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Dispensing with NAFTA Rules of Origin? Some Policy Options for Canada

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Abstract

Increased market access from Free Trade Agreements (FTAs) promised by policy makers is often diluted by preferential rules of origin (ROO). This paper discusses two policy options -- one direct, and one indirect -- with regard to limiting the impact of NAFTA ROO on trade, and illustrates the impact on GDP and welfare of these options using a computable general equilibrium methodology. The first (direct) option, moving toward a North American Customs Union (CU) instead of the current NAFTA, would basically eliminate the need for preferential ROO among members of the CU. The second (indirect) policy option is to pursue multilateral trade negotiations and reduce MFN tariffs towards zero. In this context, NAFTA ROO would lack both relevance and impact, even if they remained "on the books", because tariff preference utilization among NAFTA members would virtually disappear. The current stalemate at the WTO Doha round suggests that a North American CU remains a serious policy option. However, the erosion of NAFTA tariff preferences since the phase-in of the Uruguay round has also reduced the distortionary impacts of NAFTA ROO, somewhat limiting the gains that a CU could bring.

Keywords: *Trade Agreement; Customs Union; Rules of Origin; Multilateral Free Trade Computable General Equilibrium Modeling.*

JEL Codes : C68; D58; F13; F15

Résumé

L'accès accru des marchés, résultant des accords de libre-échange (ALE), et promit par les politiciens, est souvent dilué par les règles d'origine préférentielles (RO). Ce papier envisage deux options politiques – une directe, et une indirecte – qui pourraient diminuer l'impact négatifs des RO sur le commerce, et illustre les impacts économiques de ces deux options sur le PIB et le bien-être économique en utilisant une méthodologie d'équilibre général calculable. La première option, adopter une union douanière nord américaine (UD) plutôt que l'ALENA actuel, éliminerait les RO préférentielles entre pays membres de l'UD. La seconde option est de poursuivre les négociations multilatérales et réduire les tarifs « MFN » à zéro. Dans ce contexte, les RO de l'ALENA perdraient de facto leur pertinence même si elles restaient « inscrites dans les annexes de l'ALENA », puisque l'utilisation des préférences tarifaires entre pays membres de l'ALENA disparaîtrait. L'impasse actuelle de la ronde de Doha suggère qu'une UD nord américaine reste une option sérieuse de politique. Cependant l'érosion des préférences tarifaires depuis la fin de la ronde de l'Uruguay a également réduit les effets distortionaires des RO de l'ALENA, limitant quelque peu les gains qu'une UD puisse apporter.

Classification JEL: C68; D58; F13; F15

1. Introduction

In a recent article, Robert Pastor (2008) ironically refers to the "North American game of Scrabble" which, since 2001, leads political leaders of Canada, Mexico and the U.S. to devise intergovernmental committees, meeting periodically to "spell new acronyms that purport to be initiatives", and, with great abandon, to promptly discard them. Table 1 gives a few of these acronymic initiatives in NAGOS® (The North American Game of Scrabble): NAEC (North American Economic Community), P4P (Partnership for Prosperity), FAST (Free and Secure Trade), PIP (Partners in Protection), C-TPAT (Customs-Trade Partnerships Against Terrorism), IBETS (Integrated Border Enforcement Teams), ACE (Automated Commercial Environment), NACC (North American Competitiveness Council), and SPP (Security and Prosperity Partnership of North America).

Meanwhile, Pastor claims that if you measure progress by examining the growth in trade, the reduction in wait times at the borders, and the public support for integration, all of these initiatives have failed miserably. For him, what is lacking is a North American vision "based on the simple premise that each country benefits from its neighbors' success and each is diminished by their problems or setbacks". Such a vision stimulates "a new consciousness, a new way of thinking about one's neighbors and about the continental agenda [so that] Americans, Canadians, and Mexicans can be nationals and North American at the same time". This vision of North America, according to Pastor, could evolve starting with a customs union (CU) and a common team of customs and border guards to man the borders and the continental perimeters, thereby eliminating the costly and cumbersome rules of origin (ROO) regulations, allowing all legitimate

goods to move seamlessly across the borders, and permitting border officials to concentrate on stopping drugs and terrorists. To do this the three governments would need to negotiate a common external tariff (CET).

The exchange on who dislikes NAFTA more, between senators Obama and Clinton, the two leading Democratic candidates of the 2008 U.S. Presidential campaign, has left a bitter taste in the mouths of Canadians, and having a constructive view from an American on the future of North America and the need to replace a bad U.S. neighbor policy is refreshing. But what's in there for Canadians?

The current stalemate at the WTO Doha round suggests that, for Canadian trade policy makers, a CU that also liberalizes ROO is indeed an alternative that should not be dismissed too quickly in a renewed agenda of North American cooperation. However, the debate on ROO liberalization *per se* is often obscured by the level of technicalities of these rules. One objective of the paper is therefore to shed some light on the 'forest' behind the 'tree' of legal and technical details of these rules and to highlight key ingredients needed to gauge the economic impact of liberalizing ROO using a computable general equilibrium methodology.

Furthermore, the paper clarifies why we do need these rules in a free trade area (FTA), why we would not in a CU, and why these rules would be virtually irrelevant in a freer multilateral trade environment, and offers new evidence on the magnitude of the economic benefits for Canada, of these policy options. Although we have no intention to reduce a vision for a North American agenda to a mere analysis of *economic* costs and benefits, trade negotiators might be interested in these results, we believe, at least as a starting point of a renewed *positive* agenda of North American cooperation.

The first option is to envisage a move to a North American CU. Policy makers might want to consider this option because CUs are superior to FTAs essentially since CUs do not require preferential ROO. Although larger gains would have been obtained in the 1990s by moving directly to a North American CU, potential economic gains from switching to a CU from the current NAFTA regime remain substantial.

The second policy option is to pursue multilateral trade negotiations within the WTO and reduce most favored nations (MFN) tariffs towards zero. This second option makes NAFTA ROO lacking both relevance and impact, even if they remain "on the books", mainly because tariff preference utilization among NAFTA members would virtually vanish (and with it the FTA).

Although not discussed further in this paper, there is a third often-mentioned policy option with regard to ROO, based on simplification or harmonization of NAFTA ROO between *sectors* or across *preferential trade agreements*. It seems reasonable enough to suggest an across the board standard instead of the current heterogeneous rules across sectors (e.g., NAFTA triple transformation test in the textile/apparel sectors or the 62.5% test in the automobile sector). In practice, however, as argued by Destler (2006), harmonization across sectors would be difficult to achieve on a large scale simply because these rules resulted from hardly-disputed sector-specific negotiations and that their current settings matter a great deal to producers. ROO should not be viewed as a deal between nations but instead as a deal between private business interests and governments that needed to obtain their support in the legislative battle. Current research on harmonization of ROO *across* FTAs (e.g., Cornejo and Harris, 2007, Gasiorek, Augier and Lai-Tong, 2007) has the merit to clarify the functioning of ROO by precising

concepts such as “diagonal”, “triangular” or “multilateralizing” cumulation of ROO. However, at this stage, it remains to be seen whether trade negotiators will be able to pursue this route in a significant manner.

The rest of the paper is as follows. Section 2 discusses some key features of FTAs and CUs and gives some reasons behind the recent backlash on ROO. Section 3 offers a graphical approach of the challenge of capturing the impact of ROO liberalization in a computable general equilibrium model. Section 4 illustrates the general equilibrium impacts of respectively, moving to a CU which also liberalizes ROO, and moving towards a multilateral free trade world that makes preferential ROO obsolete. Finally, Section 5 concludes by reviewing the policy options for Canada given the current stalemate at the WTO Doha round.

2. FTAs, CUs, and ROO

In economic literature, a CU is the second level of regional integration following a FTA and involves (as in a FTA) the eventual elimination of all tariffs between member countries, but unlike a FTA, also establishes a common external trade policy, in particular by adjusting all tariffs external to the CU to a common level. In a FTA, however, the members maintain their individual MFN tariffs that they impose on countries outside the agreement.

