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CETA Without Blinders:

How Cutting 'Trade Costs and More' Will Cause Unemployment, Inequality and Welfare Losses

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Abstract

Proponents of the Comprehensive Economic and Trade Agreement (CETA) emphasize its prospective economic benefits, with economic growth increasing due to rising trade volumes and investment. Widely cited official projections suggest modest GDP gains after about a decade, varying from between 0.003% to 0.08% in the European Union and between 0.03% to 0.76% in Canada. However, all these quantitative projections stem from the same trade model, which assumes full employment and neutral (if not constant) income distribution in all countries, excluding from the outset any of the major risks of deeper liberalization. This lack of intellectual diversity and of realism shrouding the debate around CETA's alleged economic benefits calls for an alternative assessment grounded in more realistic modeling premises.

In this paper, we provide alternative projections of CETA's economic effects using the United Nations Global Policy Model (GPM). Allowing for changes in employment and income distribution, we obtain very different results. In contrast to positive outcomes projected with full-employment models, we find CETA will lead to intra-EU trade diversion. More importantly, in the current context of tepid economic growth, competitive pressures induced by CETA will cause unemployment, inequality and welfare losses. At a minimum, this shows that official studies do not offer a solid basis for an informed decision on CETA.

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1. Introduction

On 26 September 2014, Canadian Prime Minister Harper and President of the European Commission (EC) Barroso signed the Comprehensive Economic and Trade Agreement (CETA). Unlike other 'new generation' trade deals still under negotiations, such as the Trans-Atlantic Trade and Investment Agreement (TTIP), CETA is already in the process of being ratified by Canada and all European Union (EU) member states.[i] Like other 'new generation' free trade agreements (FTAs), CETA aims at further liberalizing trade, but also investment as well as other sectors of society so far not subjected to market competition. CETA is thus more than just a 'trade deal' and needs to be approached in its complexity, without blinders.

CETA's proponents argue that cutting trade costs by removing tariffs and non-tariff barriers (NTBs) to trade will boost exports and generate mutually beneficial economic gains. Critics of CETA insist that 'new generation' trade deals are different from old-fashioned trade agreements, because they are about much more than simply cutting trade costs. Not only do they lament the loss of policy autonomy as well as lack of democratic accountability implied by CETA, but they also have legitimate fears (based on historical experiences with NAFTA and other regional trading agreements) that liberalization may generate unemployment, inequality and welfare losses (see e.g., Stanford 2016, Myant and O'Brien 2015).

As has become customary for all trade deals, CETA negotiations have been accompanied by a number of quantitative studies projecting economic gains for all countries involved. Remarkably, all four studies concerned rely on the same computable general equilibrium (CGE) model from the Global Trade Analysis Project (GTAP). Accordingly, all four studies are based on standard but unrealistic neoclassical assumptions, such as the permanent full employment of all workers in Canada and the EU, the result of which is that any proven risk or macroeconomic and social costs associated with liberalization are ruled out from the outset. In these CGE analyses, the Canadian and EU economies instantaneously and costlessly adjust to the trade reform, and as any increase in unemployment or loss of aggregate income, even temporarily, is ruled out beforehand, CGE analyses can only point to net welfare gains. Blinded by such strong but palpably unrealistic priors, neoclassical CGE modelers have merely defined away the problem. In light of such a lack of intellectual diversity and empirical realism, this paper contends that, already by their design, these studies do not represent a reliable basis for assessing CETA and meaningfully informing policy-makers.

This paper pursues a double purpose. First, we offer a detailed critique of the four existing studies on theoretical and modeling grounds. Second, we propose an alternative assessment of CETA using a different and more realistic model that is based on a more complete depiction of the macro-economy and on more plausible assumptions about economic adjustments likely to occur in the wake of 'new generation' trade agreements designed to cut 'trade costs and more'. Using the United Nations Global Policy Model (GPM), this paper simulates the impact of CETA on the global economy over the period 2017-2023 in a context of protracted austerity and low growth, especially in the EU. Specifically, it does not challenge projections of bilateral Canada-EU trade expansion made by other existing studies, but rather proposes a comprehensive assessment of CETA's economy-wide impacts, including those on employment, income distribution and welfare.

