. In the final column (10), I keep all three groups and control for individual characteristics and time-varying macro shocks.

I begin with the discussion of the labour supply response to a flat tax for individuals who are always officially employed in the pre-reform period. A negative and a significant coefficient on their pre-reform status indicates that official workers on average work close to 150 hours a month or about 40 hours a week. When this group's employment status is interacted with the post-reform indicator, I find a positive but an insignificant coefficient on total work hours after the tax reform. This finding has some interesting interpretations. If individuals

were exclusively official before the reform even when the top marginal tax rate was 31 percent, I would expect them to only strengthen their official status with the implemented tax cut. In other words, it is difficult to imagine non-evaders becoming evaders at much lower tax rates. Furthermore, an increase of only 8 hours over a period of one month hints at possible work hour constraints in official employment. Since official employment is defined by a contract, hours are often pre-determined with no room for negotiations. Empirically, I provide evidence of the fact that under these circumstances the changes in the tax rate are unlikely to affect official labour supply.

In the next three columns of Table 1.8, I analyze the effect of the flat tax reform on individuals with exclusively unofficial pre-reform employment. As observed in Table 1.5, these workers contribute, on average, more total hours than their official counterparts. However, I cannot arrive at the conclusion that individuals with exclusively unofficial employment respond to a tax cut generated by the reform. While the policy coefficient is negative, it is insignificant in all three specifications. I arrive at a similar finding when I analyze how the reform affects labour supply of individuals that are both official and unofficial before the reform. The results presented in the final set of regressions in Table 1.8 indicate that this group of workers contribute, on average, 13 to 19 more hours each month than their official counterparts. However, while the interaction term between a mixed pre-reform employment status and the post-reform indicator has the expected negative sign, its significance cannot be established. Therefore, I again conclude

that the marginal tax reductions had no effect on labour supply for workers with both official and unofficial pre-reform employment.

To explore the impact of the flat tax reform on labour supply, I have constructed the empirical exercise carefully to ensure robustness.²⁷ Under various empirical specifications I consistently observe that the flat tax reform did not generate an anticipated effect on official and unofficial labour supply. Several explanations are worth highlighting. First, it is likely that the change in the tax rate alone did not create strong enough incentive and I suspect that enforcement may be the missing piece. Evasion is perhaps a habit-forming activity and therefore, strict enforcement measures in addition to tax cuts may be necessary to induce individuals to reduce their evasion activities. While my findings disagree with conclusions provided by Gorodnichenko et al. (2009), I attribute this to the fact that studying the impact of the reform on tax evasion at the household level as done in their paper may be misleading. Second, the reduction in the tax rate generates two effects, which ultimately depend on individual's risk preferences: an income effect (individuals become wealthier, thus they take more risk by increasing evasion activity) and a substitution effect (lower tax evasion on the margin). Since I observe that the impact of lower taxes is statistically insignificant, it may be that the two effects are offsetting one another. Third, the observed effect may be a result of the majority of individuals being in the lowest tax

²⁷ As a robustness verification and to better exploit the data, I have estimated the effect of the flat tax by taking series from all the different combinations of pre- and post-reform years (i.e., 1999 vs. 2002, 1999 vs. 2003, 1999 vs.2004 and the same for 2000). I continue to find that marginal tax reductions had no effect on labour supply for workers who were either exclusively official, exclusively unofficial or holding a mixed employment status before the reform.

bracket, the rate for which remained the same after the tax reform. I cannot, however, directly verify whether this is the case because individuals report only their after tax income. Using total after tax income as a crude measure, it appears that more than half of individuals in the sample belong to the 13 percent tax bracket before and after the tax reform. The presence of a smaller number of potentially affected individuals makes it more likely to observe no response from the reform.

Giving these finding, how can the gain in personal income tax revenue be explained? One factor attributing to the increase in revenues is the rapid growth in wages that occurred after the financial crisis (1998). After-tax real wage income increased by over 18 percent in 2001, while gross wages rose by 15 percent. This implies that an increase in taxable income occurs even with no change in labour supply. Part of the revenue rise can also be explained by the adjustment in work hours of individuals in higher tax brackets (only 28 percent of the sample in 2000). Furthermore, the studied sample mainly consists of individuals that are employed at organizations rather than being self-employed. Entrepreneurial activity, typically, implies higher earnings. Therefore, self-employed are more likely to fall into a higher tax bracket and have a greater incentive to evade taxes (Pradhan and Soest, 1995). The number of entrepreneurs that voluntarily registered with tax authorities in 2002 relative to 2000 increased by 19 percent.²⁸ This further suggests that a partial increase in

²⁸ Russia Federal State Statistics Service.

total tax collections can be attributed to higher total reported income coming from self-employed, a category that is not captured by these data.

Using confidence intervals on policy coefficients as presented in Table 1.9, I trust that there can still be some effect of the tax reform as suggested by lower and upper limits of the intervals. Therefore, even though I cannot reject the hypothesis of the reform having no effect on official and unofficial labour supply ($\gamma = 0$) using my data, it is still possible that the reform did indeed have some effect on individuals holding official and unofficial employment.

In summary, these findings differ substantially for individuals employed at primary and secondary jobs compared to those in official and unofficial employment. This suggests that using secondary employment as an approximation for the unofficial sector may be inappropriate.

1.5 Conclusion

This paper analyzes the effects of the Russia's flat tax reform on individual labour supply. As part of its major reform, the Federal Tax Department of Russia adopted a flat personal income tax rate of 13 percent in 2001. Chua (2003) claims that this reform has not only put an end to the conventional progressive tax structure with the top marginal tax rate of 31 percent, but also has completely modified the tax mentality in Russia. The analysis has proved to be a useful tool in understanding the impact of the reform and has shed some light on the incentives created by such a change in the tax regime.

I propose two extensions to the literature on labour supply and tax rates. First, I study the effects of new tax rates on labour supply depending on whether the individual has primary or secondary employment. The motivation for analyzing this dimension is that secondary employment is often used as a proxy for unofficial employment, while employment in the primary job is treated as official. I claim that one cannot be certain that, even in Russia, all additional employment can be automatically classified as unofficial. Since the survey allows to observe whether individuals hold one or two jobs over the five-year time period, I can explore the effect of the tax reform on secondary 'unofficial' employment. I find that the tax reform affected workers who were employed at both primary and secondary jobs in the pre-reform period. In particular, their total labour supply declined after the tax reform. This suggests that lower taxes created favourable grounds for greater voluntary compliance which is consistent with the finding in Gorodnichenko et al. (2009).

I also explore how taxes affect labour supply for individuals who are officially or unofficially registered at the place of employment. This empirical definition offers consistency with theoretical formulations and an improvement over previous studies which used employment in a second job or selfemployment as a proxy for unofficial employment sector. The empirical analysis demonstrates that the change in the tax rate did not affect official and unofficial labour supply. For individuals that hold exclusively official employment in the pre-reform period, I find that their total hours were unaffected by the tax reform.

This finding may be a result of inflexibility of hours in official employment. For workers with unofficial employment (partial or full) before the reform, I also observe that the flat tax reform did not affect their labour supply. These findings are also consistent with our initial claim that employment in a secondary job does not automatically translate into unpaid taxes. Otherwise, I would observe similar effects of the tax reform between the proxy and the direct measure of unofficial employment.

These results provide some insight for the literature on hour constraints for individuals with multiple jobs. One theoretical prediction is that the decline in the marginal tax rate reduces the number of hours individuals devote to working in second jobs (Hunt et al., 1985). I present empirical evidence that supports the predicted impact of the marginal tax reduction for those who undertake a secondary job as a result of constraints at the primary place of employment. For these workers, the decline in secondary work hours is reflected in lower total hours after the tax reform.

What policy implications of the flat tax reform arise from the results of this study? On the tax evasion side, countries with any degree of non-compliance can benefit from the adoption of the flat income tax rate. For individuals that are employed at the primary jobs, flattening of the tax schedule certainly leads to higher real income. However, policy makers should take into consideration those workers that may not accept higher take-home pay for potential hours inflexibility at the primary place of employment.

Flattening of the tax schedule also raises an interesting question about its effects on entrepreneurial activity. Recent work by Gordon and Wen (2010) suggests that tax progressivity is likely to discourage self-employment. Tax evasion literature, on the contrary, supports a reverse argument. Using entrepreneurial activity as a measure of tax evasion, one can analyze the impact of the flat tax on labour supply of self-employed.

The question whether flat taxes lead to reduced activities in the unofficial sector can further be explored using the Ukrainian Longitudinal Monitoring Survey (ULMS), a survey very similar to RLMS. Ukraine has also adopted a flat personal income tax rate of 13 percent on January 1, 2003. However, its highest marginal tax rate was 40 percent prior to the reform, therefore, the adoption of the flat tax creates a much bigger decline in taxes than in Russia. As a result, the response to this tax policy change in Ukraine can generate a more noticeable effect on labour supply in the unofficial sector.

An interesting angle that deserves more future research is the puzzle of tax compliance. Alm, Martinez-Vazquez and Torgler (2010) highlight that the answer should come from behavioral economics. The model of individual choice that I explore in this paper can also be expanded by introducing some aspects of individual behaviour. The Russia Longitudinal Monitoring Survey (RLMS) includes several questions on tax attitudes. One question attempts to establish on what portion of income do most individuals pay taxes. A second question pertains to identifying the main factors which influence individuals' decisions *not*

to pay taxes in Russia. These include high tax rates, complicated tax structure, peer effects (no one around me is paying taxes) and governments stealing tax revenue, etc. Back of the envelope calculations suggest that the structure of the tax system had a big influence on individuals' decisions not to pay taxes before the reform. After the tax reform, less individuals were claiming that this factor was influential. Also, peer effects were another major factor to deter individuals from paying taxes. Therefore, decisions to pay taxes cannot be explained only by a purely economic approach. Alm et al. (2010) argue that tax morale and personal norms should be incorporated into theoretical models. Potentially, the survey data can be used to test these models empirically.

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		Pre Reform	Post-Reform		
Variable	Persons	(1999-2000)	(2002-2004)		
Panel A	Ind	ividual Character	istics		
Total Sample	3,490	% of s	sample		
Gender					
Male	1,664	48.8	47.0		
Female	1,826	51.3	53.0		
Marital Status					
Always Married	2,110	61.2	60.0		
Never Married	247	6.5	7.4		
Change Status	1,133	32.3	32.6		
Education					
Less than High School	152	1.2	1.5		
High School	677	15.9	13.8		
College	1,961	72.2	72.8		
University	768	10.7	11.9		
Panel B	mean (st.d.)				
Age	39.2	37.5	40.4		
	(9.9)	(9.8)	(9.8)		
Work Experience	8.2	7.5	8.6		
	(8.70	(8.0)	(9.1)		

Table 1.1: Summary Statistics

Table 1.2: Primary and Secondary Employment

	Post-Reform Period					
Pre-Reform Period	Primary Only	Occasional Secondary	Always Secondary	Total		
Primary Only	3,053	166	30	3,249		
Occasional Secondary	83	30	19	132		
Always Secondary	55	31	23	109		
Total	3,191	227	72	3,490		

Notes: This table presents the number of individuals.

	Pre-Reform (1999-2000)	Post-Reform (2002-2004)	t-test on difference between pre and post means
	mean (std	.dev.)	
General Employment	150.3	157.1	4.61
	(75.26)	(69.35)	
Primary Only	148.5	155.9	5.55
	(75.75)	(71.29)	
Occasional Secondary	161.0	170.3	1.37
	(86.18)	(76.64)	
Always Secondary	181.7	170.2	-1.31
	(99.49)	(74.31)	

Table 1.3: Total Monthly Hours by Pre-Reform Primary and Secondary Employment

Notes: Numbers in bold are significant at 5 percent or less.

Table 1.4: Official and Unofficial Employment

	Post-Reform Period						
	Only	Only Only Official and					
Pre-Reform Period	Official	Unofficial	Unofficial Mix	Missing Status	Total		
Only Official	2,897	55	210	24	3,186		
Only Unofficial	42	18	20	1	81		
Official & Unofficial Mix	54	4	25	1	84		
Missing Status	112	9	18	0	139		
Total	3,105	86	273	26	3,490		

Notes: This table presents the number of individuals.

Table 1.5: Total Monthly Hours by Pre-Reform Official and Unofficial Employment

	Pre-Reform (1999-2000)	Post-Reform (2002-2004)	t-test on difference between pre and post means
	mean	(std.dev)	
Only Official	149.2	156.4	-5.55
	(76.42)	(71.44)	
Only Unofficial	167.2	162.4	0.22
	(99.93)	(84.54)	
Official & Unofficial Mix	168.6	163.4	0.66
	(85.02)	(85.89)	

Notes: Numbers in bold are significant at 5 percent or less

	Dependent Variable: Total Hours				
Independent Variables	(1)	(2)	(3)		
Post-Reform Indicator	6.869	7.775	5.394		
	(1.952)	(3.057)	(3.971)		
Gender		-14.61			
		(1.691)			
Age		1.236	2.455		
		(0.587)	(2.717)		
Age Squared		-0.013	0.008		
		(0.007)	(0.019)		
Marital Status		-3.471	5.112		
		(2.726)	(7.952)		
Education		0.470	1.449		
		(1.627)	(2.225)		
Work Experience		-0.339	-0.346		
		(0.097)	(0.163)		
Time Trend		-3.55	-6.2		
		(0.943)	(2.909)		
Constant	150.00	151.5	58.97		
	(2.515)	(10.82)	(89.48)		
District Dummies	No	Yes	No		
District Dummies*Time Trend	No	Yes	Yes		
Individual Fixed Effects	No	No	Yes		
Observations	13,681	13,681	13,681		
R-squared	0.002	0.052	0.399		

Table 1.6: Baseline Regressions

Notes: All regressions are cluster-corrected at the district level and robust standard errors are reported in parantheses. Coefficients in bold are significant at 5 percent or less, coefficients in bold and italics are significant at 10 percent. There are 38 randomly selected primary sample units (PSUs or census districts). Given a large number of dummy variables, the estimation in column (3) is performed using an 'areg' command in STATA. The following dummy variables are used to define the above controls: female=1 for gender, ever married=1 for marital status and post-secondary=1 for education.

	Dependent Variable: Total Hours						
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post-Reform Indicator	6.867	7.632	5.275	7.329	8.344	5.830	8.223
	(1.980)	(3.046)	(3.948)	(2.012)	(3.133)	(4.036)	(3.129)
Occasional Secondary Pre-							
Reform	11.57	7.071					8.195
	(5.246)	(4.476)					(4.589)
Occasional Secondary Pre-	. ,	. ,					. ,
Reform * Post-Reform Indicator	2.440	4.506	2.453				3.959
	(3.816)	(3.677)	(4.377)				(3.735)
Always Secondary Pre-Reform	. ,	. ,	. ,	32.54	31.69		32.21
				(8.770)	(9.232)		(9.260)
Always Secondary Pre-Reform *				()	· · · ·		· · · ·
Post-Reform Indicator				-18.84	-18.4	-13.06	-18.3
				(8.982)	(9.405)	(11.29)	(9.457)
Constant	149.5	152.6	58.14	149.1	151.3	59.67	152.5
	(2.534)	(10.98)	(89.49)	(2.524)	(10.72)	(89.22)	(10.88)
	. ,	. ,	. ,	. ,	. ,	. ,	. ,
Covariates	No	Yes	Yes	No	Yes	Yes	Yes
District Dummies	No	Yes	No	No	Yes	No	Yes
District Dummies*Time Trend	No	Yes	Yes	No	Yes	Yes	Yes
Individual Fixed Effects	No	No	Yes	No	No	Yes	No
Observations	13,681	13,681	13,681	13,681	13,681	13,681	13,681
R-squared	0.003	0.053	0.399	0.005	0.055	0.400	0.056

Table 1.7: Regressions with Employment Status in Primary and Secondary Jobs

Notes: See Notes in Table 1.6.

