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**Welfare Reform in Canada and the United States:
A Comparison of the Effects of Unconditional and Conditional
Block Grants**

Rapport de recherche en finances publiques

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0.0 Introduction

This paper will try to determine if the decrease observed in welfare caseloads in both Canada and the United States is attributable to the reforms of welfare financing that were enacted in both countries in the middle of the 1990s. In both countries, we observe devolution of welfare matters towards provincial or state authorities. However in the United States, state authorities have to deal with federal transfers that are much more conditional than the Canadian transfers. Thus, we will try to determine if the conditions of the transfers help attain more thoroughly the objectives set by the federal government, which are mainly directed towards getting people off welfare by making them self-sufficient.

The first section of this paper will explain and compare the reforms in the United States and Canada, as well as present briefly existing studies. The second one will describe the econometric model and data used and finally, the third section will present the results.

1.0 Frame of Analysis and Previous Studies

This section first exposes the problem we will analyze in this paper. It then presents welfare reforms in the United States and Canada, and compares them. Finally, a brief presentation of previous studies will be made.

1.1 The Problem

The central issue analyzed in this paper is one of federalism. Faced with two very similar reforms in the area of welfare, we are trying to determine if one of them has had a more important impact. Very briefly, both Canada and the United States have stopped sharing the cost of welfare with lower entities, and have put in place a block grant to cover welfare expenses. In the United States, the federal government has set many conditions and objectives the states must follow in order to keep their share of the block grant money. In Canada, the federal government has simply put in place an unconditional block grant.

This situation is very interesting because we have two similar countries, which have enacted reforms in almost the same year in the same area. The biggest difference between these reforms is the conditionality of the funds. The goal of this paper is to determine if an unconditional grant can give similar results to a conditional one.

To accomplish this, we will need a model that analyzes the number of recipients taking into account the institutional context. We need to specify whether we are under the cost-sharing program, or under the block grant program. On the other hand, we also need to take into account the economic conditions of the countries we are analyzing. We thus need to find a good measure of economic performance.

1.2 The Reforms

In the 1990s, both federal governments began to disengage themselves from the direct financing of provincial and state welfare programs. Although the Canadian provinces already had great latitude in the design of their programs, they now have it fully. As for the American states, they have to cope with many federal conditions concerning the end results of their programs, but they still have total latitude in designing them.

1.2.1 The United States

The welfare sector began a phase of restructuring in the beginning of the 1990s. Between 1993 and 1996, many waivers were implanted in several states. These waivers were made under the Aid to Family with Dependent Children (AFDC) program, a federal that *had provided cash welfare to poor families with children since 1935*¹. These waivers permitted states to diverge from the national AFDC program by imposing new requirements on beneficiaries.

1.2.1.1 Aid to Families with Dependent Children – AFDC

AFDC was a program that was designed to provide cash benefits to families with dependent children. It is a cost-shared program in which "*the federal government provides broad guidelines and program requirements, and states are responsible for program formulation, benefit determinations, and administration*"².

Funding

The portion of the cost reimbursed by the federal government depends on the type of expenditure. The federal government reimburses 50% of the administrative and training expenses to the state. On the other hand, the benefits are matched by a formula. The matching rate will depend on the state's per capita income relative to the national per capita income. The rates vary between 50% in richer states and 83%³ in poorer states.

Conditions

There are few conditions to this financing by the federal government, though there are some national guidelines that need to be followed. For example, to be eligible for AFDC benefits, a family must have at least one dependent child among its members. Another example of national standard can be found in the resource limitations criteria. *The federal statute sets a maximum limit of \$1000 in resources per assistance unit*⁴. Resources are assets a family owns, such as stocks, bonds, etc.

Another condition to be eligible for AFDC benefits is participation in the JOBS program. In 1988, the Family Support Act was enacted. It established the Job Opportunities and Basic Skills Training (JOBS) program. This program helped people gain valuable skills in order to be employable in either new or better jobs.

¹ Martha Coven (2002), *An Introduction to TANF*, Center on Budget and Policy Priorities, p. 1.
Source: <http://www.cbpp.org/>, 02 July 2002.

² Administration for Children and Families, *Fact Sheet: AFDC Program*, p.1.
Source: <http://www.acf.dhhs.gov/programs/afdc/afdc.txt>, 23 August 2002.

³ ACF, *Fact Sheet: AFDC Program*, p.3.

The conditions existing in the AFDC program are mainly linked to the eligibility of the recipients. Since the federal reimburses the state authorities for their expenses, if a given state does not follow the guidelines, it will not be reimbursed for the expenses considered to be inappropriate by the federal government.

1.2.1.2 Temporary Assistance for Needy Families – TANF

In 1996, the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) became effective. This law established the Temporary Assistance for Needy Families (TANF) program, which replaced AFDC (the states had until July 1st, 1997 to submit a state plan and actually begin the implementation of the reform⁵). With TANF, states are responsible for the design and implementation of their own welfare program, as they were in the AFDC program. Now though, states receive a block grant they may use at their discretion, but only for welfare matters⁶.

Funding

TANF is a conditional block grant that the federal government provides to the states in order to help them finance their programs. It is a fixed total amount of 16.5 billion dollars per year until 2002⁷, not indexed for inflation. The state welfare programs are financed by two sources:

- **federal funds:** the conditional TANF block grant provided by the federal government
- **state funds:** the maintenance of effort (MOE) requirement⁸, which is state money

Conditions

The TANF block grant has many conditions that the states have to fulfill. If these requirements or conditions are not met, the state in question will have to face penalties for non-compliance⁹.

⁴ ACF, *Fact Sheet: AFDC Program*, p.2.

⁵ Administration for Children and Families (2002), *Fact Sheet: Welfare*, p. 3.

Source: <http://www.acf.dhhs.gov/news/facts/tanfpr.htm>, 02 July 2002.

⁶ The state does not have to spend all federal money on the benefits. They may fund educational programs, prevention programs, subsidize jobs, etc.

⁷ After 2002, TANF was up for reauthorization. We were not able to find the amount of the grant after 2002.

⁸ The MOE requirement is the state's contribution to the TANF program:

Every fiscal year each state must spend a certain minimum amount of its own money to help eligible families in ways that are consistent with the purposes of the TANF program. The required MOE amount is based on an "applicable percentage" of the state's (non-federal) expenditures on AFDC and the AFDC-related programs in 1994.

Source: ACF (2002), *Fact Sheet: Welfare*, p. 2.

⁹ For a complete list of conditions and their corresponding penalties, please refer to the table A1 presented in Annex-1.

a) Work Requirements

Since the main objective of the TANF reform is to lead people to self-sufficiency, there are a number of work requirements the states must meet. First of all, *beneficiaries must work as soon as job ready, or no later than two years after entering welfare*¹⁰. In other words, welfare is designed to provide **temporary** help to the family, while the parent(s) are getting ready to work again, for example by participating in an education program.

In addition to this basic requirement are others that set global state population objectives¹¹:

- Minimum participation rates
 - ❖ For fiscal year (FY) 1997, 25% of all families on welfare of the state must be engaged in work-related activities. This percentage increased gradually until it reached 50% in FY 2002.
 - ❖ For two-parent families, the minimum participation rate in work-related activities was 75% in FY 1997, and increased gradually to 90% in FY 2002.
- Minimum hours of work
 - ❖ Single parents must be engaged in work activities¹² at least 20 hours per week for FY1997 and 1998. This level raised gradually until it reached 30 hours per week by FY 2000.
 - ❖ Two-parent families must be engaged in work activities at least 35 or 55 hours, depending on the situation.

Penalty¹³: For a first offence, a penalty of 5% of the grant is imposed. If the state fails to comply a second year in a row, a 2% penalty is cumulated to the previous one. The maximum penalty is 21%.

b) Time Limit

The time limit condition was put in place to emphasize the fact that welfare should be a temporary form of assistance. In fact, *states may not use federal funds to provide assistance to a family if it includes an adult or minor head-of-household [...] who has received assistance for a*

¹⁰ ACF (2002), *Fact Sheet: Welfare*, p. 1.

¹¹ Single parents with a child aged less than one year old may be excluded from the calculations.

¹² Work activities are defined by many different activities including job searching and education programs, but these have time limitations upon them.

¹³ We have found evidence, in *Annual Report to Congress* – a yearly publication of AFC, that some states have not met some requirements. We have not found evidence though that any monetary penalty was imposed to any state.

*cumulative total of more than 60 months*¹⁴. If the state wishes to continue giving assistance to such a family, there are two options available:

- The state may continue assistance with the TANF program, but not for more than 20% of the total caseload.
- The state may continue assistance by using state funds.

Penalty: There is a 5% penalty for non-compliance with the time limit requirement.

c) MOE Requirement

The maintenance of effort requirement (MOE) is what the states must contribute to their programs. The amount is fixed in proportion of the state's spending under the AFDC program. States must spend at least 75% of the money used to fund welfare programs in the fiscal year of 1994. If the state does not meet its work participation requirements though, the MOE requirement is raised to 80%.

Penalty: *The penalty is based on the amount of the state's under-spending. The state also loses its Welfare-to-Work funds*¹⁵.

*If the MOE requirement is not met for the Contingency Fund*¹⁶, *the penalty is a reduction of the State's Federal TANF grant by the amount of Contingency Funds received and not remitted*¹⁷.

The total penalty a state may face is 25% of the block grant for a given year. A state may avoid penalties if it can either prove that it had good reason to fail meeting a requirement, or if it prepares a corrective action plan that is approved. Any reduction of the federal transfer due to a penalty must be replaced with state funds. Failure to do so will result in further punishment.

1.2.2 Canada

In the postwar period, the Canadian government designed and implanted many programs meant to provide services to all Canadians, universal social programs, such as unemployment insurance. In 1966, provincial welfare programs, which were subject to cost sharing with the federal government, were consolidated into one program: the Canada Assistance Plan (CAP)¹⁸.

¹⁴ AFC (2002), *TANF, Summary of Final Rule*, p. 4.

¹⁵ ACF (2002), *Fact Sheet: Welfare*, p. 2.

¹⁶ The Contingency Fund is a special fund destined to help states with difficulties in their economy or demography. The MEO requirements are stronger.

¹⁷ ACF (2002), *Fact Sheet: Welfare*, p. 2.

¹⁸ Battle, Ken (1998). *Transformation: Canadian Social Policy Since 1985*, Social Policy & Administration, p. 322.

By this program, the federal government shared the costs of the provincial welfare programs, on a 50-50 basis.