Simulation results show CETA would lead to net losses in terms of employment, personal incomes and GDP in Canada and to a relatively lesser extent the EU. In particular, about 230 thousand jobs would be lost in CETA countries, 200 thousand of them in the EU, and 80 thousand more in the rest of the world, adding to the already declining labor income share. In the long run, slower wage increases will transfer an additional share of national income from labor to capital owners. By 2023, the share of national income accruing to capital will have risen by 1.76% and 0.66% in Canada and the EU, respectively. Consequently, workers will have foregone average annual earnings of €1776 in Canada and between €316 and €1331 in the EU depending on the country. Aggregate demand shortfalls nurtured by heightened unemployment will also hurt productivity and cause cumulative welfare losses amounting to 0.96% and 0.49% of national income in Canada and the EU, respectively. Besides hurting GDP, these effects induced by CETA will add to rising inequality and social tensions in an already complex and volatile political context.

The paper draws two general conclusions. First, quantitative studies that are by construction oblivious to proven risks related to comprehensive liberalization do not represent an adequate basis for informing policy-makers about the economic implications of CETA. Alternative approaches to modeling, which acknowledge the risks of trade liberalization and can quantify their impact and cost, are required for providing meaningful insights as to the likely consequences of CETA. Based on a model that starts from a more complete and accurate depiction of the macro-economy and on more plausible assumptions about economic adjustments likely to occur in the current context were CETA to be adopted, alternative projections provide dramatically different results. Second, seeking to boost exports as a substitute for domestic demand is not a sustainable growth strategy for the EU or Canada. Under current austerity conditions, high unemployment and low growth, improving competitiveness by lowering labor cost can only harm the economy. Were policy-makers to adopt CETA and go down this road, they would soon be left with only one option for reviving demand in the face of growing social tensions: increase private lending, possibly through renewed financial deregulation, opening the door to unsustainable debt and financial instability. Instead of repeating the same errors over again, policy-makers should rather stimulate economic activity through coordinated and lasting policy efforts supporting labor income and seek ways of initiating a much-required socio-ecological transition (Daly 2008, Holt et al. 2009, Dimitrova et al. 2013, Kohler 2015, 2016).

2. Theory meets reality: The "dirty little secrets" of neoclassical trade models

The four quantitative studies of the impacts of CETA use the same standard neoclassical CGE trade model and so it comes as no surprise that the policy advice they provide is the same as the simple and straightforward recommendation derived from the neoclassical theories of international trade: open up your borders, because trade liberalization is welfare-enhancing. This is argued to be the case not only because of *static net gains* from trade (which arise from the re-allocation of labor, capital and land to those sectors in which the country has comparative advantage), but also due to *dynamic net gains* from trade. These dynamic gains, which are usually assumed to arise from increased (global) competition, higher research and development (R&D) spending and accelerated capital accumulation needed to maintain a competitive edge in world markets, are notoriously hard to formalize and measure (Ocampo and Taylor 1998,

McCulloch 1999, Ackerman and Gallagher 2008, Rodrik 2015). In comparative statics terms, the net gains from trade liberalization are more clearly conceptualized as the 'deadweight losses' avoided when tariffs are removed, measured in terms of so-called 'Harberger triangles' as we illustrate in Figure 1 (below). The 'dirty little secret' of neoclassical economics is, as Paul Krugman (1995, p. 31) stated, that static gains from trade are very small, and we may add, also 'one-off'.

I. On the static gains from trade liberalization

We think it is useful for our purposes to go through the Harberger analysis if only to make explicit the underlying—and mostly—unstated assumptions and the contingent nature of the conclusion that freeing trade is necessarily welfare-improving. To do so we use Figure 1 in which there appears an upward-sloping aggregate supply curve for a homogeneous commodity produced by (say) Canada under conditions of perfect competition. The aggregate demand is downward-sloping, and we assume that consumers only consider the price and are indifferent as to whether the commodity has been produced domestically within Canada or abroad. The 'autarky price' would be P_A and it is higher than the prevailing world market price P_{W0}. But while the Canadian economy is open to international trade, its government imposes an ad-valorem tariff t on imports to protect Canadian industry. This tariff raises the price in the domestic market to P_T, where $P_T = (1+t)\ P_{W0}$. Domestic demand at P_T is equal to D_T, which is larger than domestic supply S_T at the same price; the excess demand ($D_T - S_T$) is met by imports. Under this system of tariff protection, the so-called consumer surplus equals the sum of areas (A + B + C), while domestic firms enjoy a producers' surplus equal to summed areas (D + E) and the Canadian state receives the proceeds of the import tariff (or areas F + G). Aggregate welfare, in neoclassical accounting, equals the sum of consumer surplus, producers' surplus and government revenue, or (A + B + C + D + E + F + G).