As a result, a CU requires members to negotiate a common trade policy and a CET with respect to non-member countries, while a FTA requires negotiating measures such as preferential ROO, to avoid trade deflection. Trade deflection -- a modification of trade flows between the rest of the world and the members of the FTA -- occurs when a non-member agent transits goods through the FTA member-country with the lower-

external tariff and then transships duty-free (or with preferential treatment) to the final destination. To eliminate the incentive for trade deflection, preferential ROO are negotiated among members of the FTA. These rules determine which goods have "origin" in member countries and thus are eligible for duty-free (or preferential) treatment when crossing partners' borders, and which goods are not as they are simply being transshipped through, or undergoing only minor transformations in a member country.[1]

However, FTAs also generate distortionary effects that lead member countries to purchase less from the rest of the world and more from other members in order to fulfill the ROO and obtain the tariff preference (Krishna and Krueger, 1995). Therefore, as suggested long ago by Krueger (1995), CUs are Pareto superior to FTA *because* the establishment of a CET in a CU would also remove the incentives for trade deflection and therefore eliminates both the need for preferential ROO and their distortionary impact on the economy and competitiveness of firms.[2] Thus, preferential ROO are typically absent from a CU arrangement and movements of goods within a CU are not based on their "originating status" but on the principle of "free circulation".

Even if ROO are required in a FTA, there has been a recent backlash on these rules. Why? U.S. trade negotiators started to pursue extensive FTAs negotiation in the 1980s and the 1990s and they looked for particularized benefits they could offer important industries in exchange for their support.[3] Industries looked for ways to gain advantage within the new economics of globalization.[4] ROO was the ideal instrument to meet the needs of both. The "success" of this strategy can be measured by the overwhelming positive response of foreign leaders, which resulted, as illustrated in

Figure 1, in a pandemic of overlapping FTAs in America, and across the world. According to Pomfret (2007), this positive response reflects that many foreign political leaders appear to take a talk-is-cheap attitude to trade agreements, happy to sign them at summit meetings and leave the details to lower officials who might bury the agreement when unpleasant consequences seem likely or political alliances shift.

The "spaghetti bowl" of regional FTAs is by now a well established culinary analogy to the visual effect of Figure 1 and of many others figures drawn for different regions in the world. One outcome of these overlapping FTAs is the ensuing proliferation of ROO. These rules of Byzantine complexity are often inconsistent across FTAs, opaque, and costly. Although the European Union (EU), in principle, does not impose preferential ROO among its members (as it is also a CU), it does have ROO regimes with countries external to the union and which have signed FTAs with the EU. Both the ROO of NAFTA and the (external) ROO of the EU are, according to Estevadeordal and Suominen (2004), highly restrictive, and the recent proliferation of inter-regional agreements are important transmission channels for the diffusion of these two dominating and costly models (Garay and De Lombaerde, 2004).

A few observers have highlighted some unpleasant consequences of these rules. Whereas, as said above, the economic justification for ROO is to prevent trade deflection inherent in FTAs because member countries, unlike in a CU, do not harmonize their external tariff by establishing a CET, Krishna (2005) argues that they are increasingly used for protectionist purposes. This has led to the underutilization of trade preferences and eventually to the questioning of the FTAs alleged market access argument. Secondly, as already mentioned, preferential ROO also have a distortionary impact when

they induce firms to substitute cheaper non-originating materials for intermediary goods originating from the zone (Krueger, 1995). Thirdly, the political economy of FTAs is likely to be less conducive to (future) multilateral trade liberalization than a CU – a stumbling-block in the terminology of Bhagwati (1993) – because ROO favor FTA intermediary producers relative to more efficient world producers so that they will constitute an additional opposition to any moves to globally freer trade. Keeping up with our previous culinary image, liberalizing ROO is not unlike removing the sauce from the FTA spaghetti bowl: an arguably difficult task. Finally, the international segmentation of production in which intermediate inputs are traded and transformed into more processed intermediate inputs, which are then moved across borders to the next stage of production, has led to a growing share of parts and components in total exports (World Bank, 2005). ROO may therefore impede FTAs firms in taking advantage of the global production chains and this might also have negative impacts on inward foreign direct investment.

However, as long as the cost of ROO is not made transparent, there is little hope for generating much policy interest in proposals for liberalizing ROO and for viable alternatives. Therefore, there is a need for new and detailed analyses of the costs of existing preferential ROO.

3. ROO: Modeling and Calibration Challenges

While computable general equilibrium (CGE) analyses have been used for many years to illustrate the economic and welfare impacts of liberalizing tariff, there has been virtually no attempt to gauge the impact of liberalizing ROO using a CGE methodology. For example, Brown, Deardorff and Stern (2001) measure the impact of moving from NAFTA to a North American CU but typically limit their CGE experiment to the

adoption of a CET. Although Ghosh and Rao (2005) stress the relevance of estimating the cost of ROO when measuring the economic effect of a potential North American CU, their impact is not captured adequately in their CGE analysis because they do not model ROO explicitly nor do they calibrate their model to reflect the presence of ROO distortions in the benchmark data set.[5] Although ROO might somewhat offset the impact of tariff liberalization, this does *not* imply, as their analysis suggests, that the economic effects of a ROO is "equivalent" to a tariff.

Therefore, more research is needed and CGE modelers could benefit from a simple methodological framework illustrating how to capture the essence of ROO into a CGE model. Georges (2008a) has used a calibration procedure of a multi-country multi-sector CGE model that permits to evaluate the economic impact of liberalizing NAFTA ROO. The objective of this section is to make this procedure more explicit, using a graphical representation of a simplified calibration procedure in order to highlight some key ingredients needed to gauge the economic impact of liberalising ROO.

Assume a firm that belongs to a FTA which, without loss of generality, will be referred to as NAFTA. Suppose that the firm, when using an intermediary good X might either purchases the intermediary good from NAFTA, X_{Nafta}, or from outside NAFTA, $X_{nonNafta}$, at existing prices P_{Nafta} and $P_{nonNafta}$. The firm has access to a constant return to scale technology to produce the composite intermediary X using X_{Nafta} and $X_{nonNafta}$, and one isoquant $\overline{X}$ is depicted by the curve in Figure 2.[6] Assume also that the firm must satisfy a ROO constraint that has to be met to obtain origin. From an analytical viewpoint the basic effect of a ROO is to raise the production costs of the good that meets the binding ROO (Francois 2005, Krishna 2005).

Suppose that at existing intermediary prices, an unconstrained firm chooses the input mix at the point labeled 1 using X_{Nafta} and $X_{nonNafta}$ so that their ratio equals α_0. The lowest cost to obtain $\overline{X}$ is given by the height of the isocost through point 1 and this cost expressed in terms of intermediary good originating from NAFTA is given by $\frac{Px\overline{X}}{P_{Nafta}}$ where *Px* is the minimum *unit* cost of the composite intermediary. A binding ROO would remove point 1 from the feasible set. If, for example, the ROO requires $\alpha = \frac{X_{Nafta}}{X_{nonNafta}} > \alpha_0$, then only points on or above the ray from the origin with slope α and on the isoquant would be feasible. In this case, costs are minimized by choosing the input mix given by point 2 and these costs, if the ROO are met, are given by the height of the isocost through point 2, $\frac{Px^{rule}\overline{X}}{P_{Nafta}}$, where Px^{rule} is the minimum unit cost of the composite intermediary given the binding ROO. Observe that a binding ROO acts like an implicit tax on the use of non-NAFTA intermediaries and an implicit subsidy on the use of NAFTA intermediaries. The implicit price distortion can be viewed graphically by comparing the slope of the isocost through point 1 with the slope of the price line (not drawn) tangent to the isoquant at point 2. More restrictive ROO would correspond to higher values for α, a steeper ray from the origin, and a higher minimum unit cost of production.

It is simple enough to realize that if a firm is strictly constrained by a ROO and is effectively at point 2 in Figure 2, then, removing the ROO would lead the firm to select the input combination given by point 1, increasing its purchase of non-NAFTA intermediary good and decreasing the purchase of NAFTA intermediary goods, which

would lower its total spending on intermediary goods. In effect, eliminating ROO implies eliminating the implicit tax on the use of non-NAFTA intermediaries and the implicit subsidy on the use of NAFTA intermediaries.

The simplicity of the argument is, however, deceptive, and Figure 3 illustrates this. Suppose for example that a data set is available on the chosen intermediary bundle at specific prices in a specific reference year and that this choice is given by point 2. (For the time being, ignore the isoquants drawn in Figure 3.) Point 2 is on a ray from the origin with slope $\frac{X_{Nafta}}{X_{nonNafta}}$. The ray's relative steepness reflects an observed *bias* for NAFTA versus non-NAFTA intermediary goods. However, we should not necessarily attribute this bias to a binding NAFTA ROO, that is, it is not because a firm utilizes intensively NAFTA intermediary goods in its production process that this necessarily reflects a constrained behavior due to a binding ROO. Alternatively, this means that if $\frac{X_{Nafta}}{X_{nonNafta}} = \alpha$ with X_{Nafta} and $X_{nonNafta}$ *observed* in the benchmark data set, then α is simply the numerical value of this ratio and should not be taken as an institutional parameter reflecting the ROO restrictiveness *per se* (say, *x*% of spending on intermediary good must be of NAFTA origin).[7]

This naturally leads to the challenge of positioning the relevant isoquant in Figure 3, or, in other words, to calibrate the distribution parameters of the production function that links the composite intermediary good X to its input mix (X_{Nafta}, $X_{nonNafta}$) while assuming a cost minimizing behavior of the firm that is *potentially* constrained by a ROO.