1.2.2.1 Canadian Assistance Plan – CAP

The provinces had to fulfill three conditions in order to obtain funding under the Canadian Assistance Plan¹⁹:

- *Income assistance must be provided to all people in need, regardless of the cause of that need.*
- *Provinces must have in place appeals system to allow welfare recipients to question decisions made with respect to their cases.*
- *Provinces could not impose minimum residence requirements for welfare.*

If these conditions were met, then the federal government would split the costs of the program with the provinces, in a 50-50 proportion.

By the end of the 1980s, pressure was on the federal government to eliminate its deficit (or at least diminish it). Many changes occurred in several social programs. The welfare program, as it was designed then, was a source of financial uncertainty for the federal government. In fact, when a recession occurred, caseloads would raise and the federal government had to give the provinces half of the cost of their expenses.

In 1990, the budget introduced a maximum growth percentage on CAP transfers. A ceiling of 5% was imposed on *annual increases in federal cost-sharing under the CAP [...] for Ontario, Alberta and British Columbia*²⁰. These provinces are the more wealthy in Canada and were thus also the non-equalizing provinces (i.e. which did not receive equalization payments). This “cap on CAP” was first introduced for the 1990-91 and 1991-92 years, but then extended until 1994-95²¹.

The 1995 budget introduced what was to be the end of the Canadian Assistance Plan. In this budget, the CAP and Established Programs Financing (EPF)²² were abolished and replaced by the Canadian Health and Social Transfer (CHST). For the first year of existence of the CHST (which is 1996-97), the total grant was equal to \$26.9 billion (paid by \$14.7 billion in cash and by

¹⁹ Battle, Ken (1998). p. 331.

²⁰ Battle, Ken (1998). p. 329.

²¹ Department of Finance Canada. *A Brief History of the Canada Health and Social Transfer (CHST)*.

Source: <http://www.fin.gc.ca/FEDPROV/hise.html>, 16 August 2002.

²² The Established Programs Financing (EPF) is a program created in 1977, which financed health care and post-secondary education.

Rayner, John and McLarnon, Shauna (2001). *Part 5. Fiscal Relations between the federal and territorial governments in Canada: a comprehensive overview*, in “Evolution of the Federal Center-Northern regions financial relationship and its consequences for “organized” migration out of the North”, p. 3.

Source: http://www.iet.ru/special/cepra/budfed/06_e.htm, 16 August 2002.

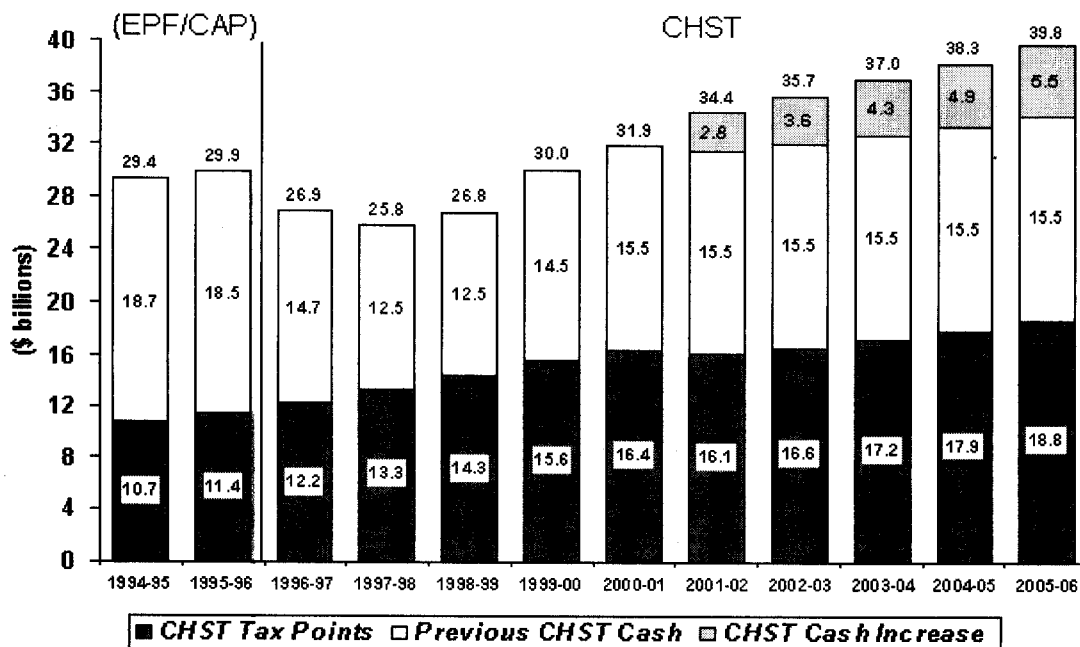
\$12.2 billion in tax point transfer). It was then cut to \$25.1 billion for 1997-98²³ (paid by \$12.5 billion in cash and by \$13.3 billion in tax point transfer). Had the system of transfers not been modified, the provinces would have received a total of \$29.4 billion²⁴ for 1996-97, and \$29.6 billion for 1997-98. This translates into reductions of 8.5% and 15.2% respectively. For the fiscal year 2001-2002, the total amount of the transfer is \$34.4 billion, \$18.3 billion of it in cash, and \$16.1 billion in tax point (see graph 1 for more information).

1.2.2.2 Canadian Health and Social Transfer – CHST

The CHST, which officially took effect on April 1st 1996, was “designed to give provinces and territories enhanced flexibility to design and administer social and health programs and to allocate funds among social programs according to their specific priorities”²⁵. It is a nearly unconditional block transfer since the only condition the absence of minimum residency requirement.

Graph 1: CHST transfer amounts, Canada, 1994-2005, in billion of \$

Canada Health and Social Transfer (CHST)



Source: Finance Canada²⁶

²³ Department of Finance Canada. *A Brief History of the Canada Health and Social Transfer (CHST)*.

²⁴ Battle, Ken (1998). p. 330.

These amounts are the sum of what would have been awarded under the CAP and EPF programs.

²⁵ Rayner, John and McLarnon, Shauna (2001). p. 2.

²⁶ Department of Finance Canada. *Canada Health and Social Transfer*.

Source: <http://www.fin.gc.ca/FEDPROV/chse.html>, 22 August 2002.

Funding

The transfer consists of a per capita target for each province, times the population of that province. The funds that are transferred to the provinces come in two forms. First, there is a cash portion, and secondly, a tax transfer portion. A tax transfer means that the federal government transfers to the province the revenues equal to a certain number of percentage points of tax income that it would normally perceive. It does so by lowering its tax rates, while the provinces raise theirs by an equivalent amount²⁷. For the total CHST transfers to provinces, the proportion of cash to tax transfer is roughly 50-50.

The problem that provinces have to face with the tax transfer is the instability of the economy. If there is a period of recession, the revenues associated with this part of the transfer will be lower than if it were a fixed cash amount. For this reason, the federal government introduced a cash floor in 1996 in the amounts transferred under the CHST. This means that a minimum portion of the transfer has to be in cash. This amount was of \$11 billion in 1996, and rose to \$12.5 billion in 1998. Thus if the tax point portion of the transfer falls, the cash portion rises to meet the per capita target amount.

Graph 1 shows in what proportions the funds are distributed in the CHST as well as is EPF and CAP combined for comparison. Furthermore, this figure shows clearly that there has been a cut in funding in 1996, when CHST was introduced.

The share of the transfer that each province gets is also subject to a lot of discussion. The CHST transfer amounts were to converge towards a per capita amount since its creation. This means that each province gets a proportion of the transfer equal to that of its population share in Canada, instead of a need-based transfer. In 1999, the federal government decided to accelerate this convergence.

Conditions

Under the CHST, the provincial governments have only two conditions to fulfill in order to retain funding from the federal government²⁸:

- Uphold the principles of the Canada Health Act (not relevant for the welfare).
- No minimum residency requirement for social assistance benefits.

Apart from these conditions, the provincial governments may use the money received by the CHST transfer to fund the programs they wish, and as they wish. The CHST is a more

²⁷ Department of Finance Canada. *Tax Transfers*.

Source: <http://www.fin.gc.ca/FEDPROV/taxe.html>, 22 August 2002.

²⁸ Department of Finance Canada. *Canada Health and Social Transfer*.

unconditional transfer than were CAP and EPF, as now the provinces may modify their welfare program as wish, as long as they do not refuse aid to new residents that left another province.

1.2.3 Comparison of the reforms

In the US, the main objective of the welfare reform was to push families towards self-sufficiency. This can clearly be seen in the Final Rule document of the Administration for Children and Families²⁹.

They [the principles governing the final rule] reflect PRWORA's strong focus on moving recipient to work and self-sufficiency, and on ensuring that welfare is a short-term, transitional experience, not a way of life.

They [the principles governing the final rule] do not tell the States how to design their TANF programs or spend their funds. At the same time, the rules hold the States accountable for moving families towards self-sufficiency.

This shows that the focus is more on the end result (self-sufficiency of families) than on the way the states will accomplish this. Thus, the conditions imposed to the states were conditions of performance.

In Canada however, the conditions are almost absent. For example, there is no maintenance of effort requirement. The main goal of the federal government was to reduce its spending, not particularly to reduce welfare caseloads. They indirectly may have favored this though. By establishing a transfer unrelated to the costs of the program, the provinces are now more vulnerable to fluctuations in the cost of the programs due to economic factors. This means that the provincial governments will be searching for ways to diminish their caseloads.

We can see here two different reforms in each country may have a similar effect. The American federal government uses a reform in which they impose welfare goals to the states, but let them free of the way they will fulfill them. The direct result should be a decline in the welfare caseloads. The Canadian reform places the burden of recessions on the provinces, which may have the indirect effect of making them want to reduce their caseloads. Thus, both reforms, though they do not have exactly the same goal, may have the same end effect.

1.3 Existing Studies

There is no paper that compares both reforms. There are quite a few studies though that try to explain the decline of caseloads in the recent years by the US reform, and controlling for

²⁹ Administration for Children and Families, *Summary, Final Rule, Temporary Assistance for Needy Families (TANF) Program*, p. 1.

Source: : <http://www.acf.dhhs.gov/programs/ofa/exsumcl.htm>, 15 August 2002.

economic variables. We will presents two of these studies here, the second being the one that has more closely inspired our model.

1.3.1 Ziliak et al. (1997)

These authors have developed a model that uses monthly data to explain the evolution of welfare caseloads through time. We will not present the whole model here as it is very close to the one from the Council of Economic Advisers below. This model uses the natural log of the number of welfare cases as the dependent variable. As an independent variable, it uses two alternative measures of economic performance, which are the natural log of employment per capita and the unemployment rate. All variables are for each state and each month. Dummy variables are used to control for state waivers, and the date of implementation of TANF. Finally, there are state-fixed effects and time-fixed effects.