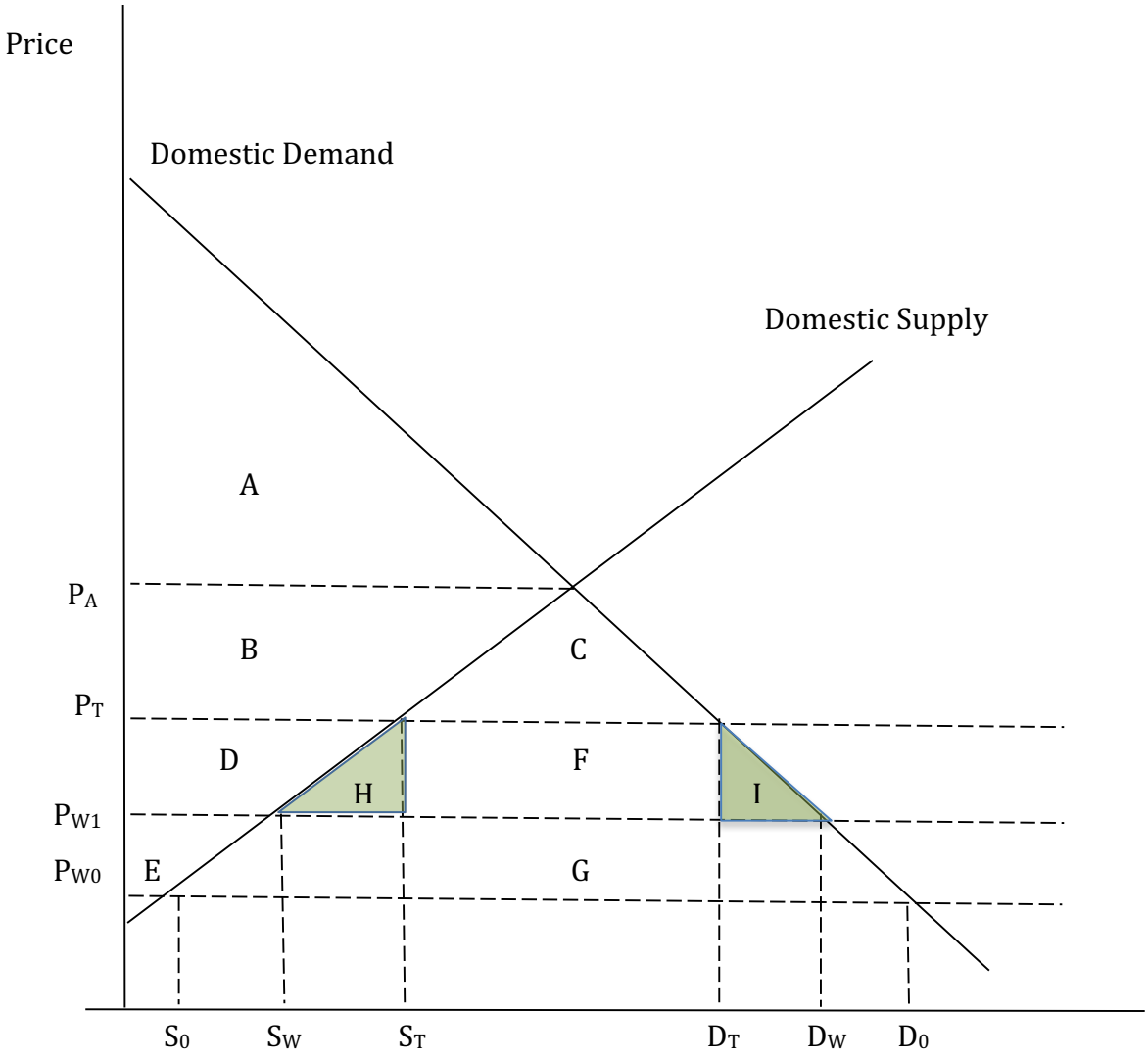
Under the assumptions made, trade liberalization must be welfare-enhancing. Let us illustrate the reasoning using Figure 1 and assume that the Canadian government unilaterally abolishes the tariff t. With open borders, Canadian consumers can now buy their goods at the world market price—and at an unchanged P_{W0}, Canada's imports would increase from ($D_T - S_T$) to ($D_0 - S_0$) in Figure 1. This would amount to making the 'small-country' assumption (as the increase in Canada's import demand does not have an impact on the world price), which would be unrealistic. Let us instead assume that Canada's opening up leads to an increase in global demand, which is large enough to push up the world market price from P_{W0} to P_{W1}. It is straightforward to see that the consumer surplus at price P_{W1} is equal to (A + B + C + D + H + F + I); compared to the earlier protectionism consumers have gained areas (D + H + F + I) thanks to a lowering of the price. Canadian producers suffer a loss (equal to area D), in Figure 1, as their producers' surplus at P_{W1} equals only area E. Government revenue declines by the sum of areas F + G.