For illustration, let us assume that such a technology is given by a constant elasticity of substitution (CES) function:

$$X = \left[\eta_{Nafta} \left(X_{Nafta} \right)^{\frac{\sigma-1}{\sigma}} + \eta_{nonNafta} \left(X_{nonNafta} \right)^{\frac{\sigma-1}{\sigma}} \right]^{\frac{\sigma}{\sigma-1}} \quad (1)$$

where η_{Nafta} and $\eta_{nonNafta}$ are the distribution parameters and σ is the Armington elasticity of substitution between NAFTA and non-NAFTA intermediaries. The crucial assumption that must be made is whether the bias for NAFTA intermediary goods in Figure 3 is due, in part or entirely, to a binding ROO. For example, if ROO distortions that might have let the firm to select the combination given by point 2 are not introduced in the analysis (because, say, these rules are not the subject of the study), then the CGE modeler will calibrate the CES function by fixing η_{Nafta} and $\eta_{nonNafta}$ to ($\eta^{\circ}_{Nafta}, \eta^{\circ}_{nonNafta}$) in order to position the isoquant $\overline{X}\left|\eta^{\circ}\right.$ at the tangency point with the isocost line at point 2.[8]

On the other hand, the modeler might assume that the observed bias at point 2 is due (in part or entirely) to a distorted behavior of the firm facing a ROO such as $\frac{X_{Nafta}}{X_{nonNafta}} \geq \alpha$ and which induced the firm to change the production process by substituting $X_{nonNafta}$ for X_{Nafta} in order to fulfill the ROO and benefit from the preferential NAFTA tariff when exporting the final good to its NAFTA partners. The calibration procedure must therefore be revised accordingly so that if point 2 observed in the data reflects an optimal behavior under constraint of a distortionary ROO, then, removing the distortion should induce some re-allocation out of X_{Nafta} and into $X_{nonNafta}$. Thus, the modeler must re-parameterize the CES function (1) by fixing the parameters (η_{Nafta},

$\eta_{nonNafta}$) to specific values ($\eta^{rule}_{Nafta}, \eta^{rule}_{nonNafta}$), therefore positioning the isoquant to, say: $\overline{X}\left|\eta^{rule1}\right.$ or $\overline{X}\left|\eta^{rule2}\right.$. These specific re-parameterizations suggest that, *ceteris paribus*, the removal of ROO would push the intermediary good bundle from point 2 to either point 1 or point 3.

Choosing between many different possible re-parameterizations is, therefore, a key challenge of this analysis. As Figure 3 illustrates, the indeterminacy between the two isoquants -- $\overline{X}\left|\eta^{rule1}\right.$ or $\overline{X}\left|\eta^{rule2}\right.$ -- is the reason why a crucial additional assumption must be imposed in order to disentangle ROO distortions (that are only implicitly present in the data set) versus any other factors that might have led the firm to choose point 2.

The proposed solution to the indeterminacy is as follows. As seen above, when ROO are distortionary there is an efficiency cost, which translates into an increase in the minimum unit cost of production in comparison to what it would be without the ROO. Therefore, we can argue that the ROO has increased the firm's minimum spending on intermediary goods by a pre-specified percentage $\theta \geq 0$, so that for example:

$$Px^{Rule}\overline{X} = Px\ (1+\theta\ )\overline{X}\ ,$$

or

$$Px^{Rule} = Px\ (1+\theta\ ), \tag{2}$$

where Px^{Rule} and Px , as defined before, are the unit costs of production of the composite intermediary good *X*, respectively with and without ROO, and where $\theta \geq 0$ is the efficiency cost of the ROO. The parameter θ provides a measure of the distance between the two relevant isocost lines as shown in Figure 3. The assumption that $\theta = \theta^1 > 0$

corresponds to the parameterization leading to the isoquant $\overline{X}\left|\eta^{rule1}\right.$ so that removing ROO in the counterfactual pushes the firm from point 2 to point 1. If, on the other hand, the efficiency cost of ROO is assumed to be $\theta = \theta^2 > \theta^1$, then, the parameterized isoquant is $\overline{X}\left|\eta^{rule2}\right.$ and removing ROO in the counterfactual pushes the firm (all else the same) from point 2 to point 3.

Finally, suppose that $\theta = \theta^0 = 0$ so that it is assumed that the initial introduction of ROO did not increase the costs of production, or, in other words, did not induce the firm to change its method of production (say, the ROO was not binding). Then, the high bias in favor of NAFTA intermediary goods as is observed at point 2 should not be attributed to ROO but to other (undetermined) factors. In this case, the calibration procedure would automatically set the shadow price of the ROO constraint equal to 0 and this would lead to a parameterized CES function given by $\overline{X}\left|\eta^{\circ}\right.$ in Figure 3. Removing ROO in the counterfactual would therefore have no impact on the firm's choice between NAFTA and non NAFTA intermediary goods and the firm would continue to optimally choose the allocation given by point 2.

To implement the method described above we need information on the parameter θ -- the efficiency cost of the ROO expressed in percentage increase of the unit cost. This is an external parameter that must be estimated. Although there is very little information on the exact magnitude of this efficiency cost, the "participation constraint" approach [Cadot *et al.* (2002) and Anson *et al.* (2005)] might be a good starting point. This literature closely links the cost of ROO with tariff preferences [*i.e.*, the differences between MFN tariff and preferential (NAFTA) tariff]. According to this approach, the

terms of a FTA are set to leave partners close to or on their participation constraint (*i.e.*, close to being indifferent between signing and not signing) so that there is a substitutability between tariff rates and ROO restrictiveness in terms of their impact on net revenues for exporters (larger net revenues due to deeper tariff preferences are just offset by the cost of more restrictive ROO). This approach leads to proxy the efficiency cost θ of the ROO with the tariff preference that can be obtained when exporting the final good to a NAFTA partner. This proxy is an upper bound to the cost of ROO, but the approach implies that it is not far off the true estimate because member countries are assumed to be "close to", if not "on" their participation constraint.[9]

As said previously, it is unlikely that ROO are the only factors explaining the high biases (the high values for α). Therefore, to re-emphasize, the key insight that is proposed is to consider that both the introduction of ROO and other (undetermined) factors have pushed the economy towards the high NAFTA-content that is observed in data. To disentangle ROO from other factors, it is assumed that ROO *per se* increased the unit cost of production in the order of magnitude $\theta (\geq 0)$ given by the appropriately weighted tariff preference as suggested above. With the information on parameter θ, the technological (distribution) parameters can be calibrated as discussed previously.

Although estimating θ is a key issue in order to capture the effects of NAFTA's ROO, we need to go one step further and to gauge the impact of removing ROO as part of a more general counterfactual experiment of moving to a CU. The relevance of a general equilibrium framework to address the impact of removing ROO should be clear when we recall that a ROO acts as an implicit tax for the use of intermediary goods purchased outside NAFTA, an implicit subsidy to NAFTA firms for the use of

intermediary goods purchased within NAFTA, and (in the more global context of the paper and in the generalized version proposed in Georges 2008a) an implicit subsidy for the use of labor and capital. Therefore, it is essential to take into account interactions between agents and repercussions on all markets in the economy following the elimination of ROO, and the knowledge of a sectoral θ as a proxy for the efficiency cost of the ROO in that sector is only an initial step in understanding the general equilibrium impacts of removing ROO.

4. Simulation Results: CU versus Multilateral Free Trade Liberalization

The calibration method outlined above has been formalized and introduced in a computable general equilibrium model (Georges, 2008a and 2008b). In this model, the world economy consists of seven countries/regions composing two blocks, NAFTA versus non-NAFTA countries: Canada, USA and Mexico (NAFTA), and Latin America, Mercosur, Europe, and the Rest of the World. All seven countries/regions are fully modeled.[10]

In this section, we use this model to evaluate and compare different counterfactual experiments: 1. The benefit we would have obtained if we had negotiated a CU instead of a FTA in the 1990s; 2. The impact of moving to a CU in the 2000s; 3. The impact of a multilateral free trade in the 1990s (instead of the hub and spoke North American system); and 4. The impact of a multilateral free trade in the 2000s.