The authors find that an important part of the decline in caseloads is attributable to economic factors, and TANF has also had an important impact on the decline.

1.3.2 Council of Economic Advisers

Another model has been elaborated by the Council of Economic Advisers (CEA) in a report written in 1997 and updated in 1999³⁰.

$$\ln R_{st} = \beta_1 \text{waiver}_{st} + \beta_2 \text{TANF}_{st} + \beta_3 \ln(\text{benefits})_{st} + \beta_4 \ln(\text{minWage})_{st} + \beta_5 \text{unempRate}_{st} + \alpha_t + \alpha_s + \text{trend} * \alpha_s + \mu_{st}$$

where³¹

R_{st} :	the ratio of the number of recipients to the population under 65 years of age; the model estimates the natural log of this ratio.
waiver:	a dummy variable that takes the value of 1 when a major waiver is in effect.
TANF:	a dummy variable that takes the value of 1 when TANF is implemented in the state.
benefits:	the maximum benefit for a family of three.
minWage:	the value of state-specific minimum wage expressed as a monthly amount assuming employment for 30 hours per week for 4.33 weeks.
unempRate:	state-specific unemployment rate
α_t :	year fixed effects
α_s :	state fixed effects
trend* α_s :	linear state-specific time trends

The dependant variable is the number of recipients, contrary to the number of cases which Ziliak et al. used. This model is closer than Ziliak's to what we need for our analysis. They find that

³⁰ CEA (1999), p. 10.

³¹ The explanation of variables used in this model comes from p. 10-11 of the report CEA (1999).

between 1996 and 1998, TANF is responsible for about one-third of the decline in caseloads³². This study also has a little longer study-period and uses annual data.

1.3.3 Criticism of existing studies

The first and most important point is that these studies only focus on the United States reform. As we are interested in comparing both reforms, we need more data and we must also ensure that the data can be found for both countries. Also, many of the studies were done shortly after TANF was in effect and have not had a very long period of data available. We now have the possibility to extend the study period.

³² CEA (1999), p. 2.

2.0 Model, Data and Graphical Analysis

This section presents the model and data which will be used. We will also present a brief analysis of the data to try and sort out trends and give a background of the situation before more in-depth analysis is made.

2.1 Econometric Model

In order to verify that the observed decline in caseloads is truly attributable to the welfare reforms, we must estimate a model that controls for other factors, notably the economic conditions of both countries and the relative incentive to be on welfare. We will use the model developed by the Council of Economic Advisers, which we presented earlier, with a few minor changes. Here is the model we will be estimating:

$$\ln C_{st} = \beta_1 \text{unemp}_{st} + \beta_2 \text{unempLag}_{st} + \beta_3 \ln(\text{benefits}/\text{minWage})_{st} + \beta_4 \text{reform}_{st} + \beta_5 \text{waiver}_{st} + \alpha_t + \alpha_s + \text{trend} * \alpha_s + \mu_{st}$$

where:

s subscript if for states or provinces, and t subscript is for the year

C_{st} : the ratio of the number of cases to the labor force; we will use the natural log of this ratio

Reform: a dummy variable that takes the value 1 when the reform is enacted

waiver: a dummy variable that takes the value of 1 when a major waiver is in effect; this variable is used only for the United States' model

benefits: the maximum benefit for a family of three for the United States and for a single-parent with a child in Canada

minWage: the value of state/province-specific minimum wage expressed as a monthly amount assuming employment for 30 hours per week for 4.33 weeks

unemp: state/province-specific unemployment rate

unempLag: state/province-specific unemployment rate, lagged one year

α_t : year fixed effects

α_s : state/province fixed effects

trend* α_s : linear state/province -specific time trends

Let us now see a more extensive definition of the variables we are using. We will also explain the modifications we have made to the model used in the report written by the Council of Economic Advisers.

2.1.1 Recipients

In order to clarify this discussion, let us introduce definitions of recipients and cases. A welfare recipient is a person receiving welfare benefits. A case is a family receiving benefits. For example, a mother of two on welfare consists of one welfare case, but of three welfare recipients since both her children are receiving benefits. The caseload is a term used to designate the total number of people on welfare, which can be measured in recipients or in cases.

Zilak et al. (1997)³³ provide arguments that show the use of the number of cases, instead of recipients, might be more appropriate to measure caseloads. First, "recipients confounds the number of households receiving welfare with the within-household fertility". This means that changes within household, for instance a fewer number of children per household, may be interpreted as a change in caseloads. The second argument is that the number of cases more closely represents the number of decision-makers. A child on welfare is not able to get off the rolls only because he wants to. He is not the one responding to the incentives states and provinces try to provide to welfare recipients. Finally, the political focus has mainly been on the number of cases, probably because of the preceding arguments.

We have computed the ratio of welfare caseloads to the labor force of each state/province. This was done in order to have a comparable per capita amount. We then have used the logarithm of this ratio in order to be able to compare results with previous studies.

2.1.2 Unemployment rate

We decided to use unemployment rate as a measure of economic conditions. We could have used other or additional measures, but we think that state/provincial annual unemployment rate provides a good approximation of employment perspectives of welfare recipients. Moreover, as these workers are the least trained and not well-educated in most cases, they are probably more at risk of losing their jobs or not finding one when the unemployment rate is particularly high, or if the economy is going through a recession cycle.

We also added a lagged unemployment rate. It is in fact logic to think that perhaps people need time to adjust to a change in the unemployment rate. A rise in the unemployment rate in 2000 may in fact influence on the number of recipients in 2001, and not only in 2000.

2.1.3 Relative cost/advantage of welfare

In order to have an idea of the cost or advantage of welfare, we needed to calculate a relative measure of the advantage of being on welfare, the monthly benefits received, and its cost, the state/provincial minimum wages. Of course, this measure is only approximate as we do not include many of the advantages and costs of being on welfare³⁴.

³³ Ziliak et al. (1997) p. 4-5.

³⁴ An impressive literature on the subject exists. Among additional advantages are child benefits in both countries and Medicaid in the United States. Among additional costs are the loss of work experience and degradation of human capital as well as psychological costs of being on welfare.

2.1.3.1 *Benefits*

The income of a welfare recipient does not consist of one unique transfer. In fact, the total welfare income consists of many different transfers. Some of these transfers come from the provincial or state governments, while others come from the federal government. In order to ensure maximum comparability between the two countries, we used only the basic social assistance payments. This assistance is the basic amount which a household is entitled to. In Canada, it *includes an amount for food, clothing, shelter, utilities, personal and households needs*³⁵. This means we have exclude such programs as Child Benefits in Canada and Food Stamps in the United States.

Also, the way family units are considered varies between the two countries. The most common unit for the United States is the three-person family which consists of one adult and two children. The closest comparable unit easily available for Canada was the two-person family, which consists of one adult and one child. By using these units, we use one-parent families for both countries.

2.1.3.2 *Minimum Wage*

As welfare recipients are often not well-trained or well-educated, the work opportunities they are faced with often are not represented by the average wage or personal per capita revenue. They usually faced with jobs paid at, or slightly above, the minimum-wage level, and more often not full time. We have thus followed what the CEA did in 1997 and 1999. We have used the state/province-specific minimum wage. In order to make this comparable with the benefits, we have multiplied the hourly wage by 30 hours per week. For the United States, the benefits were expressed as a monthly amount, so we multiplied the weekly wage by 4.33 weeks. For Canada, the benefits were expressed as an annual amount, so we multiplied the weekly amount by 52 week.

2.1.4 Reform Dummies

In these variables resides the only difference between the Canadian and American equation. As we have explained in the historic section, the United States have begun their welfare reform with waivers issued since 1993. Because we want to measure the impact of the reform that occurred in 1996, with the introduction of TANF, we must use two sets of dummies to measure the phenomenon. Thus, we have the *waivers* and the *TANF* dummies. Each one takes the value of one when either a waiver of TANF is in effect in the state in question.

³⁵ National Council of Welfare (2002), p. 9.

2.2 Data Sources

Let us now see where we found all the data we needed

2.2.1 United States

Recipients

The number of recipients for the United States comes from the website of the Administration for Children and Family, U.S. Department of Health and Human Services (on their website). The numbers for the state labor force were found on the statistics section of the Bureau of Labor website.

Unemployment rate

Statistics were found in the statistics section of the Bureau of Labor website for the United States. The unemployment rate is specific for each state.

Benefits

The data used for benefits in the United States comes from different sources; Ziliak et al.'s database, Green Book 1998 and 2000 and the State Policy Documentation Project website³⁶.

Minimum Wage

Data was obtained from William Wascher, Division of Research and Statistics of the Federal Reserve Bank, and David Neumark of the Public Policy Institute of California. This file contained the minimum wage for each year. We simply used this data to calculate the monthly minimum wage.

Reform Dates

The data of the dates of waivers and TANF implementation were taken in table A1 of CEA (1999). Since we have the dates with the month and we are using annual data, we have given a fraction value for the first year if the waiver of TANF was in effect for only a portion of the year. For example, if a waiver was put in place in March 1995, the *waivers* dummy will take the value of 10/12 for the year 1995. Also, when TANF comes in place, the *waivers* dummy takes the value 0 once again.

³⁶ More specifically, we used Ziliak et al. number for the period 1989 to 1995. These were in constant dollars and were thus converted to nominal. Years 1996 and 1997 come from the Green Book 1998, published by the U.S. House of Representatives, p. 524, Chapter 7. Year 1998 comes from the Green Book 2000, p. 383, Chapter 7. Finally, years 1999 to 2001 were found on the SPDP website. All these, except for the data coming from Ziliak et al., are in current US dollars.

2.2.2 Canada

Recipients

The number of recipients was obtained from the National Council of Welfare (thank you to Ms. Louise Gunville). The numbers for the provincial labor force was extracted from CANSIM³⁷, table 282-0002.

Unemployment rate

Data was extracted from CANSIM, table 282-0002. The unemployment rate is specific for each province.

Benefits

The data used for benefits was taken from the annual publication entitled *Welfare Incomes: 1989*, published by the National Council of Welfare.

Minimum Wage

Data was found on the Human Resources and Development Canada website. For each year, we used the minimum wage in effect for the most part of the year, then transformed it into an annual minimum wage in order to make it comparable with the benefits.