These changes make clear that trade liberalization creates 'winners' (consumers in this case) and 'losers' (firms and government in Figure 1). The (Pareto) superiority of free trade is based on the outcome that *aggregate welfare* after trade liberalization is larger than before. This holds true in Figure 1: the aggregate welfare change can be calculated by adding up the gain in consumer welfare and the losses in producers' welfare and government revenue:

$$(D + H + F + I) - D - F - G = (H + I) - G > 0$$

Areas (H + I), the two Harberger triangles, represent the 'net gain' in total welfare. They are considered to be 'deadweight losses' created by the tariff as they have no counter-benefits for anyone in the system. Area G is a terms-of-trade effect which here constitutes a welfare loss (compared to the earlier protection) and which arises because the increase in Canada's import demand, following liberalization, pushes up the world market price. We assume that area G is smaller than (H + I) so that trade liberalization does indeed generate extra welfare for Canada's economy. Note that area G would disappear in the case of a small economy, unable to affect P_W, and trade reform would be unambiguously welfare-improving.

Figure 1: Static domestic welfare effects of trade liberalization
(in conditions of full employment)



Ever since Harberger (1959) began cranking the numbers approximately sixty years ago, it has been found, as pointed out by Ocampo and Taylor (1998), that the static net gains from trade

liberalization (measured by his triangles H + I) are positive but negligibly small—Krugman's 'dirty little secret'. To elaborate, early studies for the EU estimated that a complete and simultaneous removal of all tariff and NTB restrictions would raise Europe's GDP by only 0.3 percent; similar estimates of the welfare gains of complete trade liberalization for the USA suggested GDP increases of 0.01 to 0.1 percent. Statistically speaking, there can be no doubt that these results, reported in Vousden (1990), would all fall within the margin of error associated with the null-hypothesis that the net gains from trade liberalization are zero (i.e. $H + I - G = 0$). These findings made Vousden (1990, p. 51) lament that "the conventional static welfare costs of tariffs … are quite insignificant in relative terms." Likewise, Panagariya (2002, p. 178) concludes that "in the traditional neoclassical model, the static welfare costs of protection through tariffs that are 15 percent or less are unlikely to exceed 1 percent of GNP." As highlighted by Ackerman and Gallagher (2008), similar measly gains are predicted by the GTAP and World Bank's LINKAGE global CGE models: 'one-time' welfare gains of complete liberalization of world trade are estimated to range from a pitiful 0.23% to 0.60% for the high-income countries and 0.44% and 0.80% for the developing world, respectively. The empirical evidence on the triviality of the Harberger triangles is simply overwhelming.