As said above, had we negotiated a North American CU in the 1990s instead of NAFTA, then a North American CET would have been established while NAFTA preferential ROO would be virtually absent. Therefore, in order to simulate the impact of

the counterfactual policy scenario of establishing a CU instead of NAFTA, we need to model both the adoption of a CET and the removal of NAFTA ROO.

A ROO is an implicit subsidy on capital, labour, and NAFTA intermediary goods, but an implicit penalty on intermediary goods from the rest of the world. Therefore, the main impact of removing ROO is the elimination of the implicit subsidies and penalties. This shock would reallocate efficiently the demand for factors of production in each sector of NAFTA countries, lowering NAFTA firms' demand for capital, labour, and NAFTA intermediary goods, but increasing the demand for non-NAFTA intermediary goods. The efficient reallocation of factors of production within NAFTA would also lower the unit cost of production in every sector of NAFTA countries. Therefore, Canadian real GDP would increase because resources would be used more efficiently.[11]

Had we negotiate a CU with the U.S., Canada would have gained a permanent (yearly) additional increase in GDP of 0.9% (see Figure 4) of which 0.7% would be due to the fact that a CU does not require ROO -- a magnitude corresponding to the continually-postponed Canada's commitment to the U.N. target for development assistance to less developed countries, and 0.1% would be due to the adoption of a CET which has been set, in this experiment, equal to the U.S. MFN tariff in order to avoid protracted negotiations with the U.S. on the CET itself.[12]

The basic insight of Figure 4 is that the impact on GDP of liberalising ROO largely dominates the marginal impact of adopting a CET. This is not surprising given the convergence of Canadian and U.S. MFN tariffs. However, this shows that typical studies that assume away ROO when gauging the economic impact of a CU must be far off the true estimate and Figure 4 provides a magnitude of the mis-estimation in the

existing literature. Although a CU negotiation process with the U.S. might have been longer and possibly more difficult to achieve than a FTA, it might have resulted in a net overall benefit, not through the adoption of a CET, but due to the fact Canadian exporters to the US would not have had to fulfill NAFTA ROO.[13]

This experiment captures the potential gain that could have been obtained had we moved to a CU instead of NAFTA at the end of the 1990s. These results have been simulated under the assumption of a controlled trade policy environment whereby the MFN tariffs used in the model are those observed in the 1990s after the implementation of NAFTA. To approximate this environment, we have used data from 1997 (GTAP5, release 2002), which captures the implementation of NAFTA, but not the lowering of MFN tariffs since then. However, MFN tariffs have been lowered since 1997 as the Uruguay Round (1986-1994) was progressively phased in, and an important issue is the impact that tariff preference erosion had on the distortionary cost of NAFTA ROO and therefore, on the potential benefit of adopting a CU if it was implemented in the 2000's.

Table 2a provides the magnitude of the effective MFN tariff barriers *circa* 2001 (GTAP6, release 2006 of 2001 data) while Table 2b shows the percentage point reduction in these tariffs between 1997 and 2001. The reduction in MFN tariffs implies an erosion of NAFTA tariff preference. In Table 3 we compute from GTAP5 and GTAP6 databases the tariff preferences that Canadian exporters obtained in specific sectors, *circa* 1997 and 2001. Column 3 illustrates the magnitude of tariff preference erosion over this period from the Canadian point of view. This preference erosion matters because it tends to reduce the efficiency (distortionary) cost of fulfilling ROO. Actually, these costs would virtually disappear if tariff preferences collapsed to zero. Indeed, why would a Canadian

firm, exporting to the US, bother with modifying the production process (input mix) to fulfill ROO (and pay the documentation cost), if the resulting gain (the tariff preference) was virtually zero? In this case, even if ROO remained "on the books" of the FTA, they would be irrelevant because NAFTA utilization rates would tend to zero.

We now use again our CGE modeling framework to estimate the gains of adopting a North American CU in the current environment of lower tariff preferences. This should demonstrate the impact of tariff preference erosion on regional trade agreements and that NAFTA ROO have become somewhat less distortionary than in the 1990s because MFN tariffs have been reduced since NAFTA implementation.

From Figure 5, we indeed see that although the gains of moving to a CU remain significant – a permanent yearly increase in real GDP by 0.5%, most of it originating in the elimination of ROO – they are significantly smaller than what Canadians would have obtained had MFN tariffs remained constant at their level when NAFTA was implemented (Figure 4). Note, however, that Mexico would see a permanent increase in its GDP by 2.9% and, recalling that a North American vision is also about devising "good neighbor" policy, then, this is far from being trivial.

Clearly, if the process of multilateral MFN liberalization is pursued, the additional gains that could be captured (essentially due to ROO elimination) for moving from NAFTA to a CU would also continue to plummet, simply because NAFTA ROO or the CU itself, would become economically irrelevant as tariff preference utilization would fall to zero. This naturally leads us to the second (indirect) policy option with regard to ROO -- to pursue multilateral trade negotiations within the WTO and reduce most favored nations (MFN) tariffs towards zero.

What then would be the gain for Canada of living in a multilateral free trade world? Table 4 provides a summary of the long term impacts on selected (real) variables of different counterfactual scenarios implemented at different period of time (*circa* 1997 and *circa* 2001). Our simulations show that if all countries in the world had been pursuing MFN tariff liberalization by multilaterally pushing their MFN tariffs to zero circa 1997, then Canada could have reaped an additional yearly gain of 1.2% of GDP (from the relevant 1997 benchmark). MFN tariff have been reduced between 1997 and 2001, but countries did not achieve full tariff liberalization. Full tariff liberalization in the 2000s could still brought an additional yearly gain of 0.3% of GDP (from the 2001 NAFTA benchmark) that is, less than if Canada negotiated a CU with the U.S. that also liberalizes ROO (0.5% of GDP). This result begs two questions: 1. Why is it that a multilateral free trade world is usually considered the first best policy by economists if, as our simulation results show, Canada stands to gain more by moving to a CU with the U.S.?, and 2. Why do free-trade economists put so much emphasis on the importance of free-trade if the magnitude of the gain to be recouped is somewhat unspectacular (0.3% of GDP)?

The response to the first question is linked to the standards of measures of gains following a policy change. Economists tend to focus on welfare, which essentially is a measure of real consumption, whereas policy makers are more likely to focus on GDP. Our simulations indeed show that Canadian real consumption would permanently be higher by 0.3% under the multilateral free trade arrangement than under a CU with the U.S. so that multilateral free trade is indeed the first best policy according to economists. Canadians are likely to gain from a terms of trade appreciation as the price of their

imports is likely to fall in such a multilateral free trade environment. However, a terms of trade appreciation also means that Canada need not export as much as before to finance the same volume of imports. Therefore, concomitantly with the increase in real consumption, real *net* export would decrease (see Table 4), which might lead to a somewhat subdued increase in GDP in this scenario relative to the CU scenario.

As for the second question, an increase in GDP by 0.3% (or an increase in real consumption by 0.3%) does not appear, at first sight, to warrant the passionate arguments of economists in favor of a multilateral free trade world. So, why do economists insist on the benefit of multilateral free trade? The key point is that Canada has already captured most of the gains of living in a freer trade world by lowering MFN tariffs for manufacture goods to negligible levels after seven successive multilateral trade negotiations under the auspices of the GATT. But some countries still impose relatively high MFN tariffs on others (see Table 2a); in particular, many less developed countries stand to benefit greatly from a multilateral free trade world by reducing their MFN tariffs to zero. For example, in our simulations, MERCOSUR and Latin America would see a permanent increase in their GDP by 2.8 and 3.8%.

Table 4 shows another interesting aspect of our simulation results: real investment and with it the stock of capital in Canada would tend to fall if a CU was implemented unlike the multilateral free trade scenario.[14] Indeed, NAFTA inflates, in an inefficient way, the capital-value added demanded in Canada in order to satisfy ROO, while their elimination under a CU would lead firms to purchase intermediaries from the rest of the world (which embodies rest of the world capital) so that less capital would be required domestically.