· · · · · · · · · · · · · · · · · · ·				Deper	ident Varia	able: Total	Hours			
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post-Reform Indicator	-1.080	-0.027	-2.225	6.677	6.949	3.760	6.992	7.088	3.974	3.443
Official Only Pre-Reform	(0.525) - 18.96 (6.592)	-13.52 (6.008)	(0.093)	(2.010)	(3.147)	(4.000)	(1.997)	(3.137)	(3.903)	-13.21 (16.29)
Official Only Pre-Reform * Post-	()	()								(/
Reform Indicator	8.111 (7.040)	7.256 (7.234)	6.293 (8.433)							3.787 (16.05)
Unofficial Only Pre-Reform		. ,	. ,	17.51 (16.33)	12.66 (16.36)					. ,
Unofficial Only Pre-Reform *				(******)	(******)					
Post-Reform Indicator				-4.260	-3.432	-1.670				
Official & Unofficial Mix Pre-				(15.40)	(10.10)	(20.30)				
Reform							19.17	13.38		0.515
Official & Unofficial Dro Deform *							(7.917)	(6.753)		(19.60)
Post-Reform Indicator							-10.77	-10.05	-8.990	-6.288
							(9.136)	(8.580)	(9.706)	(19.86)
Constant	168.1	161.1	15.98	149.7	147.6	15.70	149.5	149.6	15.81	160.5
	(6.713)	(12.67)	(107.2)	(2.548)	(11.03)	(107.8)	(2.477)	(11.06)	(107.5)	(19.65)
Covariates	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
District Dummies	No	Yes	No	No	Yes	No	No	Yes	No	No
District Dummies*Time Trend	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Individual Fixed Effects	No	No	Yes	No	No	Yes	No	No	Yes	No
Observations	13,370	13.370	13,370	13.370	13.370	13.370	13,370	13.370	13.370	13,370
R-squared	0.004	0.054	0.395	0.003	0.054	0.395	0.003	0.054	0.395	0.054

Table 1.8: Regressions with Employment Stats in Official and Unofficial Sector

Notes: The number of observation is 13,370 since 139 individuals (311 observations) do not report their status in some years over the time period. See Notes in Table 1.6.

	Table 1.9: Confidence	Intervals fo	r Policy	Coefficients
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Policy Variable	Coefficient	95% Confidence Interval
1. Official Only Pre-Reform * Post-Reform Indicator	7.25	(-7.40 21.91)
 Unofficial Only Pre-Reform * Post-Reform Indicator Official & Unofficial Mix Pre-Reform * Post-Reform 	-3.43	(-36.06 29.19)
Indicator	-10.05	(-27.43 7.33)

Notes: Coefficients are taken from the specification with controls, district dummies and their interaction with the trend, but no individual fixed effects.



Figure 1.1: Russia's Tax Structure Before and After the Reform

Notes: Annual income of 50,000 rubles amounts to 1,785 US dollars based on 1US\$=29 rubles average exchange rate in 2001 (Central Bank of Russia, Dynamics of the Official Exchange Rates for 2001).

1.A Appendix: Panel Structure of the Data

Number of Appearances in RLMS	Only Before Reform (individuals)	Only After Reform (individuals)	Before and After Reform (individuals)		
1	1,048	1,470	-		
2	469	980	294		
3	-	814	651		
4	-	-	1,100		
5	-	-	1,445		
Total	1.517	3.264	3.490		

 Table 1.A1: Panel Structure of the Data (persons)

Chapter 2

Foundations in Canada: Policies, Operations and Financial Structure

2.1 Introduction

Every year the Terry Fox Foundation holds a run in memory of Terry Fox. In addition to promoting his legacy, the foundation transfers an average of eleven million dollars to charities supporting cancer research annually. In 1992, Canadian foundations transferred in total over a billion dollars to other charities. In 2008, transfers from Canadian foundations to other charities totaled over three billion dollars. During this time period, the number of operating foundations in Canada grew from 5,400 in 1992 to 9,300 in 2008. Despite this strong growth in Canadian foundations, little is known about the structure of the Canadian foundation sector and how Canadian foundation operations in Canada. It first summarizes the evolution of the regulatory environment in which foundations have operated from 1850 to 2010 and then examines the composition of Canadian foundations and their financial structure using foundation-level data from the Canada Revenue Agency (CRA) from1992 to 2008.

The importance of foundations lies in the role they play for their primary donors and for the charitable sector in general. The main reasons for establishing a foundation is that the contributing donor can make tax-free investments, manage the monies distributed to charitable operations, and oversee the growth of the foundation. With the ability to control both the giving and investing of the foundation's financial resources, the primary donors can fulfill their own particular vision for what public goods should be supported. The non-foundation charitable sector benefits directly from gifts it receives from the earned income on foundations' investments that are typically distributed to charities to support ongoing charity operations (Deep and Frumkin, 2001; Sansing and Yetman, 2005). The non-foundation charitable sector may also benefit indirectly if foundations serve as a signal to individual or private donors regarding the quality of the charities the foundations transfers gifts to. By offering individuals a "stamp of approval" about charity operations, the recipient charities may attract additional private donations (Rose-Ackerman, 1980; Andreoni, 2006; Andreoni and Payne, 2011; Bilodeau, 1992).

Foundations registered in Canada are classified as either public or private foundations by Canada Revenue Agency (CRA). For example, the Terry Fox Foundation is a public foundation. The key distinction between a public and private foundation has to do with the relationship between the main donors of the foundation and the control exerted by these donors. Foundations with fewer donors are treated with caution as there is a greater opportunity for using the

foundation's tax status to avoid the payment of individual (or corporate) taxes. A private foundation is the one where the majority of its primary donors are in a non-arm's length relationship amongst themselves and more than half of the foundation's initial endowment comes from a single source. These foundations are often subject to greater scrutiny and have faced some differential treatment around the donation of certain types of gifts. A public foundation, on the contrary, is set up by individuals the majority of whom are unrelated by family or marriage and the initial gift cannot represent more than half of foundation's capital.

The richness of the tax administrative foundation data allows for an exploration of the operation of foundations based on the size of their assets. Studying this relationship is motivated by the observation that the majority of foundation assets are concentrated within a relatively small number of foundations. The remaining foundations have fairly modest assets. The tax administrative data shows that small and most medium-sized foundations hold trivial amounts of assets, raise little revenues and disburse modest gifts to other charities.¹ Moreover, differences in the key financial measures for small and medium-size public and private foundations are found to be minimal.

A more dramatic story emerges when studying the operation of large foundations. As a proportion of their assets, they disburse less and raise less revenue as their asset holdings increase. Public foundations consistently surpass

¹ Foundations are grouped by asset size in the following manner: small foundations are those with total assets that are less than \$25,000; large foundations – with assets worth at least one million dollars; and medium foundations – with assets in neither of the two groups.

private foundations in their total revenues and gifts to other charities. The administrative data also shows that large public foundations tend to exceed the government requirement in spending on charitable programs by a greater amount than private foundations. Yet, large private foundations spend a bigger share of their combined assets and revenues on gifts to other charities than do public foundations, suggesting that large public foundations could still expand their giving capacity.

This paper proceeds as follows. Section 2 summarizes the evolution of the regulatory and policy environment around foundation operations from 1850 to 2010. Section 3 describes the growth in the number of foundations and the change in their financial characteristics between 1992 and 2008. Section 4 discusses the composition of foundation spending on charitable programs and how it relates to the government spending requirement. Section 5 concludes with a discussion of the policy implications for the operation of foundations and indentifies directions for future research.

2.2 Regulatory and Policy Environment for Foundations

2.2.1 Early Government Provisions

Foundations took root in the late nineteenth century and the initial development of Canadian foundations mirrored those in the United States. At that time, government regulations in both countries were minimal and tax privileges were nonexistent. The creators of these original foundations were wealthy businessmen who knew little about actual charitable needs, although some of them directly donated to charities or sat on their boards (Hardy, 2012). These businessmen took advantage of a new trust law and set up foundations as charitable trusts for protecting their personal wealth in perpetuity. The first charitable foundations in Canada (Massey Foundation, 1918) and the United States (Peabody Fund, 1867) were formed as trusts to support the arts and educational attainment, respectively.²

The government has regulated the operation of foundations in different degrees over time as illustrated in Table 2.1.³ In the early 1900s, trusts were subject to few government regulations. Little government involvement contributed to the development of the foundation sector in North America. The number of foundations increased from 26 in 1910 to 270 by 1930 (Bakal, 1979).⁴ Income tax

² The Peabody Fund (1867) was created to encourage and promote educational attainment by residents of the US South (Bakal, 1979).

³ See Arnsberger et al. (2008) for the United States, Drache et al. (2007) and Cumyn (2012) for Canada.

⁴ Between 1945 and early 1950s, the number of foundations increased from 505 to1500 (Hammack, 2006).
exemptions introduced in Canada in 1917 reinforced the growth of Canadian foundations, but at the same time this growth sparked public concern about accumulations of large wealth beyond institutional control. As an accountability measure, the Canadian government imposed a disbursement requirement on all foundations in 1950. Foundations were required to transfer a portion of their income as gifts to other charities. Little is known about whether foundations actually complied with this regulation, because the government had no tools for monitoring foundation activities. By 1967, the government required all foundations to register with the federal tax authority and file annual returns, which contained information on foundations' charitable and financial activities. These returns allowed the government to monitor foundation operations. A decade later, the 1976-77 tax reform re-established the disbursement requirement and implemented a formal classification system for foundations.

According to the revised disbursement rules, foundations had to spend a share of their revenues and assets on either gifts to other charities or their own charitable programs. This provision fulfilled government's initial intention to prevent an undue accumulation of funds within a foundation. While disbursement

rules have changed a few times since the 1976-77 reform (as shown in Table 2.2), this tax reform set the regulatory tone around foundation disbursements for the next 30 years.⁵

The 1976-77 reform also simplified the classification of foundations by designating them as public or private.⁶ In the early 1900s, foundations inherited classifications based on the characteristics of their primary contributors. For example, a foundation created by family members was classified as a family foundation, while a foundation established with donations from citizens was known as a community foundation. Foundations are assigned into a private category based on the prevalence of a non-arm's length relationship amongst the majority of its primary donors and on the share of the initial endowment where more than half comes from a single source. Assigning foundations into public or private is viewed as necessary for the government to regulate private foundations since many have been set up to retain large family wealth while avoiding their tax obligations (Payne, 2005). Public foundations are considered the default category.⁷

⁵ In the United States, a similar tax reform took place in 1969. Foundations were required to distribute a minimum percentage of their investment assets in the form of grants to charitable organizations each year. Other small changes included banning a primary donor of the foundation to borrow money from it, or prohibiting foundations from owning a certain percentage of the company's stock (Bakal, 1979). For a discussion of the effects of the Tax Reform Act of 1969 from an economics perspective see Clotfelter (1985). ⁶ The 1976-77 tax reform also instituted a clear distinction between charitable organizations and foundations. By way of charitable activities, foundations primarily provide financial support to other registered charities. This is in contrast to charitable organizations, which are primarily involved in carrying out charitable activities with donations received from external sources.

⁷ Foundations are designated as public-benefit and private in Europe and as non-operating and private in the US.

2.2.2 Regulatory and Policy Environment, 1992-2010

I first summarize the broad set of government provisions related to foundation operations. These include provisions about foundations registering with the federal tax authority, and about maintaining and terminating foundation registrations. Second, I discuss the evolution of foundation spending requirements for gifts to other charities and to the foundations' own charitable programs. While there is great overlap in the regulatory regime between foundations and charitable organizations, the following discussion pertains primarily to charitable foundations.⁸

2.2.2.1 General Provisions Related to Foundation Operations

Today, Canadian foundations operate within a fairly structured regulatory environment with well-defined rules around their establishment, maintenance and termination. To establish a foundation in Canada, one must register it with the Canada Revenue Agency (CRA). Sometimes a foundation must also register provincially, for example, in Quebec.⁹ Registration with the federal tax authority qualifies a foundation for exemptions from both federal and provincial income taxes. Once a foundation is registered, it can issue tax receipts for any cash and non-cash donations received by the foundation.¹⁰ Tax receipts allow individuals to receive tax credits for their donations, and since 1997, individuals can

⁸ A description of the regulatory framework for charitable organizations is offered by Man (2006).

⁹ For a federal registration, foundations submit a registration application (form T2050) along with a mission statement and a governing document. For further details on the federal registration process see CRA guide T4063. Quebec foundations are required to submit a provincial registration form TP 985.5V.

¹⁰ For non-cash gifts (e.g., property, artwork, publically traded securities, etc) tax receipts are issued for the fair market value of the gift.

contribute up to 75 percent of their income and still qualify for the tax credit. This is a significant increase from the initial donation limit of 10 percent in 1930 and 20 percent in 1972 as shown in Table 2.1 and even from a more recent increase of 50 percent in 1996. Individuals also receive a tax break when they donate publically traded securities to foundations. The government eliminated the capital gains tax on these donations for public foundations in 2006 and for private foundations in 2007.

Upon registration, foundations are classified as public or private, and CRA also assigns them into broad categories based on their charitable purposes such as religion,

education, health, social welfare and community.¹¹ With these classifications, the government can monitor consistency between foundations' missions and charitable activities. During 1992-2008, an average of 215 public foundations and 200 private foundations registered in Canada.

Foundations are also guided by fairly sound rules about maintaining their registered status. In particular, all foundations are required to file an annual information return (form T3010) within six months from the end of their fiscal period. Foundations must also disburse funds as gifts to other charities or spending on their own charitable programs. These disbursements must meet the minimum spending requirement established by the government. The evolution of disbursement rules for public and private foundations are outlined in Table 2.2.

¹¹ CRA internally generates 50 categories in an attempt to classify charities according to their stated purposes.

Canadian foundations can lose their registered status if they fail to meet the government's administrative requirements.¹² Their assets, however, are required to remain within the charitable sector after their registration is dissolved.¹³ On average, 82 public foundations and 84 private foundations are terminated annually and, of these, about 60 percent are terminated voluntarily whereas the remaining 40 percent are involuntarily revoked.¹⁴ In case of a voluntary revocation, a foundation withdraws its charitable registration if it decides that its mission has been achieved, faces financial difficulties in continuing operation, or simply merges with another charity. Involuntary revocations occur due to non-compliance – late filing, failure to use foundation resources for charitable purposes, or not maintaining proper financial records. Since 1997, the CRA has expanded its audit practices and the share of foundations revoked for non-compliance has declined over time.