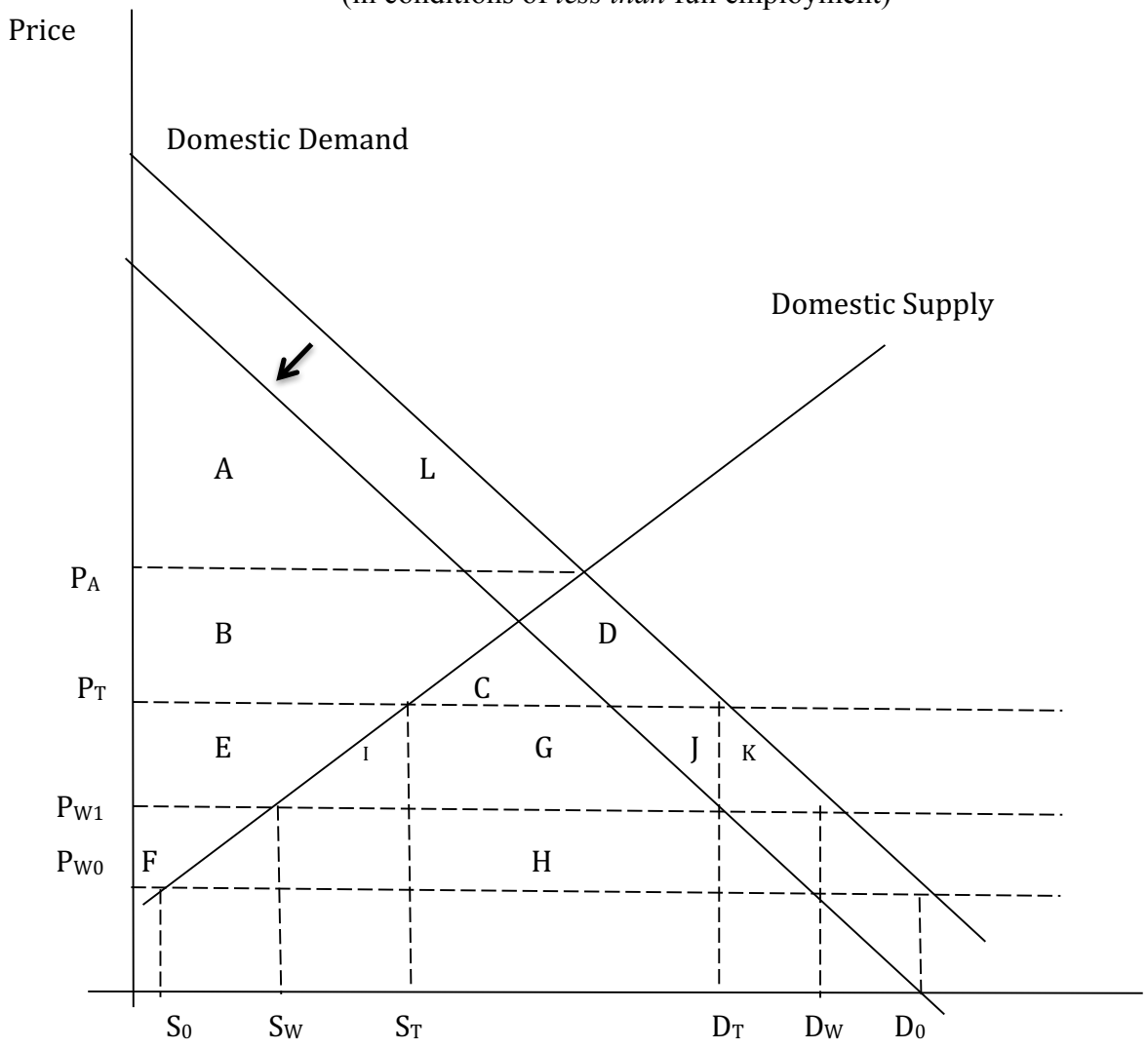
However, the trifling Harberger net gains stand in sharp contrast to the distributional shifts engendered by the trade liberalization. As Ocampo and Taylor (1998, p. 1528) point out, whereas the net overall gains are measured in terms of small triangles (H and I in Figure 1), the distributional changes are measured in much larger rectangles. In Figure 1, abolishing the tariff will increase the consumer surplus by the large rectangles (D + H) and F and the smaller triangle I. Government revenue goes down by the large rectangle (F + G). The income-distributional shifts from 'losers' to 'winners' are large, socially disruptive (when not compensated), and politically potentially upsetting. Neoclassical economics tends to define away the ensuing distributional conflicts arising out of trade reforms, but in view of Figure 1, it should not come as a surprise that 'new-generation' trade deals such as CETA stir up much debate as well as resistance (see Myant and O'Brien 2015). It is only 'rational' for (potential) losers to be worried about the consequences of freeing trade, especially in the real world where adjustments (searching new jobs, moving houses, going for additional schooling, closing down one's factory, taking a new loan for setting up a new firm) are costly. Downplaying such adjustment costs (see De Ville and Siles-Brügge 2015), neoclassical trade theory holds that free trade is welfare-improving, because winners can *in principle* compensate losers (preferably through lump-sum transfer schemes) and still be better off themselves (since overall net gains of trade liberalization are positive, even if trivial). However, the instruments to implement such lump-sum transfers are generally not available, and creating and implementing them is an uncertain and politically contested process.