Table 5 illustrates the percentage change in sectoral output when adopting the counterfactual policy of a CU, in the 1990s, in the 2000s, and of a multilateral free trade world in those same periods. Analysing the sectoral impact of a CU that also liberalises ROO is a difficult task. Removing NAFTA ROO eliminates the implicit subsidy on Canadian intermediary goods and lowers the price of Canadian final goods. Given the input-output principles on which CGE analysis is based, all eight sectors in our analysis are both *final* goods and *intermediaries* used in the production of other sectors. Canadian sectors of production will be negatively affected by the removal of ROO when their production is used as intermediaries while positively affected when their production is for final uses.

Accordingly, note the negative impact on the resource sector (-6.1%) and the upsurge of the automobile (+15.6%) and the machinery and equipment (high tech) (+3.1%) sectors in Table 5b. All sectors of the economy use resources intensively as an intermediary good. Therefore, as suggested above, the removal of ROO induces strong substitution towards non-NAFTA resources, which has a negative impact on the Canadian resource sector. The sectors of automobile and machinery and equipment are characterized by intensive use of intermediaries and they gain from a CU that also liberalizes ROO as they are in position to buy cheaper intermediaries from the rest of the world and thus improving their efficiency.

The multilateral trade liberalization scenario (Table 5d), on the other hand, is a policy that would generate a strong negative impact on the Canadian textile and clothing industry and, at the same time, a strong positive impact on the agricultural sector. This result can intuitively be explained on the basis of the existing structure of MFN tariffs

(Table 2a) which shows that Europe and the Rest of the World (ROW) still have higher trade barriers on agriculture, so that a full liberalization is likely to hurt European (and ROW) agriculture sectors while favoring Canadian agriculture.

A key message that we also want to emphasize from the analysis is the large discrepancy in sectoral results between a CU scenario that also liberalizes ROO and the multilateral tariff liberalization scenario. This (indirectly) shows that ROO liberalization has not much to do with tariff liberalization *per se* and that analyses trying to capture the impacts of ROO by using a "tariff-equivalent" methodology to such rules are likely to be misguided.

5. Conclusion: Policy Options for Canada

For pragmatic trade policy makers, preferential ROO represent a sort of pact with the devil. The backing of their supporters is often needed for an FTA to become law. But, as aptly pointed out by Destler (2006), "if ROO seem politically necessary in the short run, they are pernicious in the longer run. So the question for pragmatic trade-expanders is the ancient one: Can one dicker with the devil without joining him in Hell?"

What thus are the options for Canadian policy makers? The analysis above suggests two alternatives. Either they should concentrate their time and effort on establishing a CU with the U.S. and reap the additional yearly gain of 0.5% GDP, or they might want to concentrate their effort at the WTO table, on multilateral negotiations, to pursue MFN tariffs liberalization. According to our simulations, Canada could reap an additional yearly gain of 0.3% of GDP if all countries in the world where multilaterally pushing their MFN tariffs to zero, that is, less than if Canada followed the CU policy

option that also liberalizes ROO. Furthermore, the current stalemate at the WTO Doha round suggests that a North American CU remains a serious policy option.

Finally, such an arrangement should not exacerbate the fears of some observers that this might be done at the expense of Canada's trade relationships with other countries. Georges (2008b) shows that a CU that also liberalises ROO could intensify trade relationships between Canada and countries from outside North America while somewhat reducing the overall trade flows between Canada and the US.[15] Indeed, Canadian firms could purchase intermediaries where they are the cheapest, lowering their unit cost of production and enhancing their competitiveness, which would induce further exports towards all countries in the world.

Negotiating directly a North American CU with the U.S. is likely to be politically and diplomatically costly for Canada, although we argue that the time currently spent on the unfocused Security and Prosperity Partnership of North America or in other *forums* is probably as costly, albeit hardly as economically rewarding. An important challenge of negotiating a North American CU involves harmonizing trade policy. One of the thornier issues, as mentioned by Meilke, Rude and Zahniser (2008) would be the many different FTAs that the NAFTA members have negotiated separately (Figure 1). A *full* North American CU would require the eventual reconciliation of the ROO used in *each* FTA in Figure 1 (excluding NAFTA as NAFTA preferential ROO would no longer exist). Research along the lines of Gasiorek, Augier, and Lai-Tong (2007) on cumulating ROO, and of Cornejo and Harris (2007) on a General Origin Regime as an indispensable minimum to effectively interconnect existing FTAs should therefore be pursued and encouraged.

Another (somewhat utopian) venue would be to focus discussions, under the WTO auspice, to outlaw FTAs that are not CU. This would require a revision of Article 24 of the GATT which is the legal loophole through which the genie of the bottle escaped to fulfill the wishes of the E.U. and the U.S.[16] This would put pressures on the U.S. (and the E.U.) to recast their international trade policy that led to the current pandemic of overlapping FTAs, and which, clearly, is not in the advantage of Canada.

Table 1: NAGOS®: The North American Game of Scrabble

"Spelling new Acronyms that purport to be Initiatives"

					N				
			F		**A**				
		N	**A**	**E**	**C**				
			S		**C**	**T**	**P**	**A**	**T**
I	**B**	**E**	**T**	**S**				**C**	
				P	**4**	**P**		**E**	
		P	**I**	**P**					

Table 2a: Effective MFN Tariffs (in %) imposed on a specific sector of country *i* by country *j* *(circa 2001)*

Country *i*	Country *j*	Agri	Reso	Food	Text	Manu	Tech	Auto	Serv
CAN	**USA**	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0
CAN	**MEX**	0.8	0.0	15.0	0.5	0.8	0.3	0.6	0.0
CAN	**MER**	4.6	0.1	13.6	17.0	8.0	12.9	9.4	0.0
CAN	**LAT**	9.3	2.9	19.7	12.1	8.0	7.8	13.8	0.0
CAN	**EUR**	3.2	0.0	14.9	8.3	1.3	1.2	1.6	0.0
CAN	**ROW**	27.0	1.2	28.0	9.5	3.8	5.6	7.1	0.0
USA	**CAN**	1.5	0.0	13.5	0.0	0.0	0.0	0.0	0.0
USA	**MEX**	11.3	0.4	5.7	0.2	0.6	0.3	0.4	0.0
USA	**MER**	4.6	0.4	15.0	17.1	10.9	11.6	4.3	0.0
USA	**LAT**	10.0	7.1	14.5	14.7	8.7	7.2	10.5	0.0
USA	**EUR**	5.3	0.2	17.0	7.2	4.9	1.0	2.6	0.0
USA	**ROW**	39.2	1.3	30.2	11.3	5.4	3.1	3.6	0.0
MEX	**CAN**	1.1	0.0	3.3	1.2	0.0	0.0	0.0	0.0
MEX	**USA**	0.2	0.0	0.4	0.1	0.1	0.0	0.0	0.0
MEX	**MER**	9.5	3.4	17.0	16.7	11.6	14.3	24.6	0.0
MEX	**LAT**	8.4	1.3	21.9	13.5	8.8	8.3	34.1	0.0
MEX	**EUR**	15.2	0.0	15.8	1.6	0.3	0.1	0.6	0.0
MEX	**ROW**	6.1	12.9	36.2	8.7	5.4	3.5	9.4	0.0
MER	**CAN**	0.4	0.0	12.7	7.4	0.7	0.5	3.9	0.0
MER	**USA**	5.7	0.1	8.2	7.3	2.0	1.0	0.7	0.0
MER	**MEX**	16.7	12.4	42.0	18.2	13.7	14.2	18.2	0.0
MER	**LAT**	10.4	6.4	11.3	11.4	7.5	7.0	16.4	0.0
MER	**EUR**	6.7	0.1	25.2	3.8	1.4	0.1	1.2	0.0
MER	**ROW**	62.9	1.5	19.0	5.6	5.8	7.4	18.8	0.0
LAT	**CAN**	0.7	0.0	3.5	15.5	0.2	0.1	1.5	0.0
LAT	**USA**	0.7	0.0	4.8	11.5	0.7	0.0	0.1	0.0
LAT	**MEX**	10.9	3.3	7.3	12.5	3.7	5.9	13.3	0.0
LAT	**MER**	4.0	1.6	11.2	12.9	8.3	13.4	10.7	0.0
LAT	**EUR**	23.8	0.1	21.6	0.7	0.2	0.0	0.1	0.0
LAT	**ROW**	7.6	8.4	14.7	10.0	3.3	3.0	6.3	0.0
EUR	**CAN**	2.1	0.0	18.1	10.8	2.2	1.3	2.3	0.0
EUR	**USA**	1.9	0.0	3.8	8.5	2.1	1.0	1.5	0.0
EUR	**MEX**	13.5	12.3	28.4	25.5	13.7	12.5	16.9	0.0
EUR	**MER**	6.7	3.1	14.6	18.2	11.0	13.1	12.1	0.0
EUR	**LAT**	7.1	12.3	18.3	13.5	9.1	7.5	13.2	0.0
EUR	**ROW**	12.7	2.9	20.7	10.9	6.5	5.1	9.3	0.0
ROW	**CAN**	0.8	0.0	12.3	14.2	1.8	0.7	5.1	0.0
ROW	**USA**	2.3	0.0	3.6	11.9	1.7	0.8	2.2	0.0
ROW	**MEX**	11.6	6.7	30.4	27.1	15.3	9.8	17.7	0.0
ROW	**MER**	9.4	0.1	13.1	19.1	8.3	13.2	19.8	0.0
ROW	**LAT**	8.8	4.3	15.3	13.0	9.7	8.6	13.8	0.0
ROW	**EUR**	5.8	0.1	18.9	4.6	1.8	0.9	3.2	0.0