Reform Dates

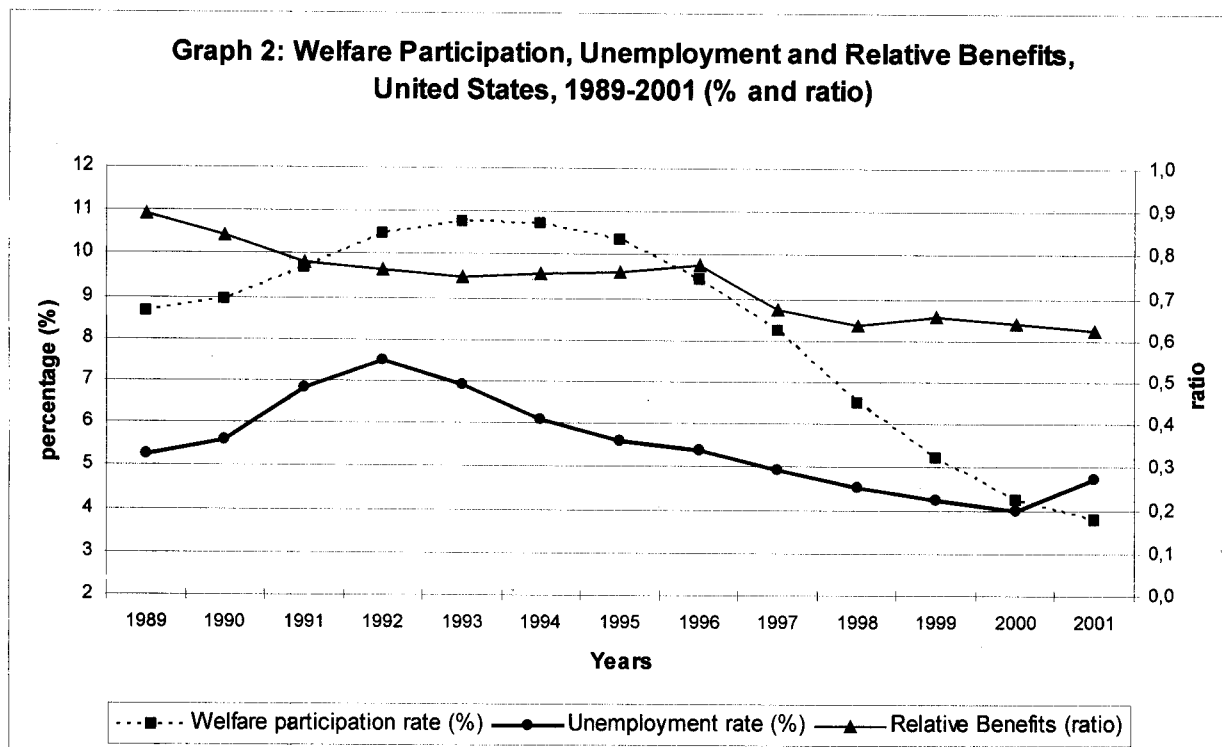
The reform was applied to all provinces at the same time, in the fiscal year 1996. The dummy *reform* thus takes the value one at the same time for all provinces. This will raise issues of collinearity with the year dummies, which we will address in more details later.

³⁷ CANSIM is Statistic Canada's main database.

2.3 Graphical Analysis

We have produced two graphs that compare the economic variables and the evolution of welfare participation for both countries.

2.3.1 United States

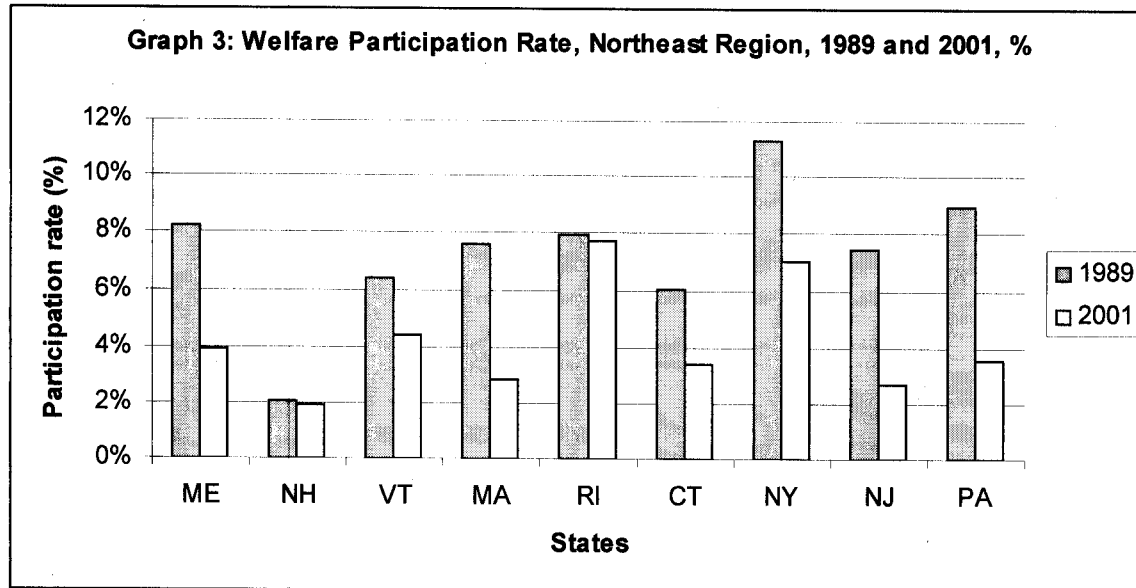


Source: US BLS for unemployment rate and calculations by the authors for the others.

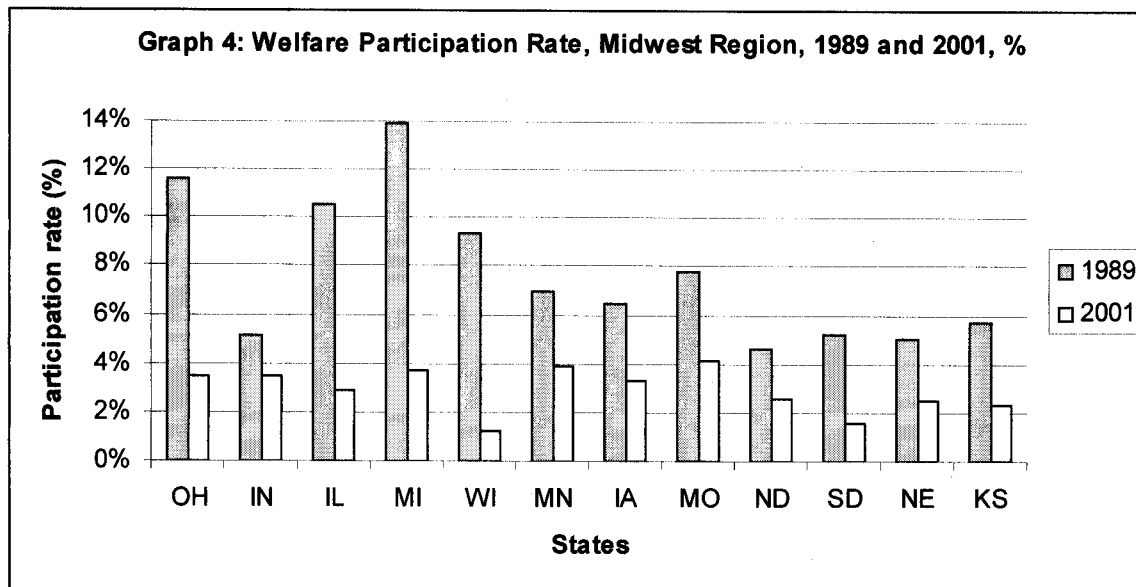
From graph 2, it is quite clear that the welfare participation rate (ratio of number of welfare recipients to labor force) has been declining ever since the introduction of waivers in the beginning of 1990s. It has continued to decline with the introduction of TANF in 1997. On the other hand, the unemployment rate has been at a very low percentage for most of the period. This means that welfare recipients might have had more opportunities to work than in the past. Also, the ratio of benefits to minimum wage has been declining since 1989. Welfare being less and less advantageous than work, even at the minimum wage, recipients might be more prone to go out on the work market.

Both of the economic variables presented here show trends that we interpret as contributing to the decline in caseloads. Further analysis is thus needed to confirm that TANF indeed has had a significant impact on the caseloads, and that the decline in welfare participation rate is not simply due to good performance of the American economy.

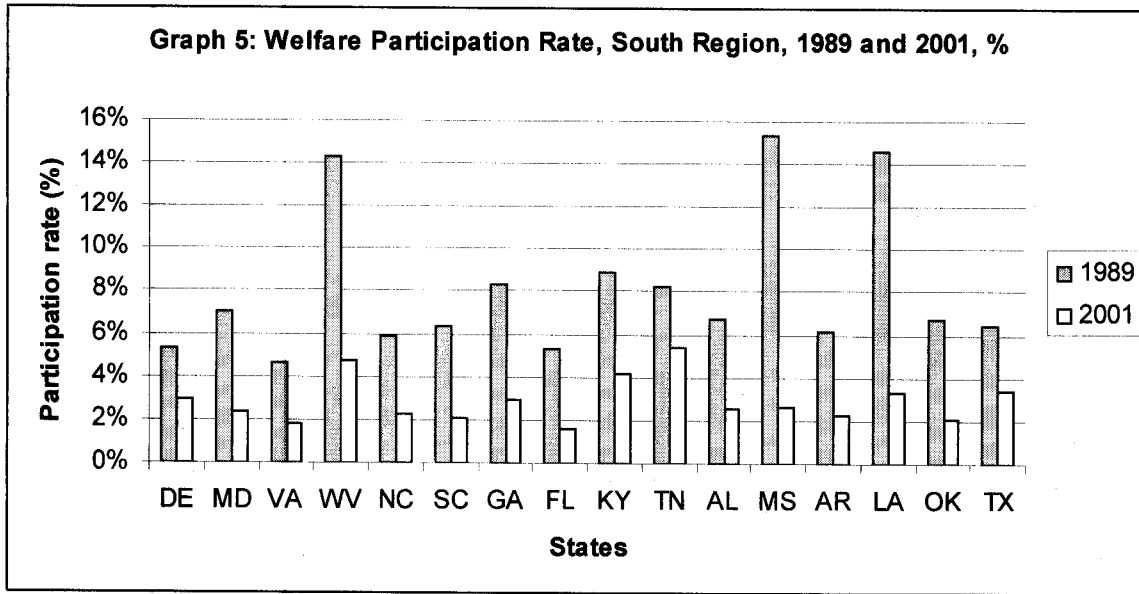
Here are now four graphs (graphs 3 to 6) that show the welfare participation rates for all the states, divided by geographic regions. Interesting geographic trends can be noted.