2.2.2.2 Evolution of Foundation Disbursements

Table 2.2 presents the evolution of disbursement rules for public and private foundations from the original disbursement reform of 1976-77 to the most recent 2010 reform. Disbursement rules have differed between public and private foundations during this time period, with preferential treatment given to public

 ¹² Administrative details of the revocation procedure are described in *"Completing the Tax Return where Registration of a Charity is Revoked"* guide (form RC4424).
¹³ Upon dissolution, European and US foundations are also required to transfer their assets to organizations

¹⁰ Upon dissolution, European and US foundations are also required to transfer their assets to organizations supporting similar purposes.

¹⁴ Foundations can also be annulled, that is when they were registered in error. There have only been four foundations that were annulled between 1997 and 2008. Revocation tax is not applicable to annulled foundations. Foundations can also merge with another registered charity. From 1997 to 2008, only 67 foundations have done this.

foundations relative to private foundations. According to the 1976-1977 tax reform, only private foundations were required to disburse out of their assets. This difference, however, has been eliminated by the 1984 reform and all public and private foundations became subject to a 4.5 percent disbursement rate (3.5 percent since 2004) from their assets averaged over the two previous years.

On the revenue side, private foundations experienced a lengthier period of unequal treatment. They were required to disburse 80 percent of their taxreceipted donations from the previous fiscal year and 100 percent of their gifts from other charities from the previous fiscal year. Public foundations, on the other hand, had to disburse only 80 percent from both tax-receipted donations and gifts from other charities. With changes proposed in the 2010 budget, public and private foundations are no longer subject to different revenue disbursement requirements.

2.3 Growth and Size of Canadian Foundations

2.3.1 Overview of the Foundation Sector

To measure the growth of foundations in Canada, I rely on the financial measures reported on foundations' Canada Revenue Agency (CRA) information returns for the period 1992 to 2008.¹⁵ For the purposes of this paper, I grouped the foundations into public and private categories based on their last reported

¹⁵ The data for this analysis were accessed at Public Economics Data Laboratory (PEDAL) directed by Professor Abigail Payne at McMaster University, Ontario, Canada. The form "T3010 Registered Charity Information Return" has changed twice during the sample period – in 2003 and 2005. Reporting of key financial measures has not changed; however, some measures previously reported in the confidential section have become publically available since 2003.

status with CRA. Moreover, I exclude information from returns that do not reflect a 12 month period (those capturing less than 10 months or more than 14 months). Public and private foundations that report zero revenues, assets, expenditures and liabilities for all years in the sample are also excluded.¹⁶ The final sample includes 11,703 foundations. All financial measures are converted to constant 2001 dollars.

Foundations have strengthened their presence in Canada across both foundation types and all charitable categories from 1992 to 2008. The number of public and private foundations has almost doubled with public foundations surpassing private foundations for most of the period. This gap, however, has narrowed in recent years (see Figure 2.1).

Figure 2.2 illustrates the number of public and private foundations across the following five categories: welfare, health, education, religious and community. In 1992, half of public and private foundations were education- and welfarerelated. The welfare-related area experienced most of the growth in terms of the number of foundations compared to other areas. By 2008, almost half of foundations were welfare-related, with a greater number of public foundations in this category than private. More public foundations are found in religious and other categories, while private foundations dominate health- and communityrelated areas.

¹⁶ This led to the exclusion of 195 public foundations and 198 private foundations, or 0.3 percent of the sample.

The summary statistics of key financial measures for both public and private foundations are shown in Table 2.3.¹⁷ These measures include total asset holdings, new revenues raised, and total disbursement and non-disbursement expenditures.¹⁸ Asset distributions are fairly similar across the two foundation types. Average assets of public and private foundations are close to 2.5 billion dollars. Within each foundation type, however, total assets vary considerably. Large deviations are attributed to 27 public and 29 private foundations that report total assets of 100 million dollars in at least one year. If these foundations are excluded, asset standard deviations fall down to six million dollars for both public and private foundations.

Relative to asset holdings, foundations raise little in revenues. Average revenues comprise only 17 percent of average assets for private foundations and 35 percent for public foundations. It appears that across the revenue distribution, total revenues of public foundations are consistently double the revenues raised by private foundations. As with assets, the top 56 foundations contribute substantially to large standard deviations in revenue. Excluding them from the sample brings the revenue standard deviations down to 2.3 million dollars for private foundations and three million dollars for public foundations.

¹⁷ There are 4.5 percent of public foundations and 8 percent of private foundations that report zero assets for all sample years. There are also 4 percent of public foundations and 5 percent of private foundations that report zero revenues for all sample years. There are 9 percent of public foundations and 10 percent of private foundations that report zero for spending on gifts to other charities and on own charitable programs ¹⁸ Liphilition of foundations are usely ded form the table being if

¹⁸ Liabilities of foundations are excluded from the table since these constitute on average only \$144,000 for private foundations and \$432,000 for public foundations. Liabilities include salaries owing, loans, mortgages, unused portions of government grants to be returned, etc.

Total expenditures also differ considerably between public and private foundations. For simplicity, expenditures are divided into spending on disbursements and non-disbursement expenses. Total disbursements are a dominant component of total expenditures. They include gifts to other charities and spending on own charitable programs. For public foundations, average gifts to other charities are \$377,000 compared to only \$198,000 for private foundations. Spending on own charitable programs contains expenses on day-to-day charitable activities, salaries and staff expenses such as education and training, and also occupancy costs. This expenditure category accounts for 19 percent of total disbursements for private foundations and 29 percent for public foundations. Finally, spending on non-disbursements includes advertising costs, licenses, bank charges and other professional fees. It comprises 18 percent of total spending for private foundations and 25 percent for public foundations.

2.3.2 Foundations by Asset Size

While the number of foundations has grown, there are many very small foundations that account for less than one percent of total assets. The majority of foundation assets are concentrated within a relatively small group of large foundations. How do these large foundations operate relative to the smaller foundations? To explore implications of size-based operations, I divide foundations into small, medium and large foundations according to their assets (see Table 2.4). A third of the sample consists of small foundations with total

assets always less than \$25,000 over the sample time period. Another third includes large foundations with total assets of one million dollars in at least one year and the last third has assets more than \$25,000 in at least one year and never more than one million dollars in any given year.¹⁹ The number of public and private foundations is comparable within each asset group.

Small foundations are at the bottom of the distribution across all key measures (Table 2.A1 in the Appendix 2.A). Average total assets for both public and private small foundations are only \$4,000. For most of them, total revenues are consistently less than \$25,000. Average total spending on both gifts to charities and own charitable activities is only \$18,000 for public foundations and \$36,000 for private foundations. Due to the 2010 disbursement changes, small foundations are no longer subject to the positive disbursement rules. Given these foundations hold a relatively trivial amount of assets, further analysis focuses only on foundations with assets above the \$25,000 threshold.

Figure 2.3 illustrates total assets across medium- and large- public and private foundations from 1992 to 2008. Medium-sized private foundations have consistently higher total assets than medium-sized public foundations, but the gap is fairly small. For the large-asset group, differences in total assets between public and private foundations are also minimal. A few remarks can also be made about the variation within each asset grouping. Medium-sized foundations in the

¹⁹ For small foundations, the choice of the threshold of \$25,000 in assets relates to changes in the disbursement quota. In 2004, government announced that foundations with assets less than \$25,000 were exempt from spending on gifts to other charities and on their own charitable programs out of their assets. In 2010, they are no longer required to disburse out of revenues as the revenue disbursement requirement was eliminated for all foundations.

top 25 percent held at least \$225,000 in assets in 1992. By 2008, this threshold increased only to \$356,000, suggesting that most medium-size foundations hold modest amounts of assets. In 1992, 18 percent of all foundations held assets greater or equal to one million dollars. This share rose to 31 percent in 2008, suggesting that more foundations are falling into the large asset group.

Figure 2.4 shows total revenues between 1992 and 2008 for medium- and large- public and private foundations. Regardless of asset size, public foundations have had consistently higher total revenues than private foundations. For medium-sized foundations, the differences in total revenues result primarily from differences in government grants, investment income and gifts from other charities. Private tax-receipted donations are similar for public and private foundations in the medium asset category. For large foundations, the differences in total revenues are primarily attributed to large differences in tax-receipted donations and gifts from other charities (these differences are shown in Table 2.A5 in Appendix 2.A).

Foundations experienced greater variation in revenues within the large asset group that within the medium one. Large foundations in the top 25 percent brought in at least \$877,000 in revenues, and by 2008, this revenue threshold increased by 35 percent. The top 25 percent of medium-sized foundations collected at least \$100,000 in revenues in 2008, which is only a minor increase from \$81,000 in 1992.

Finally, as the asset base of foundations expands, they collect proportionally smaller revenues. For medium-sized public foundations, revenues are on average 73 percent of total assets, while for large public foundations, this share is only 40 percent. For private foundations the revenue shares are 36 percent of total assets within the medium asset group and 18 percent within the large asset group.

2.4 Foundation Spending on Charitable Programs

2.4.1 Composition of Foundation Disbursements

How does variation in foundation assets and revenues translate into variation in spending on charitable programs? As seen in Table 2.3, foundation disbursements consist of spending on own charitable programs and on gifts to other charities.²⁰ Gifts received from foundations are an important source of funding for charities. Moreover, foundation grants can offer quality assurance to individuals about charity operations, which may help charities attract more donations (Rose-Ackerman, 1980; Andreoni, 2006).

Figure 2.5 shows total gifts made by both medium- and large- public and private foundations to other registered charities from 1992 to 2008. It appears that public foundations only slightly surpass private foundations in total gift disbursements. The gap, however, has somewhat widened in the late 2000s. For

²⁰ Foundations can only make gifts to other registered charities. Making a gift to an organization that is not a registered charity (e.g., a regular non-profit) leads to a 105 percent penalty on the gift amounts for the first violation and 110 percent for repeat infractions.

large foundations, the difference in total gifts to other charities between the two foundation types increased from 300 million dollars in 1992 to almost one billion dollars in 2008.

Having studied differences in foundations' total gifts to other charities, it is useful to examine how much foundations devote to spending on these gifts as opposed to financing their own charitable activities. For this exercise, I further explore variation in foundation assets and divide medium-size and large foundations according to their median threshold (see Table 2.5). For mediumsize foundations, the first group includes those foundations that have assets always above the median threshold (i.e., equal or above \$100,000 for all sample years), while foundations that vary in their asset levels form the mixed group. Large foundations are separated into a group with assets at least one million dollars (median threshold) for all sample years and the remainder fall into the group with mixed asset levels.

Table 2.5 illustrates that private medium-sized foundations with assets at least \$100,000 over the entire sample allocate on average 75 percent of their expenditures on gifts to other charities compared to an average allocation of 60 percent by public foundations in the same subgroup. Medium-sized foundations with mixed assets devote about 60 percent of their expenditures on charity gifts, with minimal differences between the two foundation types. Table 2.5 also shows that irrespective of asset size within the large-sized foundation group, private foundations are spending considerably higher percentages of expenditures on

gifts to other charities than are public foundations. For small foundations and those at the top of the distribution, little differences in gifts made to charities prevail not only across time, but also across public and private foundations (see Table 2.A6 in Appendix 2.A.)

The remaining component of total disbursements is spending by foundations on their own charitable activities as defined in Section 3. Table 2.6 shows that spending on day-to-day activities is the largest category for both medium and large private foundations (just under 80 percent), while large public foundations spend the least - only 55 percent. The reverse pattern holds for spending on salaries. Large public foundations are spending almost 42 percent to cover their payroll expenses, where these are only about 20 percent for private foundations of all asset sizes. The share of spending on occupancy costs is consistently about 4 percent across all foundations.

Underlying these simple statistics are spending decisions that foundations make on a regular basis and that remain a black box. How different are these decisions for foundations of different sizes? What role do trustees play in choosing which charitable programs to fund? Studying internal dynamics of foundations and their governance structure in future research can provide a better understanding about the decision-making process around foundation grants.

2.4.2 Foundations Disbursement Relative to the Disbursement

Requirement

Having established what foundations are disbursing, the next step is to understand how foundations are disbursing relative to the required minimum specified by the government. Foundations must abide by the disbursement regulation in order to keep their registered status with CRA.

For the years 1992 to 2008, the disbursement quota for public and private foundations has been calculated as a combination of foundations' revenues and assets as follows:²¹

 $\begin{aligned} Public \ Foundations' \ Quota_t &= \\ 80\% * \ Individual \ donations_{t-1} + 80\% * \ Gifts \ from \ other \ charities_{t-1} + 3.5\% \ (4.5\% \ before \ 2004) * \\ & \left(\frac{1}{2}(\text{Assets}_{t-1} + \text{Assets}_{t-2})\right) + 10 \ year \ gifts_t \end{aligned} \tag{1}$

Private Foundations' Quota $_{t}$ = 80% * Individual donations_{t-1} + 100% * Gifts from other charities_{t-1} + 3.5% (4.5% before 2004) * $\left(\frac{1}{2}(\text{Assets}_{t-1} + \text{Assets}_{t-2})\right)$ + 10year gifts_t. (2)

Since the quotas are based on information from the previous years, foundations should have a solid understanding about how much they need to disburse in the current year. A foundation is considered to have met its disbursement quota if actual spending on gifts to other charities and own charitable programs is equal to or above the calculated disbursement amount. If

²¹ The measure includes 10-year gifts that are spent by a foundation and transferred to charities in the current year. They are very small amounts.

a foundation has over-disbursed in the current year, it can carry this disbursement excess forward for the next five years. If, however, a foundation has under-disbursed in the current year, it can make up for the shortfall either by drawing on possible disbursement excesses from the previous five years or by using the over-disbursement from the next year as collateral for the current year.²²

With Equations (1) and (2), disbursement quotas for public and private foundations are calculated using CRA data to determine what foundations *should be* disbursing and then these required disbursements are compared to what the foundations reported to have disbursed. If the ratio of actual disbursements to estimated required disbursements is equal to or greater than one, this suggests foundations have either met or exceeded the quota. Table 2.7 presents these ratios for public and private foundations within the two different asset groups. On average, both foundation types are disbursing more than their minimal requirement. The degree of over-disbursement by public foundations across time is greater compared to private foundations. Further, medium-sized foundations over-disburse more relative to large foundations. Both small foundations and the top 56 organizations also disburse more than is required, on average (see Table 2.A7 in Appendix 2.A.)

²² Data are showing that constraints specified in Table 2.2 appear to be non-binding along with the regulation that foundations lose their registered status after 24 months if they fail to disburse properly. Foundations may be disbursing nothing for more than 2 years while still reporting positive revenues and/or assets. Foundations also have the option of applying for special reduction to their disbursement quota (form T2094) if they were unable to generate enough interest from their investments. Foundations can also apply for accumulation of property for a special project, allowing them to postpone disbursement of funds. These are rare events and only 0.2 percent of foundations are reporting them.

Classifying foundations by their revenue size tells a similar story. While public and private foundations are primarily over-distributing compared to the required minimum, these over-disbursement patterns are slightly more pronounced for public foundations (see Tables 2.A8 and 2.A9 in Appendix 2.A.)

2.5 Conclusion

The purpose of foundations ranges from promoting philanthropic legacy to financing a variety of charitable programs administered outside of the foundation. Prewitt (2006) argues that the impact of foundation operations extends beyond financial help and suggests that foundations can stimulate social change. This paper contributes to the emerging literature on foundations by offering new evidence on the growth of foundations in Canada and their operations from 1992 to 2008. The analysis explores time variation in the size of foundation assets, revenues and spending across the two basic foundation types – public and private.