Source: Compilation by author, based on GTAP6.
Note on abbreviations: agriculture (Agri); resource sector (Reso); food processing (Food); textiles and clothing (Text); manufactures excluding machinery and equipment (Manu); machinery and equipment (Tech); automotives (Auto); services (Serv).
Canada (CAN); United States of America (USA); Mexico (MEX); Mercosur (MER); Latin America (LAT); Europe (EUR); Rest of the World (ROW).

Table 2b: Percentage point differences between 2001 and 1997 on effective MFN tariffs imposed on a specific sector of country *i* by country *j*
(A positive sign indicates an effective tariff liberalization since 1997)

Country *i*	Country *j*	Agri	Reso	Food	Text	Manu	Tech	Auto	Serv
CAN	**USA**	4.4	0.0	7.1	0.0	0.0	0.0	0.0	0.0
CAN	**MEX**	32.9	0.0	19.2	-0.5	-0.8	-0.3	-0.6	0.0
CAN	**MER**	2.2	0.1	6.7	-1.4	0.1	1.2	2.9	0.0
CAN	**LAT**	3.0	5.8	-1.7	3.8	-0.6	2.1	11.6	1.8
CAN	**EUR**	27.8	0.3	33.3	-0.1	0.8	2.3	1.3	0.0
CAN	**ROW**	39.3	0.0	5.9	3.0	-0.2	0.1	-0.9	0.4
USA	**CAN**	2.7	0.0	11.9	0.0	0.0	0.0	0.0	0.0
USA	**MEX**	5.7	-0.4	27.2	-0.2	-0.6	-0.3	-0.4	0.0
USA	**MER**	2.2	-0.1	1.6	-0.4	-0.4	1.9	12.2	0.0
USA	**LAT**	0.0	0.7	2.7	7.6	1.2	1.8	2.4	2.7
USA	**EUR**	7.4	0.3	10.0	1.4	-1.5	2.2	0.5	0.0
USA	**ROW**	5.9	0.5	10.2	1.0	0.4	1.5	0.6	0.2
MEX	**CAN**	0.9	0.0	28.2	-1.2	0.0	0.0	0.0	0.0
MEX	**USA**	8.3	0.0	8.4	-0.1	-0.1	0.0	0.0	0.0
MEX	**MER**	0.7	-2.0	-0.1	-0.4	-1.5	0.1	11.7	0.0
MEX	**LAT**	3.8	3.6	-5.6	-0.6	0.2	2.6	-17.2	1.9
MEX	**EUR**	3.1	0.0	15.2	7.5	3.4	3.6	4.6	0.0
MEX	**ROW**	18.8	-11.1	4.5	3.0	1.6	-0.1	2.9	0.2
MER	**CAN**	1.6	0.0	5.0	4.1	3.4	2.1	-0.6	0.0
MER	**USA**	10.4	0.4	7.3	0.2	0.9	1.4	1.0	0.0
MER	**MEX**	-9.7	-2.6	-20.7	-6.6	-4.3	-2.6	-4.9	0.0
MER	**LAT**	0.5	3.7	3.5	1.9	2.7	2.0	0.2	2.1
MER	**EUR**	1.1	0.1	6.7	1.6	2.8	3.0	5.2	0.0
MER	**ROW**	-21.0	0.3	15.5	2.9	-0.7	-0.3	-4.2	0.3
LAT	**CAN**	1.6	0.0	20.5	4.6	1.6	3.4	2.5	0.0
LAT	**USA**	12.7	0.4	13.2	3.0	1.8	3.5	1.2	0.0
LAT	**MEX**	1.1	6.3	17.1	8.3	4.4	7.6	0.3	0.0
LAT	**MER**	3.8	2.0	3.9	4.3	-0.4	4.7	7.7	0.0
LAT	**EUR**	-13.5	0.3	20.9	8.7	2.1	3.1	1.0	0.0
LAT	**ROW**	25.4	-7.1	11.8	0.4	-0.4	2.7	-4.2	0.2
EUR	**CAN**	2.6	0.0	31.8	4.1	2.1	1.5	0.3	0.0
EUR	**USA**	8.6	0.4	5.0	1.2	1.0	1.2	0.5	0.0
EUR	**MEX**	-7.9	-4.7	1.6	-3.2	-4.1	-3.7	-4.1	0.0
EUR	**MER**	3.1	-0.7	3.2	-2.3	-0.2	1.1	10.0	0.0
EUR	**LAT**	-0.1	-5.0	-0.1	1.0	0.7	1.7	-1.3	2.1
EUR	**ROW**	11.1	1.6	16.8	4.1	2.1	2.0	2.4	0.2
ROW	**CAN**	2.7	0.0	10.4	4.4	3.0	1.3	1.1	0.0
ROW	**USA**	12.3	0.4	8.6	1.4	1.1	1.0	0.4	0.0
ROW	**MEX**	-1.1	-0.1	1.4	-5.8	-4.8	0.3	-3.4	0.0
ROW	**MER**	-0.6	4.3	3.6	0.6	2.0	1.0	14.6	0.0
ROW	**LAT**	3.3	0.6	3.3	0.3	1.0	1.3	1.2	2.1
ROW	**EUR**	4.4	0.0	21.7	6.0	1.8	3.0	3.5	0.0

Source: Compilation by author, based on GTAP5 and GTAP6.

Table 3: Tariff preference for Canadian exporters to the U.S. (selected sectors)

	Tariff Preference *circa* 1997	Tariff Preference *circa* 2001	Tariff Preference Erosion
Agri	9.4	1.8	7.6
Reso	0.4	0.0	0.4
Food	3.2	2.4	0.8
Text	12.9	11.4	1.5
Manu	2.9	1.8	1.1
Tech	1.9	0.9	1.0
Auto	2.3	1.8	0.5
Serv	0	0	0.0

Source: Author's calculations based on GTAP 5 and GTAP 6 databases.

Table 4: Long term impacts (% change from benchmark) on selected variables for different counterfactual scenarios implemented at different periods of time

	Real Export	Real Import	Real Consumption	Real Investment	Real GDP
CU ***circa 1997***	13.8	12.7	0.3	-0.7	0.9
ROO only ***circa 1997***	10.6	9.8	0.3	-0.7	0.7
CET only ***circa 1997***	2.2	2.1	0.1	-0.1	0.1
MFN=0 ***circa 1997***	12.1	13.5	1.2	2.0	1.2
CU ***circa 2001***	10.2	9.9	0.0	-0.6	0.5
ROO only ***circa 2001***	9.1	8.7	0.1	-0.6	0.4
CET only ***circa 2001***	0.8	0.8	0.0	-0.1	0.0
MFN=0 ***circa 2001***	5.0	5.7	0.3	0.5	0.3

Source: Author' simulations.
Note: Numbers rounded to one decimal.