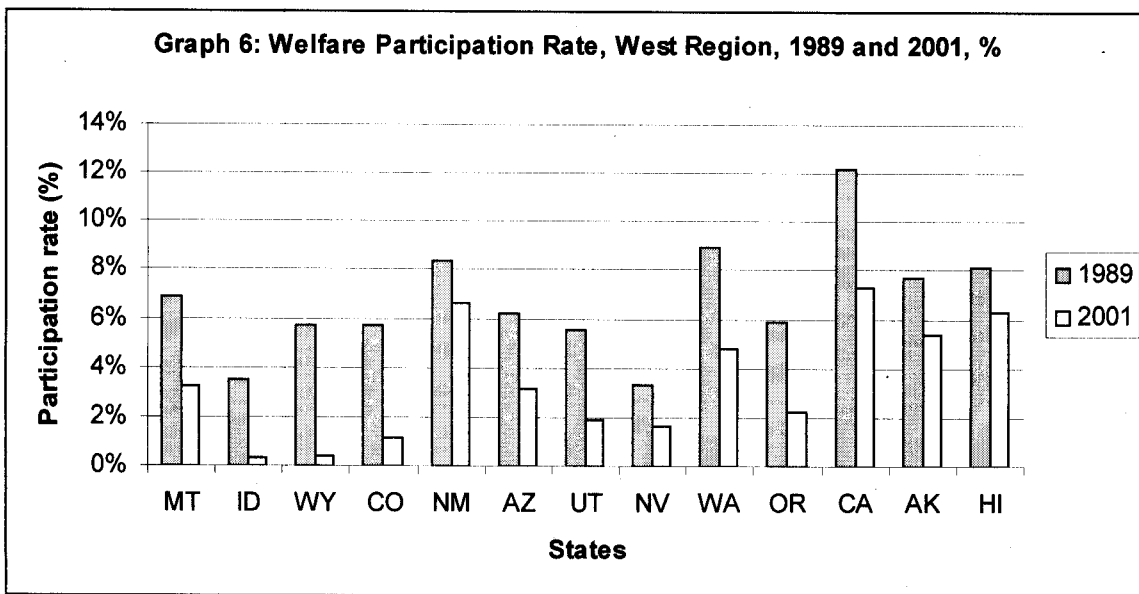
Source: Calculations made by the authors



Source: Calculations made by the authors



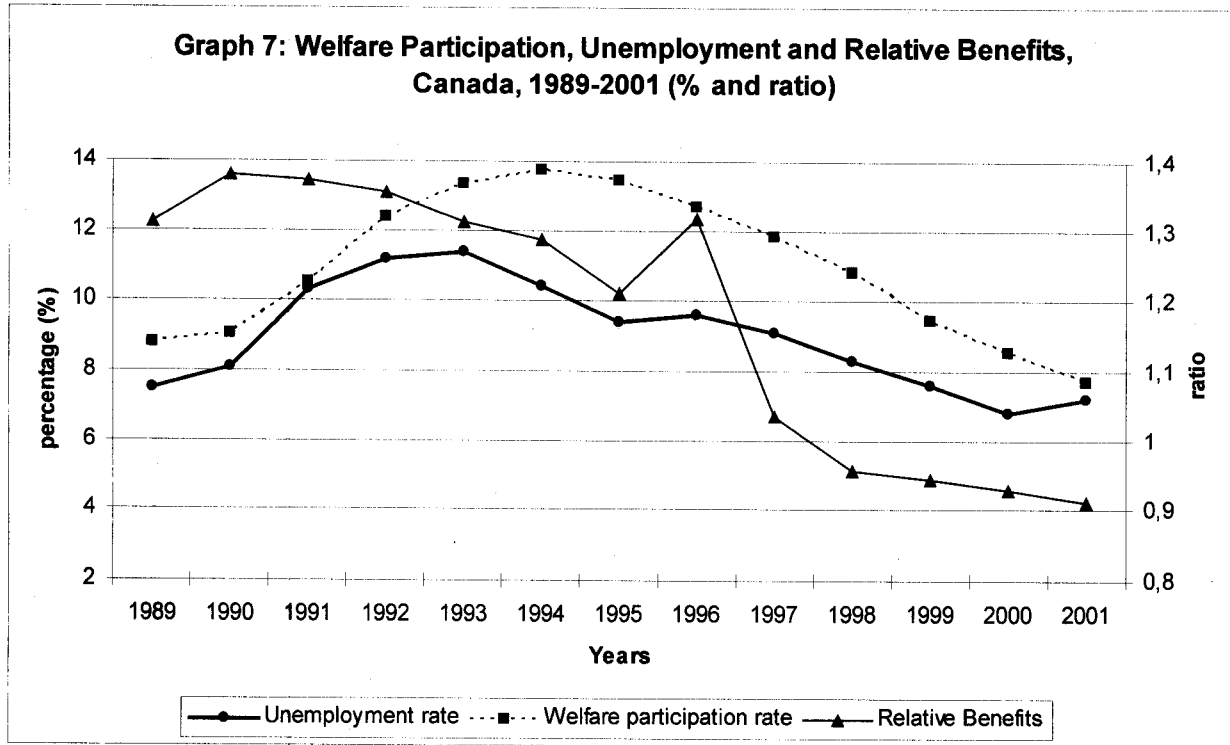
Source: Calculations made by the authors



Source: Calculations made by the authors

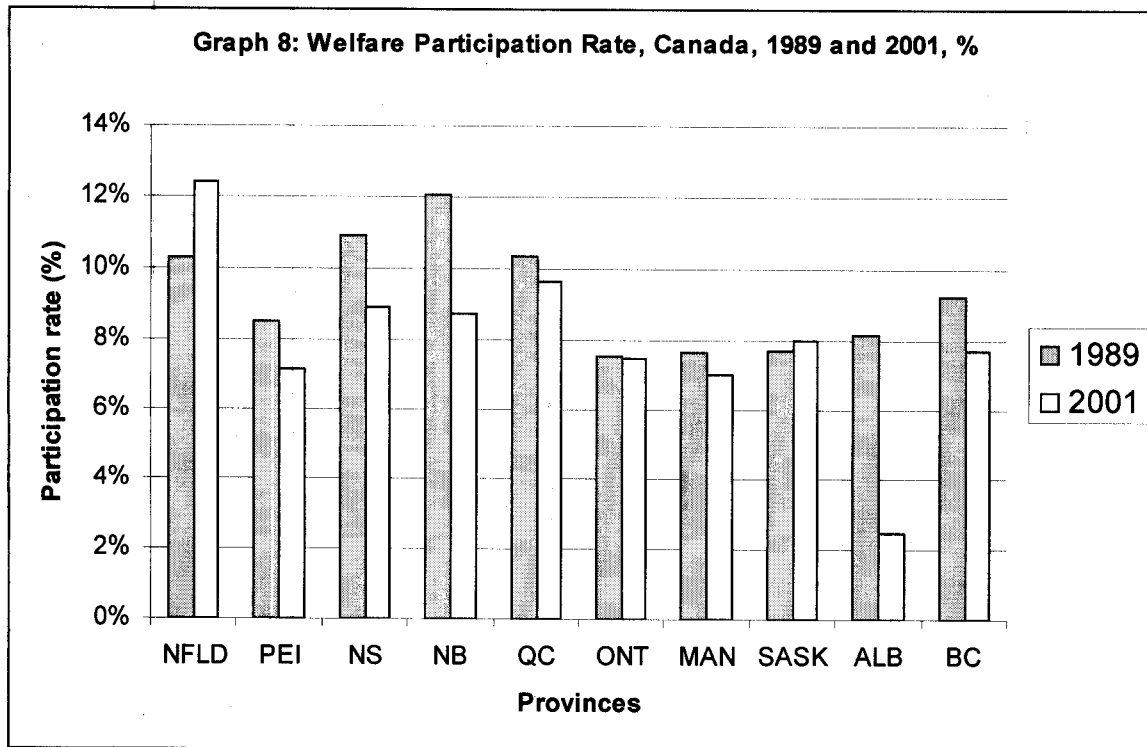
From these graphs, two things stand out clearly. First, the welfare participation rates have decreased in all states. In some states, the decreases were more important, but overall, all states experienced huge drops in the participation rates. The second thing to stand out is that the Northeast region has lower participation rates in all of its states. Also, the states with the biggest participation rates are the ones in the South Region.

2.3.2 Canada



Source: CANSIM and calculations by the authors

As for the United States, welfare participation rates have declined during this past decade. It can be noted though that the decline started after 1994. This might be a sign that the state of the economy had more to do with it than the reform, starting only in 1996. Unemployment raised in the beginning of the period, only to drop after 1993. The argument of the role of the economy might be a good one. Also, the relative benefits have dropped during this time span. It dropped from 1.3 to 0.9. This means that at 1.3, it was more advantageous for a single parent to be on welfare than to work a minimum wage job. At 0.9, it means that welfare brings a little less money. In comparison to the United States, where the ratio is at 0.6 in 2001. It is much less advantageous to be on welfare in the United States than in Canada.



Source: Calculations made by the authors

From graph 8, we can see that the decline was not as universal as it was in the United States. In fact, in Newfoundland and Saskatchewan, welfare participation rates have risen and not declined. In other provinces, the declines are not as dramatic as the ones observed in the United States. This might suggest that we will have stronger reform effects in the United States than in Canada.

3.0 Econometric Analysis

We estimated the equation of the model presented in the previous section. To do so, we used pooling. This is like an ordinary sample of i individuals. Only here, we observe these i individuals during t time periods. We now have two dimensions. This is a useful method since it enables us to see the effects of a particular event on multiple individuals, which all have different characteristics that are controlled for. In our particular case, we will have two sets of observations. First, we have 50 states during 12 years for the United States, and 10 provinces during 12 years for Canada. We have estimated our equations with the command `xtgls` in Stata, which estimates the coefficients by general least squares.

3.1 United States

We have estimated the equation presented earlier for the United States:

$$\ln C_{st} = \beta_1 \text{unemp}_{st} + \beta_2 \text{unemplag}_{st} + \beta_3 \text{lnratio}_{st} + \beta_4 \text{TANF}_{st} + \beta_5 \text{waiver}_{st} + \alpha_t + \alpha_s + \text{trend} * \alpha_s + \mu_{st}$$

In table 1 are presented the results for the coefficients of the four most interesting variables, waiver, TANF, lnratio and unemp. The complete results for all dummies (state and years fixed-effects, and state-specific trends) are presented in Annex 2. The state we used as a base is California and the base year is 1989.