What do we learn from these descriptive statistics? Between 1992 and 2008, the foundation sector in Canada has expanded in terms of the number of foundations and across key financial measures. A few interesting findings emerge when studying foundations in different asset groups. A third of foundations are small-scale, holding little assets and disbursing trivial amounts of gifts to other charities. Despite their minimal contributions, the government has granted these foundations exemption from asset and revenue disbursement rules

as of 2010. This naturally raises a question about their purpose. Small foundations operate likely for reasons related to promoting philanthropic values of their primary donors rather than benefiting the charitable sector through giving to other charities. With foundations, primary donors have the freedom to define their own philanthropic priorities, something that donors cannot accomplish when giving directly to charitable organizations.

Half of the foundations can be classified as medium-sized foundations with assets in the \$25,000 - \$1 million range. There is little difference in the growth and use of funding between the private and public foundations within this group. Focusing on the remaining third of the foundations, those with assets of more than one million dollars, I find bigger differences between the private and public foundation finances and disbursements. Total assets of public and private foundations are fairly similar, with private foundations having a slightly smaller asset base. Large public foundations raise greater revenues and distribute a higher volume of gifts to other registered charities than do private foundations. It seems that large public foundations, however, have not reached their full giving potential because they devote only 75 percent of their total disbursement expenditures to charity gifts compared to 90 percent by private foundations.

The question of suitable regulation is more pronounced around the operation of large foundations than smaller ones. There may be a greater expectation from large foundations to fund outside charitable programs in exchange for their tax exempt status. At the same time, it is these foundations

that have the ability to have a greater impact. During 1992-2010, the government reduced the asset disbursement quota and later completely eliminated the revenue disbursement rule for all foundations. Foundations may have also benefited from the elimination of capital gain tax on donations of publically traded securities. These policies, however, are not directly aimed at large foundations.

This descriptive evidence suggests several directions for future research. The first set of questions pertains to the relationship of foundations with recipient charities. Given that foundations are primarily disbursing on gifts to other registered charities, how does foundation giving impact charity operations? As a spillover effect, foundation grants to charities can also generate interesting responses from other sources of funding such as individual donations and government grants to charities. In contrast to private givers, foundations tend to be much better informed about the quality and finances of charities (Rose-Ackerman, 1980). Therefore, their gifts can serve as a signal of charity quality to individuals and thus, encourage private giving (Andreoni, 2006). In the presence of government grants to charities, evidence shows that foundations may be discouraged to give (Andreoni and Payne, 2011). These interactions arise because foundations may view government funding as substitutes to their own.

In the context of the non-profit governance literature, the next set of interesting questions relate to the internal dynamics of foundations. In what ways is a foundation similar or different from other types of organizations such as investor-owned firms or cooperatives? Since directors or trustees of the

foundation are ultimately the primary donors to the foundation, do they benefit from maximizing the return on their investments or the degree of altruism? And how can these interactions be modeled? Exploring these questions further can offer a better understanding about how granting decisions are made.

These open questions point to at least two policy issues around foundations. The first is about how foundations should be regulated given substantial differences in the scale of foundation operations. Careful thought should be given to policies around foundations disbursements. Should policies be directed towards encouraging large public foundations to spend more on gifts to other charities as opposed to financing internal charitable programs?

The second policy issue relates to the investment strategies of foundations. With the 2008 economic downturn, some foundations were unable to provide continuous support to charities (Lawrence, 2009). As a result, foundations began looking to more strategic ways to plan their giving (Kessler and Snowdon, 2005). One option was to invest in mission-related projects. Canadian Task Force on Social Finance (2010) recommends that foundations invest 10 percent of their capital towards such projects. Whether foundations should move towards mission investment remains a policy question. Further exploring the role of charitable foundations in Canada is a worthwhile undertaking for both researchers and policy makers.

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Canada United States Year Provisions about Foundation All Provisions **Operations (FO) and Giving to** Foundations (FG) 1853 Charitable Trust Act, Law of England (FO) Charitable Trust Act, Law of England 1879 Province of Quebec recognizes charitable trusts (FO) 1917 All charitable institutions become exempt Individual donations are tax deductable from income taxes (FO) 1921 Foundations are tax-exempt from income taxes 1930 Charitable donations are tax-deductable by individuals and corporations. The donation contribution limit is set at 10 percent of income. (FG) 1936 Charitable donations by corporations are tax deductable 1940 All states recognize charitable trusts 1943 Foundations are required to register and file annual returns 1950 Charities are divided into charitable organizations, charitable trusts and charitable corporations. Charitable corporations must disburse 90 percent of their income on charitable activities or on gifts to other charities. Charitable trusts must only disburse 90 percent of their income on gifts to other charities. (FO) 1967 Charitable trusts and corporations are required to register and file an annual return. (FO) 1969 Tax Reform Act: definition of private foundations and minimum payout rate for foundations are introduced 1972 The donation contribution limit increases to 20 percent of income for individuals and corporations. (FG) 1976 Redefined a payout rate for private foundations 1977 Tax Reform Act: foundations are designated as public and private; foundations are required to disburse a portion of their assets and revenues. (FO) Revision of the disbursement rate related to 1984 Increased the limit on individual deductions for foundation assets. (FO) contributions to non-operating foundations Tax deductions for charitable donations are 1987 changed to tax credits, effective in 1988. (FG)

Table 2.11: Government Provisions Affecting Foundations in Canada and the U.S. from 1850 to 1987

	Original Disbursement Rules (1976-1977 Reform)	1984 Disbursement Rules	2004 Disbursement Rules	2010 Disbursement Rules
Private Foundations	Assets: Disburse the greater of: a) 5percent of fair market value of capital assets from previous fiscal year or b) 90 percent of income earned from capital assets in previous fiscal year.	Assets: Disburse 4.5 percent of average value of assets over previous two years.	Assets: Disburse 3.5 percent of average value of assets over previous two, provided this value is above \$25,000. Otherwise, no disbursement required.	Assets: No change.
	Revenues : Disburse 90 percent of difference in foundation's income in previous fiscal year and foundation's earned income from its capital assets in previous fiscal year.	Revenues: Disburse 1) 80 percent of tax- receipted and 100 percent of gifts from other charities received in previous fiscal year and 2) 80 percent of 10- year gifts and bequests spent from current fiscal year.	Revenues: Disburse 1) 80 percent of tax- receipted donations and 100 percent of gifts from other charities received in previous fiscal year and 2) 100 percent of 10- year gifts and bequests spent from current fiscal year.	<i>Revenues:</i> All rules are eliminated
Public Foundations	Assets: None.	Assets: Same rules as private foundations.	Assets: Same rules as private foundations.	Assets: No change.
	Revenues: Disburse the greater of: a) 80 percent of tax- receipted donations from previous fiscal period or b) 90 percent of foundation's income in previous fiscal year.	<i>Revenues</i> : Same rules as private foundations.	Revenues: Same rules as private foundations.	Revenues: All rules are eliminated.

Table 2.12: Disbursement Rules for Public and Private Foundations, 1976-2010

Notes: According to the Income Tax Act of 1976, "foundation's income" is defined as income from the following sources: government, other registered charities, individuals, corporations, investment or business income. A ten-year gift is a donation made to a foundation that is subject to the donor's direction that the gift be held within a foundation for ten years. A bequest is a donated property that a foundation receives from the will of the deceased person. This table summarizes information from the following sources: Man (2006), Budget 2004, Budget 2010.

		Standard	75 th	90 th
	Mean	Deviations	Percentile	percentile
		\$2001	, Millions	
Private Foundations (N=5,797)				
Total Assets	2.542	22.984	0.853	3.465
Total Revenues (excluding capital gains)	0.446	7.173	0.137	0.593
Gross Capital Gains	0.281	6.861	0.000	0.000
Total Disbursement Expenditures	0.245	1.852	0.093	0.378
Total Program Spending	0.047	0.995	0.001	0.027
Total Gifts to Charities	0.198	1.461	0.066	0.305
Non-Disbursement Expenditures	0.054	1.376	0.008	0.042
Public Foundations (N=5,906)				
Total Assets	2.398	15.001	0.811	3.617
Total Revenues (excluding capital gains)	0.853	4.761	0.288	1.282
Gross Capital Gains	0.227	8.847	0.000	0.000
Total Disbursement Expenditures	0.535	3.338	0.144	0.709
Total Program Spending	0.157	2.237	0.013	0.101
Total Gifts to Charities	0.377	2.368	0.077	0.497
Non-Disbursement Expenditures	0.181	1.465	0.052	0.257

Table 2.13: Summary Statistics of Key Financial Measures for Public and Private Foundations

Notes: N is the number of foundations. Standard deviations are deviations of the sample. Gross capital gains (or loss) is the amount that a foundation receives from selling a property such as land, buildings, securities and work of art. These are excluded from total revenues to focus on new revenues that are raised by foundations.

Table 2.14: Foundations by Asset Size

Total number of foundations:	11,703 (% of sample)	Private Foundations	Public Foundations
1. Small Foundations : total assets always less than or equal to \$25,000	3,197 (27.3%)	1,664	1,533
2. Medium Foundations : total assets more than \$25,000 in at least one year and never more than 1 million dollars in any given year	5,387 (46.0%)	2,561	2,826
3. Large Foundations: total assets of one million dollars in at least one year	3,063 (26.2%)	1,543	1,520
4. Top 56 Foundations : total assets at least greater or equal 100 million dollars	56 (0.5%)	29	27

	Medium Foundations (N=5,387)			Large Foundations (N=3,063)				
	Assets greater o \$100	always r equal to),000	Mixed Asset Levels		Assets always greater or equal to \$1 million		Mixed Asset Levels	
Time period	Private (N=880)	Public (N=573)	Private (N=1,681)	Public (N= 2,253)	Private (N=638)	Public (N=515)	Private (N=905)	Public (N=1,005)
	(mean, std. dev)							
1992-1996	0.77	0.60	0.66	0.58	0.92	0.76	0.85	0.72
	0.40	0.46	0.45	0.46	0.23	0.38	0.34	0.41
1997-2003	0.73	0.60	0.60	0.59	0.93	0.78	0.84	0.72
	0.43	0.45	0.47	0.45	0.22	0.36	0.34	0.40
2004-2008	0.75	0.60	0.60	0.61	0.91	0.78	0.86	0.71
	0.42	0.45	0.47	0.44	0.26	0.35	0.33	0.40

Table 2.15: Gifts to Other Charities as a Share of Total Disbursements, 1992-2008

Notes: Numbers in small font are standard deviations. N= the number of foundations in each group. Average shares are calculated by deriving shares for each foundation in a given year and then taking an average across all foundations in that year.

Table 2.16: Summary Statistics for Spending on Charitable Programs by Foundation Types

	Medium Foundations	Large Foundations		
Private Foundations	N=2,561	N=1,543		
	Mean (St. L	Dev.)		
Total Charitable Program Spending	20.71	98.86		
(\$2001 Thousands)	(135.62)	(1,704.07)		
	% of Total Program	n Spending		
Day-to-day Charitable Activities	78.3	75.8		
Salaries and Staff Costs	16.8	20.7		
Occupancy Costs	4.9	3.5		
Public Foundations	N=2,826	N=1,520		
	Mean (St. L	Dev.)		
Total Charitable Program Spending	27.70	342.85		
(\$2001 Thousands)	(134.75)	(2,702.33)		
	% of Total Program Spending			
Day-to-day Charitable Activities	67.5	54.7		
Salaries and Staff Costs	28.9	41.6		
Occupancy Costs	3.6	3.7		

Notes: N is the number of foundations.

	Medium Foundations (N=5,387)			Large Foundations (N=3,063)				
	Assets always greater or equal to \$100,000 Mixed Asset Levels		Assets always greater or equal to \$1 million		Mixed Asset Levels			
Time period	Private (N=880)	Public (N=573)	Private (N=1,681)	Public (N= 2,253)	Private (N=638)	Public (N=515)	Private (N=905)	Public (N=1,005)
	Actual total disbursements/estimated disbursements							
1994-1996	1.31	1.74	1.61	2.12	1.20	1.45	1.56	2.26
1997-2003	1.32	1.47	1.27	2.22	1.00	1.38	0.98	1.52
2004-2008	1.56	1.63	1.46	1.62	1.12	1.40	0.95	1.17

Table 2.17: Ratios of Actual Disbursements to Estimated Disbursements, 1994-2008

Notes: Since disbursement calculations are based on a 2-year lag of assets, the first sample year is1994 instead of 1992. N=number of foundations.



Figure 2.1: Number of Public and Private Foundations, 1992-2008

Figure 2.2: Number of Public and Private Foundations by Category, 1992 and 2008



Notes: The 'other' category includes foundations in the areas of arts, history, library and environment.



Figure 2.3: Total Assets by Foundation Type and Size of Assets, 1992-2008

Figure 2.4: Total Revenues by Foundation Type and Size of Assets, 1992-2008





Figure 2.5: Total Gifts to Other Charities by Foundation Type and Size of Assets, 1992-2008

Notes: Ideas Canada Foundation is excluded from the sample of medium foundations in this figure due to two inconsistently large gifts to other charities in 2001 (\$72 million) and 2002 (\$74 million) as a result of the \$82 million endowment.