Table 5: Sectoral output (% change from benchmark) for different counterfactual scenarios implemented at different periods of time

(5a) CU circa 1997	CAN	USA	MEX	MER	LAT	EUR	ROW
agri	2.6	0.4	0.2	0.0	-0.3	0.3	-0.1
reso	-6.8	0.1	1.5	0.4	1.1	2.0	0.1
food	-6.7	0.0	-0.6	0.0	0.2	0.8	0.1
text	-2.7	-0.8	10.7	0.1	-0.9	0.2	0.1
manu	1.7	-0.2	0.0	0.2	1.1	0.2	0.1
tech	6.4	0.0	16.3	-0.2	-0.3	-0.3	-0.2
auto	20.5	-3.6	21.3	0.4	0.0	0.2	0.9
serv	-0.1	0.1	0.6	0.0	0.2	0.0	0.0

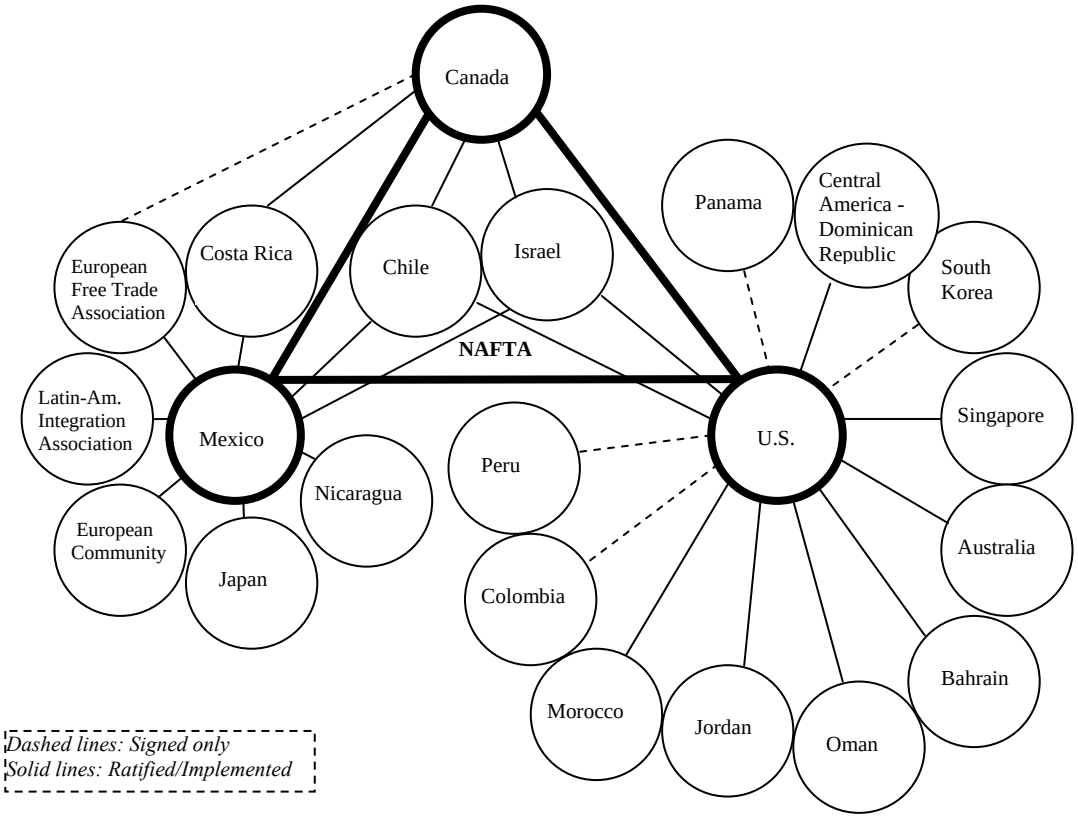
(5b) CU circa 2001	CAN	USA	MEX	MER	LAT	EUR	ROW
agri	0.1	0.3	-1.2	-0.2	0.2	0.2	0.1
reso	-6.1	0.5	2.5	-0.3	0.4	1.8	0.0
food	-2.1	0.0	-0.5	0.1	0.1	0.4	0.2
text	-1.0	-1.0	8.1	0.1	-1.6	0.5	0.2
manu	0.8	-0.1	0.7	0.1	0.6	0.2	0.1
tech	3.1	-0.2	14.6	-0.2	0.3	-0.2	-0.3
auto	15.6	-3.5	29.6	5.7	6.1	0.3	0.2
serv	-0.2	0.1	0.9	0.1	0.1	0.0	0.0

(5c) MFN =0 Circa 1997	CAN	USA	MEX	MER	LAT	EUR	ROW
agri	88.2	26.7	1.8	15.2	22.8	-4.9	-5.2
reso	-2.5	-1.5	2.6	1.7	8.1	0.0	2.1
food	1.8	8.5	3.2	14.4	24.8	-2.5	1.8
text	-27.9	-21.3	-11.8	-0.9	17.6	-2.1	17.0
manu	-0.8	0.5	2.9	0.8	4.5	2.7	1.9
tech	-1.5	0.4	4.6	-6.6	-2.1	3.0	3.7
auto	-2.3	-2.7	13.7	-9.8	-20.7	5.5	5.8
serv	0.4	0.3	0.2	1.3	2.3	0.1	0.5

(5d) MFN =0 Circa 2001	CAN	USA	MEX	MER	LAT	EUR	ROW
agri	22.1	22.2	-1.1	46.8	17.5	-5.3	-4.3
reso	0.4	-0.6	6.8	-3.1	12.1	-1.2	1.1
food	1.3	5.1	1.5	15.7	9.0	-1.7	0.5
text	-21.9	-20.6	-11.4	-4.0	19.6	1.7	13.5
manu	0.6	0.8	2.7	-1.1	2.4	1.7	1.5
tech	0.9	0.0	9.5	-10.2	0.5	2.5	2.0
auto	0.5	-2.7	17.6	-6.7	-8.5	3.8	4.3
serv	0.1	0.2	0.6	1.2	1.3	0.0	0.4

Source: Author' simulations.

Figure 1: North America's hub and spoke trade systems



Sources: Robson (2007), based on: World Trade Law.Net, Office of U.S. Trade Representative, and Department of Foreign Affairs and International Trade Canada.