Table 1: Partial results of pooling analysis, United States

Inc case	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
waiver	-.0526521	.0280389	-1.88	0.060	-.1076073	.0023032
tanf	-.1492887	.0709446	-2.10	0.035	-.2883375	-.0102399
lnratio	-.0766945	.1196347	-0.64	0.521	-.3111743	.1577852
unemp	-.0097115	.0113048	-0.86	0.390	-.0318684	.0124455
unemplag	.0181032	.010086	1.79	0.073	-.001665	.0378715

Source: Calculations by the authors

3.1.1 Reform variables

By analyzing these results, it is clear that waiver and TANF are significant, with p-value of less than 5%, meaning that the variables are significant at a 5% confidence level. This means that the introduction of waivers had a significant negative effect on caseloads, and that the introduction of TANF has had an even stronger negative significant impact on welfare caseloads. This finding is what we expected. The block grant having many conditions attached to it, the states are obliged to find ways to reduce their caseloads in order to keep funds. This was visible in the graphed data earlier, and is now confirmed with the econometric analysis.

3.1.2 Economic variables

The other variables of interest are *lnratio*, the ratio of benefits to minimum wage, *unemp*, the unemployment rate, and *unemplag*, the one year lagged unemployment rate. These variables are of the good sign, they are positive. This means that when unemployment raises, the number of recipients raises, and that when the benefits are more advantageous than working the minimum wage, the number of recipients raises. Although they are of the good sign, these variables are not significant. They have p-value of more than 0.3, meaning that they are not significant, even at a 30% confidence level. The lowest confidence level usually used to test hypothesis being 10%, we can concluded the economic variables are not significant.

3.1.3 Year fixed-effects

All year coefficients are significant until 1998, which is significant at a 10% confidence level. The remaining years are highly insignificant. Moreover, all significant years have a positive effect. This means that all years bring higher than 1989 welfare recipients level. This is mainly due to the base year. Had we chosen 1994, most years would then probably have negative coefficients. The last two years, 2000 and 2001, have negative coefficients, but these are not significant.

3.1.4 State fixed-effects

The vast majority of the states have significant negative coefficients. This means that most states have lower welfare recipients than California, and that these differences are statistically significant. Louisiana and Wyoming are the only two states that have positive significant coefficients.

3.1.5 State-specific time trends

Most of the coefficients here are negative and significant. There are more differences in these than in the state or year fixed-effects. A negative coefficient here means that the state is experiencing a faster decline in time than California is. This goes well with the previous finding, that most states have smaller welfare populations, they are also reducing faster.

3.1.6 Comparison with previous results

Table 2: Comparison of our results with previous findings

Study	Study period	Independent variable	Waivers contribution to welfare caseloads decline	TANF contribution to welfare caseloads decline
Ziliak et al. (1997)	1987-1996	natural log of per capita welfare cases	6%	-
CEA (1999)	1976-1998	natural log of per capita welfare recipients	9%	18%
Our results	1989-2000	natural log of per capita welfare cases	5%	15%

Ziliak et al. (1997) have found that only about 6% of the decline of welfare caseloads between 1993 and 1996 was attributable to the state waivers³⁸. This study found that *had it not been for the influence of economic factors, welfare reform would not have led to any decrease in aggregate caseloads*³⁹. As for the CEA (1999) report, it found that *TANF has accounted roughly for one-third of the reduction from 1996 to 1998*⁴⁰ (18% of which is attributable to TANF and the rest to state waivers from AFDC rules).

The result from our study of the American reform is that about 15% of the decline in caseloads is attributable to TANF, and another 5% to AFDC waivers, for a total of about 20% of the decline attributable to the welfare reform. These results are comparable to the results obtained by the CEA in 1999. By the comparison of our results with those of the Council of Economic Advisers, we see that they are very close.

³⁸ This study was only for the waivers' impact on caseloads, as TANF was not yet in effect at the time of the study.

³⁹ Ziliak et al. (1997), p. 3.

⁴⁰ CEA (1999), p. 2.

3.2 Canada

We have estimated the equation presented earlier for Canada:

$$\ln C_{st} = \beta_1 \text{unemp}_{st} + \beta_2 \text{unemplag}_{st} + \beta_3 \lnratio_{st} + \beta_4 \ln \text{reforme}_{st} + \alpha_t + \alpha_s + \text{trend}^* \alpha_s + \mu_{st}$$

Unfortunately, since the reform in Canada has occurred in the same time period for all the provinces, this created co linearity in the model. In order to surpass this problem, we estimated the following regression:

$$\ln C_{st} = \beta_1 \text{unemp}_{st} + \beta_2 \text{unemplag}_{st} + \beta_3 \lnratio_{st} + \alpha_t + \alpha_s + \text{trend}^* \alpha_s + \mu_{st}$$

We then used the coefficients of the year fixed-effects to determine if an effect for the reform could be found significant.

Table 3: Partial results of pooling analysis, Canada

lnrec	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
lnratio	.1596193	.096134	1.66	0.097	-.0287998	.3480384
unemp	.0474008	.0087661	5.41	0.000	.0302195	.064582
a90	-.0029961	.0281595	-0.11	0.915	-.0581878	.0521956
a91	.0327062	.0344014	0.95	0.342	-.0347193	.1001317
a92	.1214709	.0408492	2.97	0.003	.0414079	.2015339
a93	.200269	.0443009	4.52	0.000	.1134409	.2870972
a94	.2453218	.0434015	5.65	0.000	.1602565	.3303871
a95	.2856889	.0449495	6.36	0.000	.1975895	.3737883
a96	.2258633	.0438779	5.15	0.000	.1398643	.3118624
a97	.2194554	.055412	3.96	0.000	.1108499	.328061
a98	.1862314	.0623512	2.99	0.003	.0640253	.3084374
a99	.1279218	.0678381	1.89	0.059	-.0050384	.2608821
a00	.087747	.0728648	1.20	0.228	-.0550654	.2305593
a01	.0050469	.0783872	0.06	0.949	-.1485893	.1586831

Source: Calculations made by the authors

After estimating this equation, we tested several linear combinations of the year coefficients. This permits us to see if there is a significant difference between the time periods. We had three different combinations. The first tested whether the average of the year effects pre-reform was significantly different for the average of the ones from post-reform period. The second tested whether the coefficient for 1995 (pre-reform) was significantly different from the one for 1996 (post-reform). Finally, we tested the difference between the coefficient of 1995 and the one of 1997, to leave one year for the economy to adjust. Table 3 presents the results of these tests.

Table 4: Different linear combination tests and their results, Canada

(1) = (a90+ a91+ a92+ a93+ a94+ a95)/6-(a96+ a97+ a98+ a99+ a00+ a01)/6						
lnrec	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.0050325	.0412923	0.12	0.903	-.075899	.0859639

(1) = a95- a96						
lnrec	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.0598256	.0313577	1.91	0.056	-.0016343	.1212855

(1) = a95- a97						
lnrec	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.0662335	.0305847	2.17	0.030	.0062886	.1261784

Source: Calculations by the authors

We can see that the first test (average) is strongly not significant. The other two tests are significant at 10% (1995 vs 1996) and 5% (1995 vs 1997) confidence levels. This can be a way to determine that the reform has had an impact, but it is not very strong because the 1995 vs 1996 test is only significant at the 10% level.

We can see that all tests of the model cannot bring a very clear conclusion that the Canadian welfare reform has a significant impact on the welfare caseloads. This might be because reform actually began with a ceiling to the CAP payments introduced in 1990 for the three richest provinces, which are also three of the four most populous in Canada. These are Alberta, British Columbia and Ontario. These provinces have coped with a 5% maximum increase of their CAP transfers from the federal between 1990 and 1995. This has been known as the "CAP on CAP". This might mean that a clearer effect might be found should we take these changes in the CAP program as part of our reform variable.

We estimated the first equation presented in this section, where the variable reform now takes the value of one for the years 1990 to 1995 for the three above-mentioned provinces. Here are the results obtained.

Table 5: Partial results of pooling analysis, Regression 2, Canada

lnrec	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
refcap	.1205497	.0286319	4.21	0.000	.0644323	.1766671
lnratio	.1000589	.0912845	1.10	0.273	-.0788555	.2789733
unemp	.0457006	.0082332	5.55	0.000	.0295637	.0618375

Source: Calculations made by the authors

From this second regression, we can see that the variable of refcap, which contains the reform of 1996 and the previous "CAP on CAP" is statistically significant. The problem is that it is not of the right sign. The variable has a positive sign, meaning that it induced an augmentation of welfare recipients. This is a bizarre finding.

3.2.1 Reform variable

In the case of Canada, it is much less clear that the reform of welfare has had a significant impact. We do not have a clear result that tells us that the impact is negative and significant, as we are led to believe by economic logic. Perhaps this is simply because the reform has not led provinces to cut dramatically. This will be discussed further.

3.2.2 Economic variables

In the first model, both lnratio and unemp are significant. The coefficient for relative benefits is positive and significant at a 10% confidence level, and that for unemployment is positive and significant, even at a 1% confidence level. In the second model, only unemp remains significant and positive. This means that economic factors are quite important in the Canadian model.

3.2.3 Year fixed-effects

Years between 1992 and 1999 are significant for both models. The coefficients are positive, which mean that they have bigger caseloads than in 1989. Once again, this is due to the choice of the base year.

3.2.4 Province fixed-effects

There are some provinces with negative significant fixed-effects. This means that these provinces have less welfare recipients than Ontario. All provinces with positive effects are not significant coefficients.

3.2.5 Province-specific trends

The results are the same as for province fixed-effects.

3.3 Discussion

From these results, we can conclude one thing. The effects of the reform in the United States is more significant than the one in Canada. In the United States, where the reform variables were significant, the economic variables played no significant role. On the contrary, in Canada, where the reform variables were not as clearly significant, the economic variables played a significant role.

There is another factor of importance to be considered. When we analyze it, the American welfare system seems like a more of a last resort help than in Canada. Welfare in Canada also is supposed to be that kind of help, but the target population of the American program is single parents with at least one child. These people may be much less responsive to economic incentives and much more to welfare reforms where new conditions are imposed.

There also seems to be less dependence on the system in the United States. This might mean that reform in Canada cannot put these dependent recipients back in the labor force, or that once again, since the people on welfare in the United States are recipients only when things turn really bad for them, that even if the benefits or the unemployment rate go down, they will not be able to leave welfare unless they are cut off - which might happen with the reform.

In brief, the main finding from our model and estimations is that the American reform has led to a significant decline in caseloads, while the Canadian reform has not.

4.0 Conclusion

The goal of our study was to compare the effects of the welfare reforms in the United States and Canada. We have found that the conditions imposed to subnational entities were very strong in the United States, and almost inexistent for Canada. This led to the question of comparing the effects of imposing a conditional versus an unconditional block grant.