2.A Appendix: Additional Descriptive Statistics

	Mean	Standard Deviation	75th Percentile	90th percentile
		\$2001,	Thousands	·
Private Foundations (N=1,664)				
Total Assets	3.375	5.115	4.825	11.500
Total Revenues (excluding capital gains)	41.632	217.616	17.953	57.773
Gross Capital Gains	0.000	0.000	0.000	0.000
Total Disbursement Expenditures	35.933	205.685	12.809	45.256
Total Program Spending	4.540	58.399	0.564	7.174
Total Gifts to Charities	31.393	197.679	7.415	37.038
Non-Disbursement Expenditures	2.468	26.385	0.287	2.621
Public Foundations (N=1,533)				
Total Assets	3.983	5.335	5.982	12.091
Total Revenues (excluding capital gains)	26.628	210.365	14.319	24.373
Gross Capital Gains	0.000	0.000	0.000	0.000
Total Disbursement Expenditures	18.144	118.449	10.143	26.246
Total Program Spending	5.098	75.094	0.429	5.868
Total Gifts to Charities	13.046	89.528	7.099	18.918
Non-Disbursement Expenditures	4.808	28.521	1.228	7.21

Table 2.A18 Summary Statistics of Small Foundations

	Mean	Standard Deviation	75th Percentile	90th percentile
		\$2001	, Millions	
Private Foundations (N=2,561)				
Total Assets	0.225	0.234	0.355	0.599
Total Revenues (excluding capital gains)	0.080	0.262	0.054	0.181
Gross Capital Gains	0.013	0.297	0.000	0.000
Total Disbursement Expenditures	0.061	0.244	0.037	0.120
Total Program Spending	0.021	0.136	0.006	0.030
Total Gifts to Charities	0.040	0.204	0.023	0.072
Non-Disbursement Expenditures	0.016	0.748	0.004	0.013
Public Foundations (N=2,826)				
Total Assets	0.171	0.202	0.243	0.483
Total Revenues (excluding capital gains)	0.127	0.957	0.106	0.272
Gross Capital Gains	0.002	0.026	0.000	0.000
Total Disbursement Expenditures	0.078	0.640	0.058	0.167
Total Program Spending	0.028	0.135	0.013	0.056
Total Gifts to Charities	0.050	0.626	0.029	0.102
Non-Disbursement Expenditures	0.039	0.626	0.022	0.077

Table 2.A2: Summary Statistics of Medium Foundations

Table 20: Summary Statistics of Large Foundations

	Mean	Standard Deviation	75th Percentile	90th percentile
		\$2001	, Millions	
Private Foundations (N=1,543)				
Total Assets	5.046	9.963	4.474	11.752
Total Revenues (excluding capital gains)	0.933	4.085	0.630	1.953
Gross Capital Gains	0.592	9.266	0.000	0.374
Total Disbursement Expenditures	0.530	2.691	0.380	1.161
Total Program Spending	0.099	1.704	0.000	0.055
Total Gifts to Charities	0.431	1.895	0.318	0.945
Non-Disbursement Expenditures	0.120	2.204	0.039	0.142
Public Foundations (N=1,520)				
Total Assets	4.836	9.443	4.419	11.325
Total Revenues (excluding capital gains)	1.836	5.112	1.473	4.111
Gross Capital Gains	0.355	10.448	0.000	0.000
Total Disbursement Expenditures	1.173	3.887	0.802	2.518
Total Program Spending	0.343	2.702	0.073	0.368
Total Gifts to Charities	0.830	2.683	0.561	1.829
Non-Disbursement Expenditures	0.396	1.595	0.277	0.885

	Mean	Standard Deviation	75th Percentile	90th percentile
	Moan	\$2001	, Millions	poroontilo
Private Foundations (N=29)				
Total Assets	131.650	240.010	122.220	223.130
Total Revenues (excluding capital gains)	16.715	81.847	8.625	23.971
Gross Capital Gains	13.828	53.797	0.000	15.670
Total Disbursement Expenditures	6.684	11.180	7.714	15.563
Total Program Spending	0.845	3.365	0.504	1.894
Total Gifts to Charities	5.837	19.635	6.336	13.819
Non-Disbursement Expenditures	1.306	4.174	1.075	2.619
Public Foundations (N=27)				
Total Assets	120.592	126.154	129.368	260.560
Total Revenues (excluding capital gains)	31.287	33.691	40.934	80.850
Gross Capital Gains	17.712	80.588	0.000	0.000
Total Disbursement Expenditures	18.694	24.161	25.144	52.193
Total Program Spending	5.273	19.683	0.934	4.959
Total Gifts to Charities	13.421	17.205	19.294	36.425
Non-Disbursement Expenditures	5.422	12.106	5.758	11.175

Table 21: Summary Statistics of the Top 56 Foundations

	Medium Foundations			Large Foundations		
	Maan	Standard	Maximum	Maan	Standard	Movimum
	wean	Deviation	Maximum ¢2004	Wean	Deviation	Maximum
			\$2001, I	VIIIIIONS		
Private Foundations		N=2,561			N=1,543	
Total Revenues	0.080	0.262	16.566	0.933	4.085	137.948
Tax-receipted donations	0.052	0.214	16.520	0.514	2.949	117.400
Gifts from other charities	0.003	0.032	2.249	0.032	0.750	72.563
Government Grants	0.007	0.087	3.604	0.038	0.915	53.944
Investment Income	0.006	0.019	2.339	0.192	1.692	218.242
Other Revenues	0.012	0.109	12.776	0.157	2.395	95.661
Public Foundations	N=2,826			N=1,520		
Total Revenues	0.127	0.957	106.087	1.836	5.112	122.199
Tax-receipted donations	0.051	0.706	83.710	0.782	2.786	94.177
Gifts from other charities	0.010	0.586	104.392	0.166	1.332	62.684
Government Grants	0.014	0.166	11.908	0.274	3.091	116.164
Investment Income	0.004	0.012	1.160	0.153	0.466	14.230
Other Revenues	0.048	0.173	8.891	0.461	1.531	49.659

Table 22: Summary Statistics on	Revenue	Components	of Medium	and Large
Foundations		-		_

Notes: N is the number of foundations.

Table 236: Gifts to Other Registered Charities as a Share of Total Disbursements, 1992-2008

	Small Foundat	ions (N=3,197)	Top 56 Foundations			
Time period	Private (N=1,664)	Public (N=1,533)	Private (N=27)	Public (N=29)		
	(mean, std. dev.)					
1992-1996	0.69	0.69	0.89	0.89		
	0.44	0.42	0.22	0.24		
1997-2003	0.66	0.70	0.92	0.86		
	0.45	0.43	0.18	0.29		
2004-2008	0.58	0.72	0.88	0.85		
	0.47	0.41	0.21	0.30		

Notes: Numbers in small font are standard deviations. N= the number of foundations in each group. Average shares are calculated by deriving shares for each foundation in a given year and then taking an average across all foundations in that year.

	Small Founda	tions (N=3,197)	Top 56 Foundations			
Time period	Public (N=1,533)	Private(N=1,664)	Public (N=27)	Private (N=29)		
	Actual total disbursements/estimated total disbursements					
1994-1996	1.61	1.33	1.87	1.34		
1997-2003	1.65	1.33	1.14	0.96		
2004-2008	2.44	1.45	1.05	0.67		

Table 24: Ratios of Actual Disbursements to Estimated Disbursements by Asset Size, 1994-2008

Notes: Since disbursement calculations are based on a 2-year lag of assets, the first sample year becomes 1994 instead of 1992. N=number of foundations.

Table 25: Ratios of Actual Disbursements to Estimated Disbursements by Revenue Size Within Asset Groupings, 1994-2008

	Medium Foundations by Assets (N=5,387)			Large Foundations by Assets (N=3,063)				
	Revenues always less than or equal to \$100.000		Mixeo	d group	Revenues always less than or equal to \$1 Million		Mixed group	
Time period	Private (N=1,248)	Public (N=1,233)	Private (N=1,313)	Public (N= 1,593)	Private (N=598)	Public (N=508)	Private (N=945)	Public (N=1,012)
-	Actual total disbursements/estimated disbursements							
1994-1996	1.33	1.58	1.55	2.03	1.34	1.11	1.34	1.71
1997-2003	1.22	1.50	1.27	2.03	1.13	1.09	0.97	1.44
2004-2008	1.21	1.51	1.52	1.63	1.20	1.06	0.99	1.31

Notes: Since disbursement calculations are based on a 2-year lag of assets, the first sample year becomes 1994 instead of 1992. N=number of foundations.

Table 26: Ratios of Actual Disbursements to Estimated Disbursements by Revenue Size Only, 1994-2008

	Small Foundations		Medium Foundations		Large Foundations		
Time Period	Private (N=1,731)	Public (N=1,381)	Private (N=2,994)	Public (N=3,363)	Private (N=1,072)	Public (N=1,162)	
	Actual total disbursements/estimated disbursements						
1994-1996	1.47	1.53	1.26	1.45	1.39	1.76	
1997-2003	1.24	0.94	1.12	1.35	0.96	1.38	
2004-2008	1.32	1.35	1.27	1.36	0.93	1.24	

Notes: These foundations are grouped based on the size of their revenues only. Small foundations – with revenues always less than \$25,000; Medium-size foundations – with revenues not always less than \$25,000 nor always greater than one million dollars; Large foundations – with revenues ever greater than one million dollars. This group includes foundations with revenues ever greater than 100 million dollars – there are 21 such foundations.

Chapter 3

Does Foundation Giving Stimulate or Suppress Private Giving? Evidence from a Panel of Canadian Charities

3.1 Introduction

In the current economic environment, many governments face challenges in financing the provision of public goods and services. As a result, the role of the charitable sector has become increasingly important. Charities are key providers of many goods and services. With shrinking public budgets, charities rely more heavily on funding from individuals, corporations and foundations. This paper explores interactions between individuals and foundations as the two sources of charitable funding.

Standard economic theory on voluntary contributions to public goods would predict that foundation giving will crowd-out private donations since individuals have an incentive to free-ride on the donations of other contributors, including foundations (Varian, 1994). Foundation giving may, however, have the opposite effect on individual giving to a charity if foundations have better access to information about charities than individuals. A foundation grant can then signal
information about the quality of the charity and thereby positively influence individuals' decisions to give to that charity. Whether foundation giving is a substitute or complement for individuals giving will depend on the relative magnitude of these two opposing effects.

The empirical literature that explores the relationship between different sources of funding in the presence of incomplete information about charity quality is still developing. Most of prior research has focused on government grants signaling quality of the charitable public good (Payne, 2001; Huetel, 2012; Jack and Recalde, 2013). These studies have established that when private donors look to government funding for information about the charity, the relationship between government funding and individual donations is complementary. Karlan and List (2012) use a field experiment to examine the impact of foundation gifts on private donations to a charity. They find that when a large foundation (the Gates Foundation) provides grants to a lesser-known charity, TechnoServe, the grant serves as a signal of charity guality to smaller donors. As a result, average revenue per solicitation increased by 12 cents amongst non-prior donors and the probability of the individual donating rose by 26 percent. These findings support a positive relationship between foundation grants and individual donations that I also find in my paper.

I contribute to this literature by using a unique panel on Canadian social welfare and community charitable organizations to study the relationship between foundation and private giving. The empirical analysis is based on the annual tax

filings of 4,906 social welfare and community charities with Canada Revenue Agency (CRA) between 1997 and 2006. The Canadian administrative data provides richer financial information about charities than similar U.S. administrative data (form 990). To capture all forms of private giving, I use both tax-receipted gifts and revenues from fundraising. Tax-receipted gifts includes all charitable gifts for which charities issue tax receipts. Revenues from fundraising consists of proceeds from individuals when charitable organizations sell goods as part of their fundraising campaigns (e.g., charitable event). For a measure of foundation grants, I use *gifts from other charities* reported by charitable organizations on their annual returns. This measure includes both gifts from foundations and gifts from other charitable organizations. With separate CRA data on foundations, I match gift revenues reported by charities with the grants charities received from foundations. This matching exercise identifies a more exogenous part of *gifts from other charities*.

In addition to the administrative data, I use the Canadian Census and data on provincial elections to control for time-varying socio-economic and political characteristics of neighborhoods in which charities operate. With a complete panel on social welfare and community charities I can exploit the charity-specific effects to capture time-invariant quality differences.

I begin the empirical analysis with an OLS estimation of the relationship between private and foundation giving. While I find a positive and a strongly significant effect, foundation grants and private donations are likely to be jointly

determined leading to endogeneity and omitted variable biases. To address these potential biases, I perform a two-stage least squares estimation. As instruments, I use measures that are derived from the data on foundations to proxy for the pool of foundation funding in all years of charity operations. Empirical results confirm a positive impact of foundation grants on all measures of private giving. An additional dollar of foundation grants, on average, increases private donations by 3.7 dollars. The robustness of this effect is ensured by testing it across various specifications and subjecting it to several sensitivity checks. These findings suggest that private donors may look to foundation grants for information about charities to make informed giving decisions.

The remainder of the paper is structured as follows. The next section provides a review of the related literature. Section 3 presents a theoretical framework for understanding the relationship between foundation and individual giving. Section 4 describes the dataset. Section 5 presents the empirical methodology and discusses the main results. Section 6 concludes.

3.2 Related Literature

Theoretical and empirical literature that examines how donors interact when contributing to the public good is constantly expanding. A large body of this literature is devoted to explaining the relationship between private donations and government grants as key players in funding the provision of public goods. Even in the narrow scope of this relationship, the spectrum of conclusions is wide. For example, early theories (Warr, 1982; Bergstrom, Blume and Varian, 1986) and a recent empirical study (Andreoni and Payne, 2011) suggest that government funding to charities decreases private donations dollar-for-dollar. This is because government grants are treated by individuals as a pool of tax-financed donations, and individuals respond to them by reducing their voluntary contributions. Most of empirical work, however, provides support for either partial crowd-out (Kingma and McClelland, 1995; Payne, 1998; Andreoni and Payne, 2003; Simmons and Emanuele, 2004; Gruber and Hungerman, 2007) or no crowd-out at all (Reece, 1979; Khanna, Posnett and Sandler, 1995). Interpretations of these results are also quite diverse, extending from warm-glow (Andreoni, 1989) to social pressures (DellaVigna, List, Malmendier, 2012).

Early theoretical models and many empirical studies, despite offering useful insights for understanding donor behaviour, assume that agents have perfect information about the quality of the public good. A stream of literature describing a more realistic environment where donors have incomplete information about the public good began with Rose-Ackerman (1980). She posited that individuals' decisions to support charitable programs may depend on their knowledge about these programs. Since individuals face greater time and financial costs to gather information about charities, they may prefer to opt out from giving. Institutional donors (e.g., governments or foundations) may be more able to undertake the expense of learning about charity-specific information. This

information about charity quality can then be conveyed to individuals through their institutional grants.

Formal economic modeling of asymmetric information in organizations was initiated by Hermalin (1998). He shows that under symmetric information about the marginal product of effort everyone in the organization free-rides. Under the asymmetric information, however, the leader can transmit information about the effort by exerting full effort himself, which signals to workers that effort has a higher marginal product. Applying Hermalin's logic to public goods, Vesterlund (2003) argues that donors with incomplete information about the quality of the public good can acquire sufficient information from the lead donor. Modeling sequential contributions to the public good, Vesterlund finds that through information revelation one donor can encourage additional giving from other donors.¹ Andreoni (2006) extends Vesterlund's analysis and argues in favour of Rose-Ackerman's earlier proposition that institutional donors such as governments or foundations can signal charity quality by awarding leadership gifts to charities.

Empirical literature that examines how one source of funding signals information about charity quality to another source and thus stimulates giving is just developing.² Amongst only a few are studies that use panel data to examine

¹ Varian (1994) pioneered the model where the two individuals make sequential donations to the public good and they have perfect information about the quality of the public good. He concludes that individuals will also free-ride, which is similar to simultaneous-move games.

² Experiments by Potters, Sefton and Vesterlund (2007) and Komai, Grossman and Deters (2011) find that leadership giving facilitates information transmission and contributions to the public good appear to be complementary.

the change in private donations in response to contributions by other donors. Within a higher education sector, Payne (2001) investigates the effect of federal research funding on private donations for both research and non-research universities where government grants may be used as a signal of university's research quality. Potentially, government agencies have more information about a university (e.g. through its grant applications), which may be quite costly (both in time and money) to obtain for individuals. Using data on 577 universities between 1972 and 1997, Payne performs the two-stage least squares estimation and finds that an additional dollar of federal funding to research universities, on average, increases private donations by 65 cents. This suggests that the effect of signaling research quality outweighs the crowd-out effect.

While also exploring the relationship between two sources of funding to universities, Goddfried (2008) looks at how alumni giving responds to non-alumni contributions, which exclude government grants.³ He relies on a panel of 1,422 US colleges and universities for 1995 and 2006. Including school-specific effects, Goddfried concludes that a one percent increase in total non-alumni funding which comes primarily from corporations or foundations increases alumni donations by nine percent. His findings also offer supporting evidence of a positive information effect.

³ While Connolly (1997) also examines the relationship between internal and external funding to universities, her empirical methodology is based on simulating shocks to internal funding and analyzing impulse response functions. She concludes that higher internal funding serves as a signal of research quality and enhances the amount of outside funding to the university.