Figure 2: Distortion due to ROO

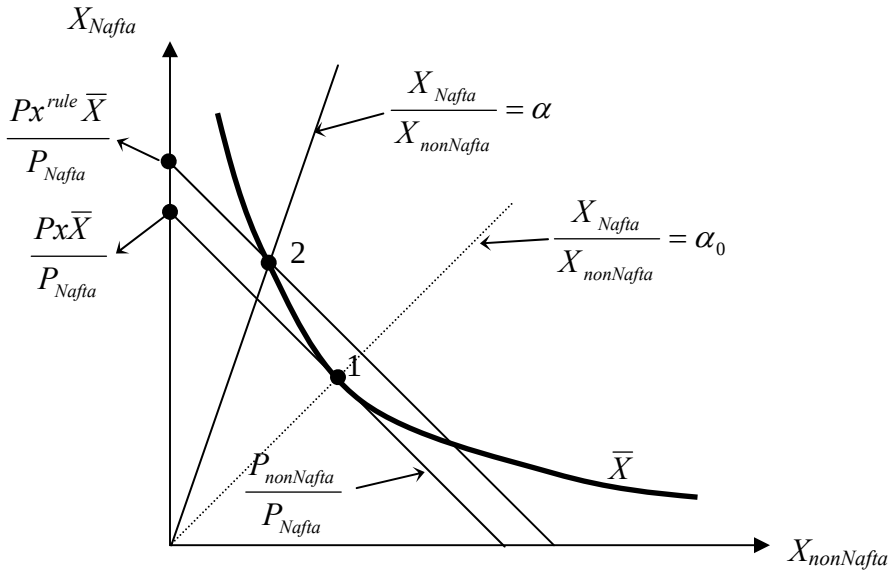


Figure 3: Calibration Issues

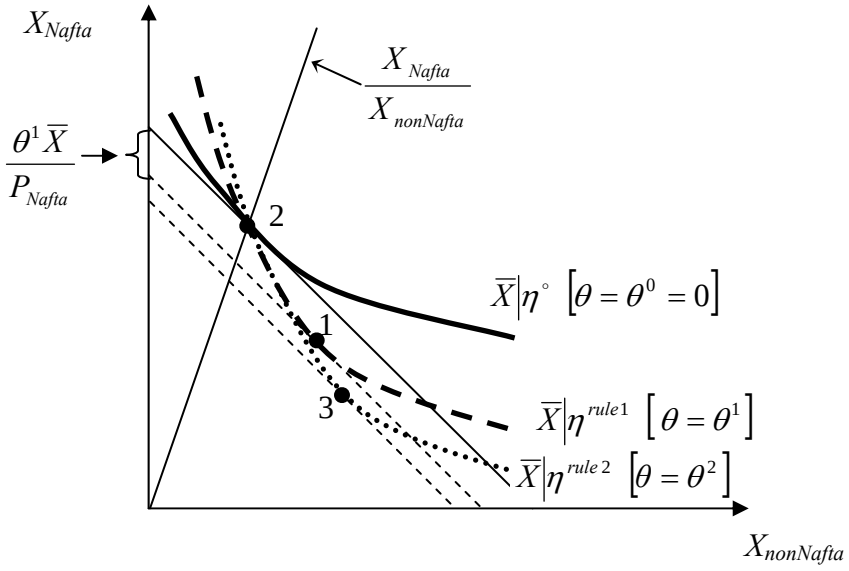
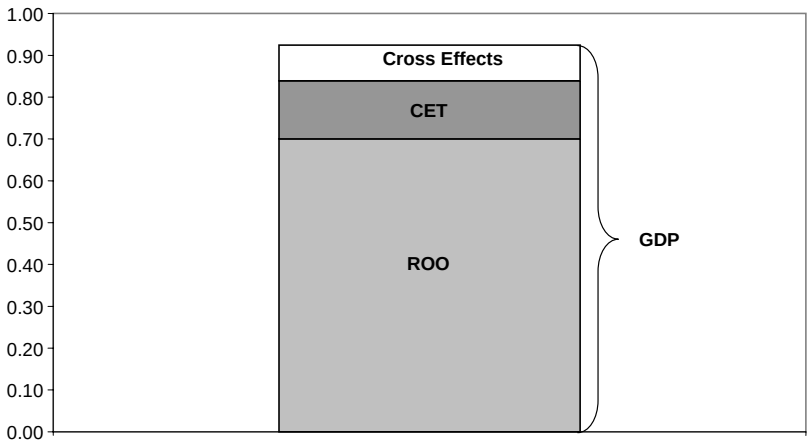
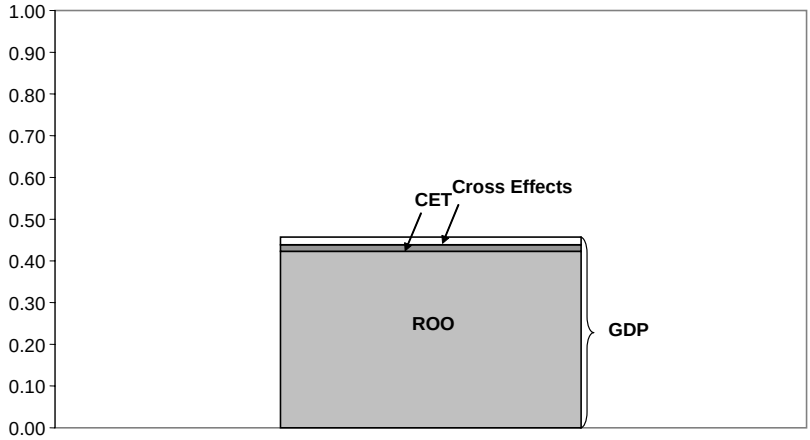


Figure 4: % increase in real Canadian GDP if we had negotiated a North American Customs Union instead of NAFTA in the 1990s GTAP5 data (2002 release of 1997 data)



Source: Georges (2008b)

Figure 5: % increase in real Canadian GDP if we wanted to negotiate a North American Customs Union in the 2000s GTAP6 data (2006 release of 2001 data)



Source: Author's simulations

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[1] For a recent collection of papers analysing different aspects of ROO, see Cadot, Estevadeordal, Suwa-Eisenmann, and Verdier (2006).

[2] Starting at any FTA, the theorem of Kemp and Wan (1976) ensures that there is a CU that is Pareto superior (to the FTA) if ROO are eliminated, but this requires to chose a CET that does not affect the terms of trade of the union with respect to outside countries and that member countries implement lump-sum transfers so that no individual member is worse off.

[3] One may wonder why the U.S. started to pursue extensive FTAs negotiation during the 1980s. Different arguments have been advanced, in particular by Bhagwati (2008). One argument is imitation of the European Union hub which increasingly had a number of spokes through regional FTAs. Some of the U.S. trade negotiators had in mind the spectacle of the spokes voting on GATT issues with the hub and this might have let to the U.S. abandoning its exclusive embrace of multilateralism in free trade. A second argument is that in order to respond to growing pressures from South America for debt relief, the U.S. responded by offering trade instead and the U.S. became a hub for some spokes. Finally, the over-appreciation of the U.S. dollar in the 1980s led to protectionism voices there, and the only way to countervail and contain the protectionists was to mobilize exporting interests by offering them markets abroad. However, the Europeans and the developing countries would not agree to declaring a new multilateral round when the U.S. tried hard to start one in the early 1980s. This led the U.S. to conclude that it was left with no option except to go the bilateral route.

[4] Krueger (1993) points that ROO can effectively extend the protection that the U.S. intermediary industry receives within the U.S., to Canada and Mexico, so that the ROO can be used by the U.S. to secure its NAFTA intermediary market for the exports of its own intermediate products.

[5] Indeed, unless CGE modellers re-calibrate their models appropriately, there is no "room" for the ROO distortion (that is only implicitly present in the initial benchmark database) and thus there is no way to remove it.

[6] A more formal presentation of the allocation between X_{Nafta} and $X_{nonNafta}$ where the firm must also choose between capital, labour, and several composite intermediary inputs, is given in Georges (2008a).

[7] The bias given by α represents observed data at the aggregate level. If we had adopted the alternative interpretation of an institutional parameter, then the issue of whether the ROO is strictly binding or not

would matter and detailed information on firms' use of NAFTA preferences would be relevant. For example, according to Goldfarb (2003), in 2002, 55% of total value of U.S. imports from Canada entered under the NAFTA regime and 45% entered at MFN rates. Goldfarb also notices a large inter-sectoral difference in NAFTA utilization rates. Our approach, however, has the advantage to avoid both the complication of whether the ROO is strictly binding or not and the problem of heterogeneous behaviour of firms with respect to ROO. In particular, we can assume a 'representative' firm in each sector of the economy. The representative firm may therefore be thought of as an "average" of numerous different types of firms with heterogeneous positions with respect to the sectoral ROO.

[8] The calibration procedure consists of fitting the model to the database, which implies that the choice of the distribution parameters of the CES function in equation (1) must be done so that if the modeler "simulates" a parameterized model without shock, and assuming cost minimizing behaviour given a set of prices, then he/she will be able to replicate the observed data set or benchmark (point 2).

[9] θ is a percentage increase in the *average* (unit) cost of production (so that it applies to each unit produced) whereas tariff preference only applies to the production that is exported to NAFTA countries. Therefore, in order to use tariff preference as a proxy for the increase in unit cost of production, it must be weighted by the share of sectoral production that is exported to the NAFTA member (that provides the preference). If a firm sells its entire production domestically, then tariff preference *per se* has no value, so that the firm would not change its input mix and incur an increase in unit cost of production (weight = 0) in order to satisfy a ROO. The weight equals 1 in the other extreme scenario of a NAFTA firm that exports all its production to the two other NAFTA members.

[10] Each country has eight sectors of production, all perfectly competitive. These sectors are agriculture, resource sectors, food processing, textiles and clothing, manufactures excluding machinery and equipment, machinery and equipment, automotives, and services. Each of these industries is assumed to produce a single commodity. Trade flows among countries are organised through an Armington system. Georges (2008b) describe the model in details and Georges (2008a) explains theoretically the calibration challenge.

[11] The cost of documenting ROO is not taken into account in this analysis so that our results are "conservative".

[12] Observe that the full impact of a CU includes second order or "cross effects" (0.92%-0.70%-0.14%): the removal of NAFTA ROO *per se* modifies trade patterns between NAFTA and non-NAFTA countries. Therefore, second-order effects measure the impact that the adoption of a CET might also have on this *new* pattern of trade *due to* the ROO removal, with repercussions on all variables in the model. As these cross effects are relatively small we will not discuss them further.

[13] Even a CET set equal to the U.S. MFN tariffs (to avoid a lengthy negotiation process with the U.S.) is likely to generate much lobbying, negotiation, and opposition. Industries where Canadian MFN tariffs have to be reduced to U.S. levels are likely to oppose such a move. Furthermore, foreigners are likely to oppose any upward adjustment of Canadian to U.S. MFN levels, which would violate the WTO and trigger retaliation or require compensation.

[14] Table 4 reports steady state (long term) results. In our model, steady state investment is equal to the depreciation of the stock of capital. Therefore, a decline in real investment (by 0.7%) translates in a lower steady state stock of capital in Canada.

[15] This result is in stark contrast to the study of Gil and al. (2008) which, using gravity equations, shows a gradual increase in trade intensity among European countries as they evolved from an FTA to a CU. However, these results might be obscured, as mentioned by the authors, by the role of phase-in periods.

[16] This would require a stricter mandate for the WTO Committee on Regional Trade Agreements which is charged to examine whether preferential trade agreements are compatible with Article 24.