The results of our study tend to show that a federal government looking to attain certain specific objectives would be better off by financing the lower entities by a conditional block grant. The argument that the lower entity knows better where to use the money because it is closer to its citizens does not mean that the money will be spent the way the federal government would want. While this argument may be true in the sense that the state/provincial governments may know what is better for their citizens, a federal government with clear objectives in mind should use conditional grants in order to attain these goals more efficiently.

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Annex 1 -- Possible penalties imposed to a non-complying state

Table A-1: Possible penalties imposed to a non-complying state

Failure	Penalty
Satisfy with work requirements	A penalty of 5 percent accrues in the first year. The penalty amount increases 2 percent per year for each consecutive failure. The penalty is adjusted based on degree of failure. The maximum penalty is 21 percent.
Comply with five-year limit on assistance	Failure to comply results in a 5 percent penalty.
Meet the state's basic MEO requirements	The penalty is based on the amount of the state's under-spending. The state also loses its Welfare-to-Work funds.
Meet the state's Contingency Fund MOE requirement	The penalty is a reduction of the State's Federal TANF grant by the amount of Contingency Funds received and not remitted.
Reduce recipient grants for refusing to participate in work activities without good cause	A penalty of between 1 percent and 5 percent is assessed based on the degree of noncompliance.
Maintain assistance when a single custodial parent with a child under six cannot obtain child care	Failure to comply results in a penalty of 5 percent.
Submit required data reports	A penalty of 4 percent accrues.
Comply with paternity establishment and child support enforcement requirements	Failure to comply results in a penalty of up to 5 percent.
Participate in the Income and Eligibility Verification System	A penalty of up to 2 percent accrues.
Repay a federal loan on time	The penalty will be based on the amount unpaid.
Use funds appropriately	Misuse of funds can result in states being penalized for the amount misused. If this misuse is found to be intentional, an additional penalty of 5 percent will be assessed.
Replace federal penalty reductions with additional state funds	This provision results in a penalty of up to 2 percent and requires states to contribute state funds to make up for any reductions in federal funds due to penalties.

Source: ACF Fact sheet on welfare (2002)

Annex 2 – Results United States

. xtgls lncase waiver tanf lnratio unemp unemplag a90 a91 a92 a93 a94 a95 a96 a97 a98 a99 a00
a01 al ak az ar co ct de fl ga hi id il ind ia ks ky la me md ma mi mn ms mo mt ne nv nh nj nm ny
nc nd oh ok or pa ri sc sd tn tx ut vt wa wv wi wy alt akt azt art cot ctt det flt gat hit idt
ilt indt iat kst kyt lat met mdt mat mit mnt mst mot mtt net nvt nht njt nmt nyt nct ndt oht okt
ort pat rit sct sdt tnt txt utt vtt vat wat wvt wit wyt

Cross-sectional time-series FGLS regression

Coefficients: generalized least squares
Panels: homoskedastic
Correlation: no autocorrelation

Estimated covariances	=	1	Number of obs	=	650
Estimated autocorrelations	=	0	Number of groups	=	50
Estimated coefficients	=	116	No. of time periods	=	13
Log likelihood	=	365.0553	Wald chi2(115)	=	9871.25
			Prob > chi2	=	0.0000

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
waiver	-.0526521	.0280389	-1.88	0.060	-.1076073	.0023032
tanf	-.1492887	.0709446	-2.10	0.035	-.2883375	-.0102399
lnratio	-.0766945	.1196347	-0.64	0.521	-.3111743	.1577852
unemp	-.0097115	.0113048	-0.86	0.390	-.0318684	.0124455
unemplag	.0181032	.010086	1.79	0.073	-.001665	.0378715
a90	.0850945	.0323706	2.63	0.009	.0216493	.1485397
a91	.2181639	.0460253	4.74	0.000	.1279559	.3083718
a92	.3195341	.0539498	5.92	0.000	.2137944	.4252737
a93	.3739157	.0616967	6.06	0.000	.2529925	.494839
a94	.4099799	.0680607	6.02	0.000	.2765834	.5433764
a95	.42706	.076569	5.58	0.000	.2769874	.5771325
a96	.4030966	.0858628	4.69	0.000	.2348085	.5713846
a97	.3701755	.1156949	3.20	0.001	.1434177	.5969333
a98	.1206058	.1330979	0.91	0.365	-.1402613	.381473
a99	.0158376	.1407131	0.11	0.910	-.2599549	.2916302
a00	-.1536677	.1497876	-1.03	0.305	-.447246	.1399107
a01	-.177168	.1582697	-1.12	0.263	-.4873709	.1330348
al	-.6347445	.2308756	-2.75	0.006	-1.087252	-.1822366
ak	-.4045447	.1170597	-3.46	0.001	-.6339776	-.1751118
az	-.4952253	.1484218	-3.34	0.001	-.7861266	-.204324
ar	-.7461668	.1815961	-4.11	0.000	-1.102089	-.3902449
co	-.5528982	.1372917	-4.03	0.000	-.8219849	-.2838115
ct	-.5757234	.1171838	-4.91	0.000	-.8053995	-.3460474
de	-.6324278	.1379656	-4.58	0.000	-.9028354	-.3620201
fl	-.4570107	.1503778	-3.04	0.002	-.7517457	-.1622757
ga	-.2095021	.1541125	-1.36	0.174	-.5115569	.0925528
hi	-.6403667	.1245847	-5.14	0.000	-.8845482	-.3961851
id	-.7952402	.14235	-5.59	0.000	-1.074241	-.5162393
il	-.1354787	.1360758	-1.00	0.319	-.4021823	.1312249
ind	-.8502234	.1513641	-5.62	0.000	-1.146892	-.5535552
ia	-.6806591	.1310015	-5.20	0.000	-.9374172	-.423901
ks	-.7286271	.1318154	-5.53	0.000	-.9869804	-.4702737
ky	-.1934485	.1762982	-1.10	0.273	-.5389866	.1520897
la	-.0660802	.1910523	-0.35	0.729	-.4405358	.3083754
me	-.3073203	.1271227	-2.42	0.016	-.5564762	-.0581645
md	-.4288723	.1330675	-3.22	0.001	-.6896799	-.1680648
ma	-.3005386	.1160651	-2.59	0.010	-.528022	-.0730552
mi	.1781316	.1236245	1.44	0.150	-.064168	.4204312
mn	-.6706022	.1217175	-5.51	0.000	-.909164	-.4320403
ms	.2050046	.2485625	0.82	0.410	-.2821689	.6921782
mo	-.5255234	.151037	-3.48	0.001	-.8215505	-.2294963
mt	-.5610389	.1376327	-4.08	0.000	-.830794	-.2912837
ne	-.9882959	.1410782	-7.01	0.000	-1.264804	-.7117877
nv	-1.158988	.1410842	-8.21	0.000	-1.435508	-.8824679
nh	-1.376782	.1213953	-11.34	0.000	-1.614713	-1.138852
nj	-.4160203	.1306303	-3.18	0.001	-.672051	-.1599897
nm	-.5206597	.1598436	-3.26	0.001	-.8339474	-.2073721
ny	-.1330333	.1170029	-1.14	0.256	-.3623548	.0962882
nc	-.4191536	.1570221	-2.67	0.008	-.7269112	-.111396

nd		-.923587	.1337984	-6.90	0.000	-1.185827	-.661347
oh		.006831	.1438957	0.05	0.962	-.2751993	.2888613
ok		-.4089532	.1389103	-2.94	0.003	-.6812123	-.136694
or		-.5515627	.1255515	-4.39	0.000	-.7976392	-.3054863
pa		-.3401813	.1318572	-2.58	0.010	-.5986165	-.081746
ri		-.4197553	.120205	-3.49	0.000	-.6553528	-.1841578
sc		-.5312426	.179183	-2.96	0.003	-.8824347	-.1800504
sd		-.759606	.1348122	-5.63	0.000	-1.023833	-.495379
tn		-.367613	.1906981	-1.93	0.054	-.7413745	.0061485
tx		-.6216476	.1938581	-3.21	0.001	-1.001602	-.2416927
ut		-.7611708	.1338111	-5.69	0.000	-1.023436	-.498906
vt		-.5299982	.1170272	-4.53	0.000	-.7593672	-.3006291
va		-.886072	.1515814	-5.85	0.000	-1.183166	-.5889779
wa		-.3338897	.1203692	-2.77	0.006	-.569809	-.0979703
wv		.1417444	.1771143	0.80	0.424	-.2054496	.4889384
wi		-.0262963	.1239085	-0.21	0.832	-.2691525	.2165599
wy		-.0874423	.1349167	-0.65	0.517	-.3518742	.1769896
alt		-.059958	.0155191	-3.86	0.000	-.090375	-.0295411
akt		.0080007	.0148433	0.54	0.590	-.0210916	.037093
azt		-.0271651	.0149738	-1.81	0.070	-.0565132	.0021831
art		-.0472606	.0147287	-3.21	0.001	-.0761284	-.0183928
cot		-.0985061	.014726	-6.69	0.000	-.1273685	-.0696437
ctt		.0041665	.0145762	0.29	0.775	-.0244023	.0327354
det		-.0149156	.0144958	-1.03	0.304	-.0433269	.0134957
flt		-.05021	.0147308	-3.41	0.001	-.0790819	-.0213382
gat		-.0493901	.014661	-3.37	0.001	-.0781252	-.0206551
hit		.0343538	.0150573	2.28	0.023	.004842	.0638656
idt		-.1458823	.0145158	-10.05	0.000	-.1743328	-.1174318
ilt		-.0503397	.0147864	-3.40	0.001	-.0793205	-.021359
indt		-.0228265	.0146969	-1.55	0.120	-.0516319	.005979
iat		-.0232611	.0147112	-1.58	0.114	-.0520944	.0055722
kst		-.0474418	.0147407	-3.22	0.001	-.0763329	-.0185506
kyt		-.0263614	.0150929	-1.75	0.081	-.055943	.0032203
lat		-.0284228	.0147979	-1.92	0.055	-.0574261	.0005806
met		-.0299522	.0146997	-2.04	0.042	-.058763	-.0011414
mdt		-.0494432	.014675	-3.37	0.001	-.0782058	-.0206807
mat		-.0404377	.0146502	-2.76	0.006	-.0691516	-.0117239
mit		-.0722448	.0149906	-4.82	0.000	-.1016258	-.0428637
mnt		-.0168637	.0147187	-1.15	0.252	-.0457119	.0119845
mst		-.1003417	.0155964	-6.43	0.000	-.1309101	-.0697733
mot		-.0151276	.0147039	-1.03	0.304	-.0439466	.0136915
mtt		-.0436781	.0152983	-2.86	0.004	-.0736621	-.013694
net		-.0128353	.0147021	-0.87	0.383	-.041651	.0159803
nvt		-.0227111	.0146926	-1.55	0.122	-.0515081	.0060858
nht		.0090646	.0150286	0.60	0.546	-.0203909	.0385201
njt		-.040931	.0146295	-2.80	0.005	-.0696043	-.0122577
nm		.0216523	.0162927	1.33	0.184	-.0102809	.0535854
nyt		.0009743	.0145986	0.07	0.947	-.0276383	.029587
nct		-.0387516	.0146543	-2.64	0.008	-.0674735	-.0100297
ndt		-.0398386	.0149735	-2.66	0.008	-.0691861	-.0104911
oht		-.0513517	.014881	-3.45	0.001	-.0805179	-.0221855
okt		-.0599583	.0146034	-4.11	0.000	-.0885805	-.0313361
ort		-.05874	.0145553	-4.04	0.000	-.0872679	-.0302121
pat		-.0321013	.0147045	-2.18	0.029	-.0609217	-.003281
rit		.0283997	.0146914	1.93	0.053	-.000395	.0571943
sct		-.0612837	.0145771	-4.20	0.000	-.0898542	-.0327132
sdt		-.0600678	.0148637	-4.04	0.000	-.0892	-.0309355
tnt		-.019228	.0147025	-1.31	0.191	-.0480444	.0095883
txt		-.0318855	.0148294	-2.15	0.032	-.0609507	-.0028204
utt		-.0590539	.0149629	-3.95	0.000	-.0883808	-.0297271
vtt		-.0039462	.014501	-0.27	0.786	-.0323676	.0244752
vat		-.0305015	.0148233	-2.06	0.040	-.0595545	-.0014484
wat		-.0151142	.0145993	-1.04	0.301	-.0437283	.0135
wvt		-.0688851	.0153212	-4.50	0.000	-.0989142	-.038856
wit		-.1400697	.0153196	-9.14	0.000	-.1700956	-.1100437
wyt		-.1832551	.014554	-12.59	0.000	-.2117803	-.1547299
_cons		-3.257525	.106617	-30.55	0.000	-3.466491	-3.04856