More recently, Huetel (2012) has analyzed the relationship between private donations and government grants for a panel of over 29,000 social services charities in the United States. He argues that if the government signals higher quality through higher funding then government grants can cause higher private donations. Recognizing that the relationship between these two sources of funding is endogenous, Huetel performs a two-stage least squares estimation to address potential biases. He finds that, on average, an additional dollar of government grants leads to an increase in private donations by 30 cents. Huetel concludes that government grants possibly signal information about the quality of the charity, thereby enhancing private giving.

There is only one study that examines the relationship between foundation grants and private giving. In a field setting, Karlan and List (2012) analyze the effect of giving by the Gates Foundation on private donations to TechnoServe, a charity supporting poverty reduction.⁴ They find that in providing grants to a lesser-known charity the Gates Foundation signals charity quality to smaller donors. This not only encouraged donations from existing donors (giving rate increased from 0.4 to 0.6 percent), but it also increased the probability of donating by new donors by 26 percent. In my paper, I use panel data on social welfare and community charities matched with their foundation donors to offer new evidence on signaling charity quality and voluntary contributions to the public goods.

⁴ The study by Jack and Recalde (2013) also provides supporting evidence for information signaling about the quality of the public good. Performing a field experiment in Bolivia, they find that contributions to a local school from elected representatives crowd-in private donations.

3.3 **Theoretical Framework**

Existing theoretical literature provides useful guidelines for studying the relationship between foundation and private giving. Explicitly, however, this relationship has not been previously formulated. Adopting the model by Andreoni (2006), I develop a theoretical framework capturing asymmetric information about a charity's quality. The model is based on four key assumptions: 1) the public good is provided by a single charity; 2) individuals donate to the charity, but do not donate to the foundation; 3) only individuals care explicitly about the total provision of the charitable public good; and 4) the charity remains passive in attracting donations.

Consider the economy with *n* individuals and one foundation. Individuals consume a composite private good x_i and contribute g_i to the charity, which provides a public good of given quality α . Each individual is endowed with positive income m_i such that $m_i \in \{m_i, ..., m_n\}$.⁵ Let *y* denote a foundation good and let *a* be the foundation's income endowment. The foundation's contribution to the charity or equivalently public good is denoted as *f*. Therefore, the charity provides the total amount of public good *G* such that $G = \sum_{i=1}^{n} g_i + f$.

⁵ Individuals will choose to contribute a higher amount as their income rises, that is $\partial g_i / \partial m_i > 0$. This result is derived in Appendix 3.A.

Individuals care about the quality of the public good, but it is only observed by the foundation.⁶ Foundations may have better access to information about charities for a couple of reasons. First, charities submit grant applications to foundations, which provide information about the goods and services they provide. Second, the foundation and the charities it gives to may operate in the same charitable area (Thornton, 2010). While individuals are uninformed about the true charity quality they can observe the foundation grant and infer the quality of the public good from the grant. Individuals assume the quality of the public good is given by s(f), which is increasing in f. It seems reasonable to assume that individuals can access information about the foundation grant because charities often advertise the receipt of foundation gifts and information about recipients of foundation funding is also available on the CRA website.

I assume that the foundation moves first and chooses how much to contribute to the charity. Individuals then observe the foundation grant and choose how much to donate. Working backwards, I begin with the individuals' problem. Individuals derive utility from consumption of the private good, the total public good and from the inferred quality of the public good. Since the foundation moves first, individuals take the foundation grant as given. The individual maximizes utility $u(x_i)+V[G;s(f)]$ subject to the budget constraint $x_i + g_i = m_i$

⁶ If individuals knew the quality of the public good then donations would be increasing in quality of the public good. This result is derived in Appendix 3.A

where $G = \sum_{i=1}^{n} g_i + f$ and s(f) is a concave function. This produces the following first-order condition:

$$u'(m_i - g_i) = V_G[G; s(f)]$$
 (1)

Differentiating Equation (1), the change in the individual donation as a result of the change in the foundation grant becomes:

$$\frac{\partial g_i}{\partial f} = -\frac{V_{GG}[G;s(f)]}{u^{''}(m_i - g_i) + V_{GG}[G;s(f)]} - \frac{V_{Gs}[G;s(f)]s^{'}(f)}{u^{''}(m_i - g_i) + V_{GG}[G;s(f)]}$$
(2)

Since the sign of the denominator for both terms is negative due to the concavity of $u(\cdot)$ and $V(\cdot)$, the sign of the expression in (2) will depend on the sign of the numerator. The numerator of the first term is negative as it is simply the crowd-out effect.⁷ It occurs because under complete information about the quality of the public good one group of givers free-rides on the other group. A different giving dynamic may arise between the two groups of givers if one group has limited information about the quality of the public good, but it can infer about the good's quality from gifts made by the other group. This is captured by the second term, which represents the information effect. Its numerator is the product of $V_{Gs}[G(f); s(f)]$ and s'(f) which are both positive.⁸ The overall positive impact prevails if the effect of transmitting information about charity quality outweighs the standard crowd-out effect. I determine the direction of the overall effect in an extensive empirical analysis.

⁷ In the case of perfect information about charity quality, the relationship between foundation grants and individual donations is defined only by the crowd-out effect. This scenario is presented in the Appendix 3.A.

⁸ Otherwise, the function s'(f) = 0 if the distribution constraint is binding.

Next, I solve the foundation's problem. A foundation's utility is given by $W = w(y) + q(f;\alpha)$ where $w(\cdot)$ is strictly concave and twice continuously differentiable functions. The $q(\cdot)$ function is increasing in both of its arguments $q_{ff} < 0$ and $q_{f\alpha} > 0$. A foundation maximizes its utility subject to the budget constraint y + f = a and to the distribution constraint $f \ge \lambda a$ where λ is the proportion of income distributed in a given year.⁹ The foundation's problem is

$$\mathsf{L} = w(a-f) + q(f;\alpha) + \phi(-\lambda a + f)$$
(3)

where ϕ is the Lagrange multiplier. The two first-order conditions are

$$\frac{\partial \mathbf{L}}{\partial f} = w'(a-f)(-1) + q_f(f;\alpha) + \phi = 0$$
(4)

and

$$\frac{\partial \mathbf{L}}{\partial \phi} = (-\lambda a + f) = 0 \tag{5}$$

In the interior solution the optimal grant is implicitly given by

$$\frac{q_f(f;\alpha)}{w(a-f)} = 1 \tag{6}$$

⁹ According to the Income Tax Act, foundations are required to distribute a portion of their assets and revenues in the form of gifts to other charities. A detailed description of this minimum spending requirement is offered in Kryvoruchko (2013).

which is represented by point B in Figure 3.1. The optimal contribution by the foundation becomes $f^* = a - w^{-1}(q_f(f;\alpha))$, which is an increasing function of quality.¹⁰

3.4 Data on Canadian Registered Charities

All charities in Canada must register with Canada Revenue Agency (CRA) to receive exemption from the income tax, issue tax receipts for individual donations and receive grants from other registered charities. At registration, CRA designates charities into charitable organizations and foundations. Charitable organizations are primarily engaged in providing a range of public goods and services, while foundations devote their activities to raising funds and allocating them as grants to other registered charities. Additionally, CRA assigns all charities into the following broad categories based on their mission statements: social welfare, community, religious, health, education, and other.

CRA mandates that all registered charities file an annual return (form T3010) within six months from the end date of their fiscal periods. Failure to comply with these regulations leads to the revocation of the charities' registered

 $^{^{10}}$ When the distribution constraint binds ($\phi>0$), the optimal contribution by the foundation becomes

 $f^* = \lambda a$ which is no longer a function of quality of the public good. It is denoted as point A on Figure 3.1. In practice, foundations are required to disburse a portion of their revenues and assets as gifts to other charities. To have an approximate understanding of a binding or a non-binding constraint, I derive the minimum spending requirement for foundations. If the constraint is binding, reported gift made by foundations will be close to the minimum spending amounts. I find that foundations distribute more than the requirement (see Kryvoruchko, 2013). Deep and Frumkin (2001) and Sansing and Yetman (2006) analyze whether grant payout regulations bind for US foundations. They confirm that foundations tend to distribute more to charitable purposes than the required percentage.

status. The return includes detailed information about charitable activities, fundraising and financial operations. Compared to similar US administrative data (form 990 filed by all 501(c)(3) non-profit organizations), Canadian data on registered charities provide richer financial information and span a longer time period. Moreover, CRA data on foundations incorporates information on the recipients of foundation grants and specific gift amounts transferred to other registered charities.

Available data from CRA are collected for administrative and not research purposes. I undertake a few measures to prepare these data for a research study. At the initial cleaning stage, I convert all negative values into positive and express them in 2001 dollars. I also exclude information that does not reflect close to a 12-month period (those capturing less than 10 months and more than 14 months). Next, I use the CRA classification system to extract all charitable organizations serving social welfare and community purposes. Specifically, I focus on categories such as: care, welfare (three codes), community (three codes) and recreation. Studying one charity type is considered a common practice in the empirical literature because charities are different in many respects from the operational design to the types of donors that support these organizations (Steinberg, 1985; Andreoni and Payne, 2011; Huetel, 2012). The

initial sample includes over 24,000 social welfare and community charitable organizations from 1997 to 2006. ¹¹

From charity annual returns, I collect three revenue measures for my analysis. The first measure is *tax-receipted gifts*, which includes all charitable donations for which charities issue tax receipts to individuals.¹² It serves as the first measure of private giving. The second measure is revenues from fundraising, which represents individual contributions collected at charitable events.¹³ I combine this measure with tax-receipted gifts to create the aggregate measure of private giving. Finally, gifts from other charities is a revenue measure that combines gifts from foundations and other charitable organizations. This revenue indicator is used to create a measure of foundation giving. Figure 3.2 shows that combined tax-receipted gifts and gifts from other charities as a share of total revenue are consistently higher for social welfare and community charities than for other charity types. A solid upward trend in gift shares since 2004 is attributed partly to strong economic growth resulting in higher individual incomes and partly due to the elimination of capital gains tax for donations of publically traded securities.¹⁴

¹¹ The form "T3010 Registered Charity Information Return" has changed twice during the sample period – in 2003 and 2005. Reporting of key financial measures has not changed; however, some measures previously reported in the confidential section have become publically available since 2003. ¹² Tax-receipted gifts may include a small portion of gifts from corporations as they can request tax receipts

¹² Tax-receipted gifts may include a small portion of gifts from corporations as they can request tax receipts to be issued for their tax purposes. Anecdotal evidence suggests that corporations prefer to donate through sponsorships because charities can then publicly advertise these donations, while public recognition of a corporation's gift is not allowed if a tax receipt is issued.
¹³ Revenues from fundraising do not include revenues from institutional donors because fundraising does

¹⁵ Revenues from fundraising do not include revenues from institutional donors because fundraising does not include requests for funding from foundations and governments (Fundraising by Registered Charities, CPS-028).
¹⁴ Report of the Stording Complete and Finance (2010)

¹⁴ Report of the Standing Committee on Finance (2012).

The way charities collect gifts and carry out their charitable activities varies across neighborhoods in which these charities operate.¹⁵ In order to capture differences in socio-economic and political characteristics across neighborhoods, I match in data from two additional sources via postal codes obtained from charity annual returns. First, I use Canadian Census data for years 1996, 2001 and 2006. Continuity between years is achieved with linear interpolation.¹⁶ This captures time-varying characteristics of the forward sortation area (FSA), which is a rough approximation of an 8,000 household neighborhood.¹⁷ Second, I use Canadian general elections data to obtain measures of political party affiliations.¹⁸ This is necessary for capturing differences in political tastes that may be reflected in general giving trends.

I impose additional restrictions on the sample of social welfare and community charitable organizations to ensure further quality of the working dataset. First, I exclude 2,411 charitable organizations that always report zero aggregate private donations (tax-receipted gifts and revenues from fundraising). Second, I eliminate 720 charitable organizations that always report operating outside of Canada because I am focusing on local public good provision. My final exclusion consists of 1,801 charitable organizations that have fewer than three years of observations. This restriction ensures a certain degree of continuity in

¹⁵ In my sample, 80 percent of charitable organizations indicate that their programs are carried out in a single rural city or metropolitan area.
¹⁶ Linear interpolation procedure has been used by others in the literature. See Luttmer (1998), Dhuey and

¹⁰ Linear interpolation procedure has been used by others in the literature. See Luttmer (1998), Dhuey and Smith (2010) and Card, Dooley and Payne (2007). ¹⁷ FSA is the first three characters of the postal code. Individual FSAs are associated with a postal facility

[&]quot;FSA is the first three characters of the postal code. Individual FSAs are associated with a postal facility from which mail deliveries originate.

¹⁸ Political party system in Canada, unlike the US, consists of more than two active parties. The most popular are Conservative, Liberal, New Democratic Party, Bloc Quebecois, and Green.

charity operations. After the last restriction, I arrive at a sample of 19,070 charitable organizations.

The next step is to perform a matching exercise, where the cleaned sample of charitable organizations is matched to their foundation donors. For this, I use data on foundations from their tax filings between 1997 and 2006. In particular, I rely on the 'Qualified Donee Worksheet' (form T1236), which collects information on the specific gift amounts transferred to other registered charities and also their gift recipients by unique business numbers and charity names (see Figure 3.3 for a snapshot of this worksheet).¹⁹ I match 19,070 social welfare and community charitable organizations with foundation gifts data via unique business numbers of these charities. The matching procedure separates the cleaned sample into two groups: 4,906 charities that match to a non-zero foundation funding in at least one year and 14,164 charities that cannot be matched. As a result of the matching exercise, the original measure of gifts from other charities is linked to specific grant amounts transferred by foundations. There are a few instances, however, when the value of gifts from other charities does not match. First, it is possible that some of the non-matched revenue comes from other charities and not foundations. Through this procedure, I am matching in a part of revenue from other charities that is potentially more exogenous because foundations tend to establish rigorous competitions for their funding.²⁰

¹⁹ A business number of a registered charity, which is also known as a registration number, consists of 15 characters - 9 digits, two letters 'RR' and four digits. Letters 'RR' a program account of a registered charity.
²⁰ Each foundation has its own eligibility requirements for charitable organizations to apply for funding. A brief discussion of the granting process can be found in Northcott and Uytterhagen (2002).

Charities, however, may be affiliated, which means that they may develop a relationship where one transfers gifts to the other on a regular basis. If their revenues are correlated with some unobservable, this can lead to an omitted variable bias. Second, some of the non-matched revenue may result from the data collection issue. This is where I can use aggregated measures from foundation data to create instruments that would represent a potential pool of foundation funding. Finally, there are 1,029 charities that never report receiving positive *gifts from other charities*, while foundations report having given a positive gift in at least one year. For years that I observe a positive gift from a foundation, I replace zero *gifts from other charities* with a positive foundation gift. I argue that foundations may be more diligent in keeping the record of transferred gifts due to their disbursement quota obligation. In section 4, I exclude these charitable organizations as part of my robustness check.