Annex 3 – Results Canada

. xtgls lncase lnratio unemp unemplag a90 a91 a92 a93 a94 a95 a96 a97 a98 a99 a00 a01 nfld pei ns
nb qc man sask alb bc nfldt peit nst nbt qct mant saskt albt bct

Cross-sectional time-series FGLS regression

Coefficients: generalized least squares
Panels: homoskedastic
Correlation: no autocorrelation

Estimated covariances	=	1	Number of obs	=	130
Estimated autocorrelations	=	0	Number of groups	=	10
Estimated coefficients	=	34	No. of time periods	=	13
Log likelihood	=	188.8051	Wald chi2(33)	=	4861.31
			Prob > chi2	=	0.0000

lncase	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
lnratio	.0990869	.088467	1.12	0.263	-.0743051	.272479
unemp	.0265758	.0104366	2.55	0.011	.0061204	.0470313
unemplag	.0201586	.00973	2.07	0.038	.0010882	.039229
a90	.0089609	.0260966	0.34	0.731	-.0421876	.0601094
a91	.0644816	.0327412	1.97	0.049	.00031	.1286532
a92	.1373086	.0375658	3.66	0.000	.0636811	.2109361
a93	.2109295	.0419626	5.03	0.000	.1286844	.2931746
a94	.2356876	.0434596	5.42	0.000	.1505083	.3208669
a95	.2535931	.0454706	5.58	0.000	.1644725	.3427138
a96	.2199896	.0408842	5.38	0.000	.139858	.3001212
a97	.1818463	.0523764	3.47	0.001	.0791904	.2845021
a98	.138632	.0593912	2.33	0.020	.0222274	.2550366
a99	.1056488	.0636412	1.66	0.097	-.0190857	.2303832
a00	.0698721	.0684521	1.02	0.307	-.0642917	.2040358
a01	.0196906	.0722587	0.27	0.785	-.1219339	.1613151
nlfd	-.607415	.0984737	-6.17	0.000	-.80042	-.41441
pei	-.488011	.0853249	-5.72	0.000	-.6552447	-.3207772
ns	-.074731	.0612317	-1.22	0.222	-.194743	.045281
nb	-.0026056	.0779209	-0.03	0.973	-.1553277	.1501165
qc	.0165775	.0647788	0.26	0.798	-.1103866	.1435416
man	-.139689	.0587715	-2.38	0.017	-.2548791	-.0244989
sask	-.4001877	.0501912	-7.97	0.000	-.4985607	-.3018148
alb	-.0997572	.0520857	-1.92	0.055	-.2018433	.002329
bc	-.0448379	.0533892	-0.84	0.401	-.1494788	.0598029
nlfdt	.0328495	.0068991	4.76	0.000	.0193275	.0463715
peit	-.0002099	.0063817	-0.03	0.974	-.0127177	.0122979
nst	-.0062674	.0064087	-0.98	0.328	-.0188282	.0062934
nbt	-.0206664	.0071682	-2.88	0.004	-.0347157	-.006617
qct	.0102515	.0060573	1.69	0.091	-.0016205	.0221235
mant	-.0018393	.0070788	-0.26	0.795	-.0157135	.0120348
saskt	.0280896	.0062365	4.50	0.000	.0158664	.0403128
albt	-.1005911	.0065404	-15.38	0.000	-.11341	-.0877722
bct	.0013446	.0062337	0.22	0.829	-.0108732	.0135625
_cons	-3.345231	.0745775	-44.86	0.000	-3.491401	-3.199062

. lincom (a90+ a91+ a92+ a93+ a94+ a95)/6-(a96+ a97+ a98+ a99+ a00+ a01)/6

(1) .1666667 a90 + .1666667 a91 + .1666667 a92 + .1666667 a93 + .1666667 a94 + .1666667
a95 - .1666667 a96 - .1666667 a97 - .1666667 a98 - .1666667 a99 - .1666667 a00 - .1666667
a01 = 0.0

lncase	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.0292137	.0383109	0.76	0.446	-.0458742	.1043016

. lincom (a90+ a91+ a92+ a93+ a94+ a95)/6-(a97+ a98+ a99+ a00+ a01)/5

(1) .1666667 a90 + .1666667 a91 + .1666667 a92 + .1666667 a93 + .1666667 a94 + .1666667 a95 - .2 a97 - .2 a98 - .2 a99 - .2 a00 - .2 a01 = 0.0

lncase	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.0486889	.0440129	1.11	0.269	-.0375748	.1349527

. lincom a95- a96

(1) a95 - a96 = 0.0

lncase	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.0336036	.0313491	1.07	0.284	-.0278396	.0950467

. lincom a95- a97

(1) a95 - a97 = 0.0

lncase	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
(1)	.0717469	.0289287	2.48	0.013	.0150477	.128446

2nd Reform variable

. xtgls lncase refcap lnratio unemp unemplag a90 a91 a92 a93 a94 a95 a96 a97 a98 a99 a00 a01 nfld
pei ns nb qc man sask alb bc nfldt peit nst nbt qct mant saskt albt bct

Cross-sectional time-series FGLS regression

Coefficients: generalized least squares
Panels: homoskedastic
Correlation: no autocorrelation

Estimated covariances	=	1	Number of obs	=	130
Estimated autocorrelations	=	0	Number of groups	=	10
Estimated coefficients	=	35	No. of time periods	=	13
Log likelihood	=	199.0509	Wald chi2(34)	=	5713.47
			Prob > chi2	=	0.0000

lncase	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
refcap	.1237778	.0262734	4.71	0.000	.0722828 .1752728
lnratio	.035165	.0828804	0.42	0.671	-.1272777 .1976076
unemp	.020139	.0097419	2.07	0.039	.0010451 .0392329
unemplag	.0270418	.0091105	2.97	0.003	.0091856 .0448981
a90	-.0180238	.0247897	-0.73	0.467	-.0666107 .030563
a91	.0480161	.030461	1.58	0.115	-.0116864 .1077186
a92	.1228703	.0348537	3.53	0.000	.0545583 .1911824
a93	.1950109	.0389292	5.01	0.000	.118711 .2713108
a94	.2191041	.0403199	5.43	0.000	.1400786 .2981295
a95	.2356168	.0421973	5.58	0.000	.1529116 .3183221
a96	.1407743	.041358	3.40	0.001	.0597141 .2218345
a97	.0899119	.0521923	1.72	0.085	-.0123831 .1922069
a98	.0444465	.0584175	0.76	0.447	-.0700497 .1589426
a99	.0166729	.0617758	0.27	0.787	-.1044054 .1377511
a00	-.0166863	.0658783	-0.25	0.800	-.1458053 .1124327
a01	-.0554401	.0686601	-0.81	0.419	-.1900114 .0791312
nlfd	-.4940967	.0941355	-5.25	0.000	-.6785989 -.3095945
pei	-.3686825	.0828263	-4.45	0.000	-.531019 -.2063459
ns	.0374169	.061394	0.61	0.542	-.0829131 .157747
nb	.084984	.0743766	1.14	0.253	-.0607915 .2307595
qc	.1204053	.0637969	1.89	0.059	-.0046344 .2454449
man	-.0415162	.0581775	-0.71	0.475	-.155542 .0725095
sask	-.2890493	.0520413	-5.55	0.000	-.3910484 -.1870501
alb	-.1204996	.0483392	-2.49	0.013	-.2152427 -.0257565
bc	-.0661719	.0495503	-1.34	0.182	-.1632887 .0309448
nlfdt	.0253118	.0065739	3.85	0.000	.0124271 .0381965
peit	-.009313	.0062065	-1.50	0.133	-.0214774 .0028514
nst	-.0144684	.0061735	-2.34	0.019	-.0265682 -.0023686
nbt	-.0272629	.0067713	-4.03	0.000	-.0405344 -.0139915
qct	.0008803	.0059411	0.15	0.882	-.010764 .0125247
mant	-.0090795	.0067204	-1.35	0.177	-.0222512 .0040922
saskt	.0195205	.006044	3.23	0.001	.0076745 .0313665
albt	-.0985956	.0060595	-16.27	0.000	-.110472 -.0867191
bct	.0030488	.0057726	0.53	0.597	-.0082653 .014363
_cons	-3.399031	.069865	-48.65	0.000	-3.535963 -3.262098