In order to ensure that the main dataset is representative of all social welfare and community charitable organizations, I explore differences across charities in the matched and non-matched samples. While being considerably smaller in terms of the number of charities, the matched sample represents most of the monetary value of social welfare and community charities (see Table 3.1).²¹ The average of aggregate private donations for the matched charities is \$116,000, while for the non-matched sample this average is only \$10,000. Averages of gifts from other charities are over \$50,000 for the matched and close

²¹ Data shows that 60 percent of all revenues is raised by social welfare and community charities in the matched sample.

to \$5,000 for the non-matched charities. If total assets and revenues can be treated as rough approximations of the organization's size, social welfare and community charities that have a corresponding foundation-giver tend to be larger compared to their non-matched type. For the empirical analysis, I focus on a panel of 4,906 (44,788 observations) charitable organizations that match to the set of foundations. The data from the non-matched sample is explored in the section on robustness checks.

3.5 Empirical Analysis

3.5.1 Empirical Strategy

I estimate the impact of foundation giving on private donations to social welfare and community charitable organizations in Canada using the following empirical equation:

Private Donations $_{ct} = \alpha_c + \gamma_t + \beta$ *Gifts from Other Charities $_{ct} + \lambda$ *Charity Characteristics $_{ct} + \varepsilon_{ct}$ (7)

The variable Private Donations_{ct} refers to all private donations to a charitable organization c at time t. As defined in Section 3, tax-receipted gifts and aggregate private donations represent two measures of private giving, while Gifts from Other Charities_{ct} is a measure of foundation giving. The relationship between foundation and private giving is captured by β , which is likely to be endogenous. The endogeneity can arise because foundation and individual gifts

may be jointly determined. On one hand, if both sources of funding increase in response to an unexpected event such as a natural disaster, the estimates will have an upward bias. On the other hand, the estimates can be biased downward if foundation grants and private donations are negatively correlated. For example, charitable organizations can seek foundation grants based on their existing individual contributions. In a year when combined private donations are lower than expected, charities may actively apply for foundation grants to make up for the difference. During more successful years in attracting private donations, charities may decide not to apply for foundation funding. Another possible case is that foundations may consider the level of private donations when transferring gifts to charitable organizations. The two-stage least squares estimation is used to address these possible biases.

The empirical specification also includes Charity Characteristics_{*ct*}, which control for socio-demographic and political characteristics of neighborhoods in which charitable organizations operate. These variables include total population and shares of population less than 19 years old, between 55 and 64, 65 years and older, those with a post-secondary diploma and those that are immigrants. I also control for average family income with its square term. For political measures, I use shares of provincial party seats. All regressions include charity fixed effects to capture time-invariant charity characteristics and year effects to control for time-varying local macro-level trends. Finally, I incorporate the charity specific time trend and its square term to capture changes that may be occurring

at the charity and may be correlated with individual and foundation gifts. Summary statistics for these controls are shown in Table 3.2.

3.5.2 Empirical Results

I begin the empirical analysis by estimating the effect of foundation giving on private giving using ordinary least squares (OLS). Table 3.3 shows the effect of foundation grants on the two categories of private donations: tax-receipted gifts (columns 1-3) and aggregate private donations (columns 4-6). I find that, on average, an additional dollar of foundation grants increases tax-receipted gifts in the range from 3.9 to 4.9 dollars. While the coefficients are positive and statistically significant, foundation grants and private donations are likely to be jointly determined for reasons discussed earlier. Therefore, OLS estimates may suffer from the endogeneity and omitted variable biases.

To address these biases, I estimate preferred specifications in columns (3) and (6) using limited information maximum likelihood (LIML) method as an alternative to the 2SLS method. While both methods produce asymptotically similar estimators, LIML is superior in the presence of weak instruments (Staiger and Stock, 1997).

The robustness of the findings will depend on whether selected instruments can predict *gifts from other charities* and remain uncorrelated with the error term in the structural equation for private giving. To ensure desired exogeneity of the instruments, I use foundation level data to create measures

based on the institutional environment that governs foundation operations. As described in the previous chapter, foundations must disburse a portion of their revenues and assets from previous years to maintain their charitable status. I use various types of foundation revenues and assets to create my instruments. Their main goal is to ensure that a given charity still has access to the pool of foundation money even in the years that it reports receiving no funding from foundations. While I have considered several variations of instruments, the chosen two are statistically the most plausible.

The first instrument is the replication of the minimum spending requirement (disbursement quota) that is defined by the government for foundations. It is computed according to the following expression:

Foundations'Quota $_{t} = 80\% *$ Individual donations $_{t-1} + 80\% (100\% \text{ if private foundation}) *$ $Gifts from other charities<math>_{t-1} + 3.5\% (4.5\% \text{ before } 2004) * (\frac{1}{2}(\text{Assets}_{t-1} + \text{Assets}_{t-2})) + 10\text{year gifts}_{t}$ (8)

This minimum spending amount is then summed across the set of foundations from which the charity reports receiving over the sample period. The second instrument is derived in two steps. First, for each foundation I compute the average of its total assets over the previous two years. Second, I average these assets across all foundations within a given province and then match them to the province of a charitable organization in a given year.

In the first-stage regressions presented in Panel B of Table 3.4, I use the two instruments alone and also their pairing. The coefficient on the disbursement quota is significant at 10 percent with an F-statistic of 2.87. Its positive sign suggests that the higher are previous year's revenues and assets of foundations, the higher is the level of foundation grants to be disbursed to a charitable organization in the current year. The coefficient associated with foundation assets matched to a charity's province of operation is also positive. It is statistically significant at 5 percent with an F-statistic of 4.58. Jointly, these instruments yield and F-statistic of 2.86. According to Stock, Write and Yogo (2002), selected instruments may be regarded as weak since they are lacking desired statistical strength because their F-statistics are below the benchmark value of 10. Intuitively, however, their exogeneity is more convincing since these instruments are aggregated at the foundation level and are distantly connected to a charitable organization.

The results of the LIML estimation shown in Panel A of Table 3.4 suggest that foundation grants have a positive impact on private giving to social welfare and community charitable organizations. I find that an additional dollar of foundation giving, on average, increases tax-receipted gifts by 3.2 dollars. This coefficient is significant at 10 percent. When I estimate the effect of foundation grants on aggregate private donations, the results are statistically more plausible. With the minimum spending amount as the first instrument, the coefficient on gifts from other charities is 3.77 and statistically significant at 5 percent. I also find a

statistically significant and a positive coefficient of 3.66 when I pair the two instruments.

I repeat the estimation of preferred specifications in columns (3) and (6) using the Generalized Method of Moments (GMM) estimation and its special case – the standard 2SLS estimation (Table 3.B1 in Appendix 3.B). I observe that the magnitudes of the 2SLS are similar to the LIML coefficient, while GMM coefficients on tax-receipted gifts and aggregate private donations are smaller. It also appears that the standard errors on the GMM coefficients are considerably lower. The advantage of the GMM over 2SLS is that it corrects for arbitrary heteroskedasticity leading to consistent standard errors. I continue to find that foundation giving crowds-in aggregate private donations to social welfare organizations in Canada.

3.5.3 Robustness Checks

I explore the robustness of a positive relationship found between foundation grants and private donations with several sensitivity checks. Findings presented in Table 3.5 are only for the aggregate measure of private giving with the pairing of the two instruments.

First, I test the sensitivity of my results by excluding 1,029 charitable organizations that always report receiving zero *gifts from other charities*. While foundations report having transferred gifts to these charities at least once over the sample period, suppose these records were made in error. I continue to find a

positive and a statistically significant relationship between foundation giving and aggregate private donations as shown in column (1).

The next two sensitivity checks relate to provincial and territorial differences in charitable giving (columns (2) and (3)). First, I exclude charitable organizations located in Quebec (1,438 charities) because, anecdotally, Quebecers prefer to donate less and tax credits for donations do not serve as a motivational factor compared to individuals in other provinces. This may indicate that charities in Quebec are operating under a different scheme than other Canadian charities. Then I also exclude 5 charitable organizations that operate in Yukon and Northwest Territories. Remote locations of these charities in the territories may engage in different operational tactics than the rest of Canada. The results are not sensitive to these restrictions and I continue to observe that an additional dollar of foundation grants increases aggregate private donations on average by 3.6 dollars.

Third, I test the robustness of the functional form by expressing the measure of *gifts from other charities* and private giving in logarithms and square roots (columns (4) and (5)). The standard error on gifts from other charities in logarithms is similar to the error in the linear estimation, but the coefficient becomes insignificant and with a much lower magnitude. In regressions with the square roots, the standard error on the measure of foundation giving is significantly lower. While this coefficient remains statistically significant, its

magnitude falls to 0.77. Interestingly, the F-statistic on the joint significance of the two instruments is 12.51, which passes the F-statistic threshold of 10 as noted in Stock et al. (2002).

In the fourth robustness check, I replace *gifts from other charities* obtained at the level of a charitable organization with *gifts to other charities* reported by foundations (column (6)). This replacement tests whether reports by foundations on their transferred gifts are potentially more accurate than reports by charitable organizations on their gifts receipts. By their means, these two measures are quite different with \$52,853 for *gifts from other charities* and \$17,119 for *gifts to other charities*. I find that the magnitude of the coefficient is at 3.07, which is only slightly lower than the original finding. Statistical significance of this coefficient, however, cannot be confirmed due to a much weaker statistical performance of the second instrument (average foundation assets in a province of charity's operation).

Finally, I test the effect of *gifts from other charities* on aggregate private donations for 14,164 charitable organizations that did not match with foundation gifts data. There are at least two reasons to perform this test. On one hand, these charities may not be matching due to a data collection issue, but they are in fact receiving gifts from foundations. On the other hand, it may be that these charities are simply receiving gifts from a set of non-foundation charities. To obtain a sense of the effect of charity gifts on private donations, I run OLS regressions controlling for socio-economic and political characteristics of neighborhoods in

which charities operate and including charity fixed effects, year effects and also a charity time trend with its square (see Table 3.6 for regression results). The coefficient on *gifts from other charities* in column (1), which includes the entire non-matched sample, while positive, is small (0.018) and insignificant. Then, I test this effect for charities that report receiving gifts from other charities at least once over the sample period (exclude 7,923 charities that never report charity gifts). I continue to find a small and insignificant effect. Finally, I match 14,164 social welfare and community organizations with non-foundation gifts data. When I run the OLS regressions with 3,073 charitable organizations that matched to a non-foundation charity donor, I find a small (0.037), but positive and a highly significant coefficient on *gifts from other charities*. For the remaining sample of 11,091 charities I continue to find no effect of gifts from other charities on private giving. These verifications strengthen the robustness of my original findings.

3.5.4 Discussion

While the estimation results provide evidence of a positive relationship between foundation and private giving, the question still remains as to how meaningful are these findings? Since this is the first study of its kind, I can compare my results only to studies which examine the effect of government grants, acting as signals of charity quality, on private donations. While Andreoni (2006) claims that governments and foundations can both signal charity quality to individuals, Rose-Akcerman (1980) argues that private givers will likely have different perceptions

of the two donors given their distinct natures and hence will react differently to their signals. Foundations, unlike governments, cannot utilize the tax system to extract contributions from individuals, hence allowing for a completely voluntary relationship with individuals. It is important to acknowledge these differences when making comparisons with existing crowd-in effects.

In relation to the previous literature where the crowd-in effect of private donations does not exceed one dollar, the effect of 3.7 dollars appears quite large. There are two possible explanations for finding a large magnitude. The first explanation relates to uncovering the composition of the crowd-in effect. Following Payne and Andreoni (2009, 2011), who decompose the crowd-out effect of givers and fundraisers in the presence of government grants, foundation grants may crowd-in both givers and fundraisers, thus re-enforcing the crowd-in effect. While current literature has not yet explicitly analyzed the effect of foundation grants on fundraising by charities, Andreoni (2006) and Karlan and List (2012) argue that in theory this relationship is likely to be positive.

The second explanation concerns the statistical weakness of chosen instruments, which may be inflating the coefficients. In searching for a stronger instrument, it may be useful to explore the role of directors or trustees in a foundation's grant-making process. For example, in some crowd-out literature, government grants to charities are instrumented with tenure of politicians because they are responsible for bringing funds into their districts including grants to charities (Payne and Andreoni, 2003 and 2011). Applying this logic to

foundations, creating a measure that is tied to those who are directly involved in making decisions about foundation funding may be a more appropriate instrument.

3.6 Conclusion

Does foundation giving stimulate or suppress private donations to charitable organizations? Theoretical modeling results in an ambiguous direction of the relationship between gifts from foundations and individual contributions because it depends on two competing effects. A positive information effect of foundation giving on private donations can offset the crowd-out effect. I perform an extensive empirical analysis to clarify the direction of the overall effect. For this, I create a panel on 4,906 social welfare and community charitable organizations in Canada that are matched with their foundation donors for 1997 and 2006. Moreover, utilizing CRA data on foundations I construct exogenous instruments to predict a pool of foundation funding for a given charity. The LIML estimates suggest that, on average, an additional dollar of foundation grants increases aggregate private giving by 3.7 dollars. The robustness of this result still holds when it is subjected to various sensitivity checks. These findings support the initial claim that private givers may look to gifts from foundations as a signal of charity quality.

What public policies can be proposed to support the positive relationship between foundation and private giving? One option is to offer tax incentives to encourage foundation giving. For example, in the UK, charities can reclaim the

basic tax rate paid on the donation, which can then be transferred to charities in the form of the gift.²² Another possibility may be to create favourable conditions for mission-related investing (MRI) by foundations. Most Canadian foundations continue to finance grants with income from assets invested in traditional markets. A recent report of the Task Force on Social Finance (2010) suggests that by investing 10 percent of total capital into MRI, foundations can maximize their impact in fulfilling their charitable missions. In the United States, a fair number of foundations have already adopted this funding method.

Since private givers may use foundation grants as a signal of charity quality, individuals may greatly benefit from having better access to information about these gifts. It may be possible for the government to create a transparent and easily accessible donation registry so that private givers can make informed charitable decisions. Moreover, active charities can use the receipt of foundation grants as a fundraising tool to attract more private donations.

The role of charitable foundations as active contributors to a charitable public good has been largely unexplored and many interesting questions remain unanswered. One possible extension of the current work is to study whether private giving by other charity types will be impacted similarly by foundation grants as observed for social welfare and community charities. Another avenue for future research involves relaxing the assumption about charity's passive role in attracting donations as assumed in this paper. In this paper's model,

 $^{^{\}rm 22}$ For example, with a basic tax rate of 20 percent and a ten pound donation, a charity can reclaim 12.5 pounds.

individuals learn about the quality of a charitable organization by observing grants from foundations. When the charity is active, it engages in fundraising through which individuals can directly learn about a particular charity and its mission. An interesting question is how foundation giving affects fundraising activity of charities in Canada. Preliminary theoretical derivations suggest that fundraising efforts increase in response to greater foundation giving. An extensive empirical investigation is required to obtain further insight into this question.

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	All SW (N=	/C charities =19,070)	Matched S (N=4	WC charities 4,906)	Non-matched SWC charities (N=14,164)	
(\$2001, thousands)	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
Tax-receipted gifts	57.9	1,672.9	116.0	2,397.8	10.0	77.9
Aggregate private donations	74.6	1,685.7	153.2	2,430.2	20.8	98.5
Gifts from other charities	21.8	395.5	50.2	416.0	4.8	34.8
Total revenue	721.8	4,769.6	1,299.7	7,113.2	388.9	1,970.7
Total assets	734.6	4,585.6	1,157.1	5,438.4	429.3	2,047.4

Table 3.1: Summary Statistics of Social Welfare and Community (SWC) Charities

Notes: Aggregate private donations are the sum of tax-receipted gifts and revenues from fundraising

Table 3.28Summary Statistics of Economic and Political Measures for Regressions

	Mean	Standard Deviation	25th Percentile	75th Percentile
Demographic and Economic Measures (FSA level)				
% less than 19 years old	22.53	5.92	19.53	26.42
% between 55-64 years old	10.15	2.05	8.70	11.37
% 65 years and older	14.64	4.23	11.86	17.31
% with post-secondary diploma	18.01	11.61	9.40	23.32
% immigrants	17.70	15.23	5.22	25.12
Total Population (thousands)	27.67	17.72	16.51	33.17
Family Income (\$2001, thousands)	65.78	26.91	51.94	70.90
Family income Squared (\$2001, millions)	5,050	7,800	2,700	5,030
Political Measure (provincial level)				
% of liberal seats	43.54	24.41	23.08	60.80
% of conservative seats	26.36	29.11	0.00	57.28
% of other party seats	29.99	26.04	6.80	56.00
Total party seats	98.41	25.60	79.00	125.00
Number of Neighborhoods	1,130			
Number of Charitable Organizations	4,906			
Number of Observations	44,788			

	Tax-Receipted Gifts			Aggregate Private Donations			
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	
Gifts from other charities	3.889 (1.932)	3.918 (1.943)	4.856 (1.481)	4.083 (1.823)	4.110 (1.833)	4.873 (1.468)	
Demographic and Economic Measures	(()	((()	()	
% less than 19 years old		0.867 (6.797)	11.45 (10.53)		0.439 (6.493)	16.88 (11.13)	
% between 55-64 years old		17.90 (11.67)	21.93 (13.86)		13.65 (11.39)	22.98 (14.16)	
% 65 years and older		-6.913 (5.626)	8.829 (7.306)		-6.498 (5.770)	8.786 (7.110)	
% with post-secondary diploma		-3.776 (5.351)	7.949 (6.227)		-4.097 (5.213)	9.441 (6.940)	
% immigrants		-2.237 (2.487)	1.176 (2.545)		-2.295 (2.202)	1.301 (2.648)	
Total population (thousands)		567.0 (568.2)	585.3 (1,818)		595.3 (571.8)	729.4 (1,862)	
Family income		-0.940 (2.787)	-4.180 (3.931)		-0.346 (2.683)	-4.727 (4.269)	
Family income squared (millions)		-2.103 (7.005)	6.786 (6.464)		-2.951 (6.920)	7.445 (7.338)	
Political Measures						, , , , , , , , , , , , , , , , , , ,	
% of Liberal party seats		1,009 (655.4)	-219.8 (358.4)		1,095 (633.9)	-271.8 (366.6)	
% of Conservative party seats		-22.23 (646.3)	-915.0 (845.1)		83.29 (643.0)	-1,289 (875.6)	
Total party seats		-637.7 (504.9)	`1,312 [´] (1,334)		-426.5 (511.4)	`1,211 [´] (1,341)	
Year effects	No	Yes	Yes	No	Yes	Yes	
Charity time trend (with its square)	No	Yes	Yes	No	Yes	Yes	
Observations	44788	44788	44788	44788	44788	44788	
Number of Charitable Organizations	4,906 0.459	4,906 0.461	4,906 0.614	4,906 0.493	4,906 0.494	4,906 0.614	

Table 3.3: Results from the OLS Regressions

Notes: Coefficients in bold are significant at 5 percent or less and coefficients significant at 10 percent are in bold and in italics. Robust standard errors clustered at the charity level are in parentheses.
	Тах	-Receipted	Gifts	Aggregate Private Donatior		onations
Panel A:	IV #1	IV #2	IV # 1+2	IV #1	IV #2	IV # 1+2
Gifts from other charities	3.203	0.376	3.117	3.768	0.221	3.662
	(1.943)	(1.128)	(1.931)	(1.741)	(1.279)	(1.742)
Over-identification test	-	-	1.06	-	-	1.52
(p-value)			(0.30)			(0.22)
R-squared	0.54	0.09	0.54	0.58	0.05	0.57
Panel B: First Stage Results	Instrument 1 Inst		Instru	Instruments 1+2		ents 1+2
F-test	2.87		4.58		2.86	
(p-value)	(0.	09)	(0	.03)	(0	.06)
Sum of a minimum spending						
amount of a set of foundations						
from which the charity receives	1.	178			1.	178 605)
over the sample (Thousands)	(0.6	090 <i>)</i>			(0.	095)
Average of previous year's						
assets across all foundations in						
a given province matched to a			_			
province of charities' operations			8.687		8.841	
(Thousanus)			(4.059) (4.084)		004)	
Number of observations	44 788	44 788	44 788	44 788	44 788	44 788
Number of charitable orgs.	4,906	4,906	4,906	4,906	4,906	4,906

Table 30: Results from LIML Regressions

Notes: Coefficients significant at 5 percent are in bold and coefficients significant at 10 percent are in bold and in italics. Robust standard errors clustered at the charity level are in parentheses. All specifications include year effects, charity time trend, charity fixed effects and the following covariates: total population, family income, family income squared, share of population: less than 19 years of age, between 55 and 64, 65 years and older, with post-secondary education and those that are immigrants, share of liberal party seats, share of conservative party seats and total party seats.

	Aggregate Private Donations					
						Gifts from
						other
	Evoludo 1.020		Evoludo	Foundation		charities
	charities that		charities in	& private	Foundation	is replaced
	always report	Exclude	Yukon &	aiving are	& private	by aifts to
	receiving zero	charities	North West	in	giving are	other
	gifts from other	in Quebec	Territories	logarithms	in square	charities
Restriction:	charities (1)	(2)	(3)	(4)	roots (5)	(6)
			Instrumen	ts 1+2		
Gifts from other						
charities	3.593	3.369	3.628	1.594	0.772	
	(1.724)	(1.799)	(1.734)	(1.732)	(0.377)	0.070
Gifts to other charities						3.073
						(1.939)
Over-identification test	1 36	0.50	1 35	1 21	2.22	0 59
(p-value)	(0.24)	(0.47)	(0.24)	(0.54)	(0.13)	(0.44)
	(0.24)	(0.47)	(0.24)	(0.04)	(0.10)	(0.44)
F-statistics on						
instruments	2.53	2.92	2.86	0.61	12.51	1.86
(p-value)	(0.08)	(0.05)	(0.06)	(0.54)	(0.00)	(0.15)
	. ,			. ,	. ,	
R-squared	0.57	0.56	0.57	-	-	0.50
Number of observations	35,630	31,653	44,742	23,287	44,788	44,788
Number of charitable						
orgs.	3,877	3,468	4,901	4,032	4,906	4,906

Table 31 Robustness of Results from LIML Regressions

Notes: See Notes in Table 3.5. For regressions where foundation and private giving are in logs and square roots, the instruments are also expressed in logs and square roots.

Table 32: Results from OLS Regressions for the Non-Matched Sample

	Aggregate Private Donations				
	(1)	(2)	(3)	(4)	
Cifts from other charities	0.019	0.019	0.024	0.027	
Gits from other chanties	(0.012)	(0.018)	-0.024 (0.019)	(0.037	
	(01012)	(01012)	(01010)	(01010)	
Number of observations	120,173	53,804	92,844	27,329	
Number of charitable organizations	14,164	6,241	11,091	3,073	
R-squared	0.000	0.001	0.000	0.003	

Notes: See Notes in Table 3.5.



Figure 3.1: Representation of Interior and Corner Solutions



Figure 3.2: Individual Donations and Gifts from Other Charities, 1997-2006

Notes: The graph is based on 24,002 social welfare and community charities and 61,355 other charities

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Figure 3.3: Snapshot of the Qualified Donee Worksheet

Qualified donees worksheet / Amounts provided to other organizations

Registered charities can make gifts to qualified donees. Enter the required information for each gift made to a qualified donee or other organization. See the reverse for information on filling out this form.

Total number of qualified donees/other o	organizations:					
Name of organization:			Associated charity:	Yes No		
BN/Registration number: RR	City and Prov/Terr:					
Amount of gifts-in-kind \$		Total amount of gifts	\$			
Was any part of the gift intended for politica	al activities? Yes No If y	ves, enter amount \$				
Name of organization:			Associated charity:	Yes No		
BN/Registration number: RR	City and Prov/Terr:					
Amount of gifts-in-kind \$		Total amount of gifts	\$			
Was any part of the gift intended for political activities? Yes No If yes, enter amount \$						

3.A Appendix: Theoretical Framework

1. Individuals increase their donations as their income rises.

Differentiating the first-order condition in Equation (1), the change in individual's income with respect to individual's donation becomes:

$$\frac{\partial g_i}{\partial m_i} = \frac{u''(m_i - g_i)}{u''(m_i - g_i) + V_{GG}(G; s(f))} > 0$$
(3.A1)

Due to the concavity of $u(\cdot)$ and $V(\cdot)$ the sign of the expression is positive, suggesting that as income rises, individuals tend to contribute a higher amount to the public good.

2. Individuals increase their donations as the quality of the public good rises.

Individuals derive utility not only from the total public good, but also from its quality. Assuming quality is observable, differentiating the individual's first-order condition and rearranging yields:

$$\frac{\partial g_i}{\partial \alpha} = -\frac{V_{G\alpha}[G;\alpha]}{u^{''}(m_i - g_i) + V_{GG}[G;\alpha]} > 0$$

(3.A2)

I assume that total and marginal utility of *G* increases with quality, hence $V_{G\alpha} > 0$. Since the denominator is negative due to concavity of utility functions $u(\cdot)$ and $V(\cdot)$, I obtain a positive sign for the above expression. Therefore, an individual responds with a greater donation to the total public good if its quality increases.

3. Perfect information about charity quality.

In the case of perfect information about charity quality, the relationship between foundation grants and individual donations is defined solely by the crowd-out effect. In the case of perfect information, individuals know the quality α of the public good. In a set-up where the foundation moves first, individuals take its contribution as given. Then individuals maximize their utility $u(x_i)+V[G,\alpha]$ subject to the budget constraint $x_i + g_i = m_i$, where $G = \sum_{i=1}^n g_i + f$. The first order condition becomes $u'(m_i - g_i) = V_G[G,\alpha]$. By differentiating the first order condition, the change in the individual donation with respect to the foundation grant becomes:

$$\frac{\partial g_i}{\partial f} = -\frac{V_{GG}[G,\alpha]}{u''(m_i - g_i) + V_{GG}[G,\alpha]} < 0$$
(3.A3)

Due to the concavity of $u(\cdot)$ and $V(\cdot)$, the sign of the expression is negative, suggesting that in the presence of complete information about the public good, contributions from a foundation crowd-out individual donations to charitable organizations.

3.B Appendix: Additional Empirical Results

	GMM Estimation		2SLS Estimation		
	Tax-	Aggregate	Tax-	Aggregate	
	Gifts	Private Donations	Gifts	Private Donations	
Panel A:	Instruments 1+2		Instruments 1+2		
Gifts from other charities	1.555	2.110	3.135	3.683	
	(1.137)	(1.129)	(1.907)	(1.707)	
Over-identification test	1.06	1.52	1.06	1.52	
(p-value)	(0.30)	(0.22)	(0.30)	(0.22)	
R-squared	0.331	0 417	0 537	0.577	
Panel B: First Stage Results	01001	0	0.001	0.077	
-					
F-test	2.86		2.86		
(p-value)	(0.06)		(0.06)		
Sum of a minimum spending amount of a set of foundations from which the charity receives over the sample (Thousands)	1. (0.0	178 695)	1. (0.6	178 695)	
Average of previous year's assets across all foundations in a given province matched to a province of charities' operations (Thousands)	8. (4.(841 084)	8.841 (4.084)		
Number of observations	44,788	44,788	44,788	44,788	
Number of charitable orgs.	4,906	4,906	4,906	4,906	

Table 33: Results from GMM and 2SLS Regressions

Notes: See Notes in Table 3.5.

Conclusion

This dissertation is an empirical study of two distinct questions in public economics. The first chapter explores how individuals respond to changes in the tax regime and potential incentives that develop as a result. The remaining two chapters switch from tax policy to an investigation of charitable foundations in Canada and their role in the provision of charitable public goods and services.

In the first chapter, I examine the effect of the Russia's flat tax reform on individual labour supply. In the early 2000s, Russia, as many other countries of the former Soviet Union, was restructuring its tax system to attract foreign investment and promote growth. The tax reform, implemented in 2001, included not only the reduction in the tax rates, but also the tightening of the tax regime to address the ongoing issues of non-compliance.

I study the change in Russia's tax regime along two employment dimensions: primary vs. secondary and official vs. unofficial. This is an improvement over previous studies which often use secondary employment as a proxy for unofficial employment, while employment in the primary job is treated as official. The micro-level data from the Russia Longitudinal Monitoring Survey (RLMS) creates an opportunity to distinguish between these two employment dimensions. I find that workers with both primary and secondary jobs reduce their labour supply in response to the reduction in the tax rate. The tax reform, however, did not affect official and unofficial labour supply. My findings support the initial claim that secondary employment cannot be treated in the same way as

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unofficial employment. Otherwise, empirical analysis would yield similar results for these two types of employment. While the decline in the tax rate generates a few positive responses, I suspect that in the country like Russia, this reduction may still not be a strong incentive to motivate compliance and stricter enforcement measures may need to be developed.

The remaining two chapters study the operation of Canadian foundations and their role in financing the provision of charitable public goods. While the legal literature on foundations is quite large, academic literature on foundations is just emerging. Both chapters contribute to earlier research by beginning to uncover some of many unanswered questions concerning the purpose of charitable foundations.

In the second chapter, I provide new evidence on the composition of the Canadian foundation sector and variation in its financial structure between 1992 and 2008. With rich administrative data on foundations, I explore variation in the operation of foundations based on the size of their assets. I find that only a third of foundations have assets more than one million dollars, while the remaining foundations have relatively small-scale operations. Most likely the purpose of small foundations is potentially focused on promoting philanthropic values rather than providing significant financial resources to support charity operations. There may be a greater expectation, particularly from large foundations, to take on the role of sizeable financial donors to charities. I find that large public foundations raise greater revenues and distribute a higher volume of gifts to other charities

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than private foundations. Yet, large private foundations disburse a greater share of assets and revenues on gifts to other charities than on own charitable programs. This suggests that large public foundations can still expand their giving capacity.

In the final chapter of my thesis, I study the relationship that arises between foundations and individuals when they participate in financing a charitable public good. Theoretical modelling results in an ambiguous direction of this relationship. On one hand, this relationship may be complementary because individuals may look to foundations for information about charity quality, since foundations incur smaller costs in gathering this information compared to individuals. On the other hand, individuals may treat foundation grants as substitutes to their own donations as postulated by standard theory.

To clarify the direction of the overall effect, I perform an extensive empirical analysis of the relationship between foundation grants and individual donations. I construct a unique dataset by linking data on social welfare and community charitable organizations with their foundation donors. Empirical findings imply that the relationship between foundations and individuals in financing a charitable public good is complementary. I find that an additional dollar of foundation grants increases private giving, on average, by 3.7 dollars. I conclude that private givers may look to gifts from foundations as signals of charity quality.

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