However, in our view, Figure 1 contains one more 'dirty little secret': the analysis presupposes that the tariff-imposing economy always operates at full employment (or at the maximum level of GDP), which is exactly what is done in the CGE model used to assess the welfare impacts of CETA. Assuming full employment means that whatever happens, aggregate income or GDP will stay unperturbed. If trade liberalization leads to a decline in output and the shedding of workers in certain activities (presumably those lacking comparative advantage), it is assumed that these workers will rapidly find new jobs in those activities boosted by the trade reform. Productive resources must lack any sector-specific features, which indeed means that an assembly-line

employee of an automobile factory can take up a new job at a software company, and vice versa. Alternatively, both can also become 'Uber entrepreneurs'. Likewise, capital (to be interpreted as 'machines') is malleable and can be reallocated from sunset to sunrise sectors. If necessary, wages will go down, which in the process will raise employment (through capital-labor substitution), so that aggregate wage income (which is the product of wages earned per hour and total hours worked by the labor force) does not go down too much. If income is redistributed from lower-saving wage earners to higher-saving profit recipients and aggregate savings increase, this will not cause a deficiency of aggregate demand, because the additional savings will be channeled into higher investment, presumably through a well-functioning (interest-rate-clearing) Wicksellian loanable-funds market. Assuming rapid and costless adjustments so as to maintain demand at the level of full employment, is of critical importance to the conclusions, because it ensures that the aggregate demand curve does not shift downwards (to the left) in Figure 1. Let us be specific: clearly, aggregate demand does not just depend on (relative) price, but also on aggregate income (or GDP). It is only by defining away the problem of demand deficiency and by assuming that GDP remains constant at the full employment level that we can be sure that the demand curve in Figure 1 stays put—which in turn allows us to measure the static net gains of trade liberalization in terms of Harberger's triangles. There is no need to argue that this is unrealistic.

Let us instead entertain the possibility that resources are not automatically fully employed and that trade liberalization depresses aggregate demand, at least temporarily (say during the first five to seven years of transition following the reform). This could well be the result of costly time-consuming adjustments in the allocation of labor and capital (e.g. frictional unemployment and underutilization of capacity). In Keynesian fashion, it could be the consequence of a shortfall of (private) investment in conditions of heightened uncertainty and rising unemployment, in combination with an increase in aggregate savings. The result would in all cases be a drop in GDP which would lead to a downward shift of the aggregate demand curve, as is illustrated in Figure 2. The welfare analysis of Figure 2 is similar to that of Figure 1, which makes it possible to immediately jump to the net changes in consumer surplus (= E + G + I – L), producers' surplus (= – E) and government revenue (= – G – H – J). On balance, aggregate welfare changes by (I – L – D – H – J) < 0. In Figure 2, trade liberalization would be welfare reducing, basically because consumers would now lose out as a result of declining income and job losses. Trade liberalization is thus no longer a matter of just substitution effects, as income effects matter as well and arguably matter more, as (for the record) was recognized already by Adam Smith, who provided a reasoned case in favor of tariffs in the latter part of Book IV, Chapter II of *The Wealth of Nations* (Ocampo and Taylor 1998).

Figure 2: Static domestic welfare effects of trade liberalization
(in conditions of *less than* full employment)



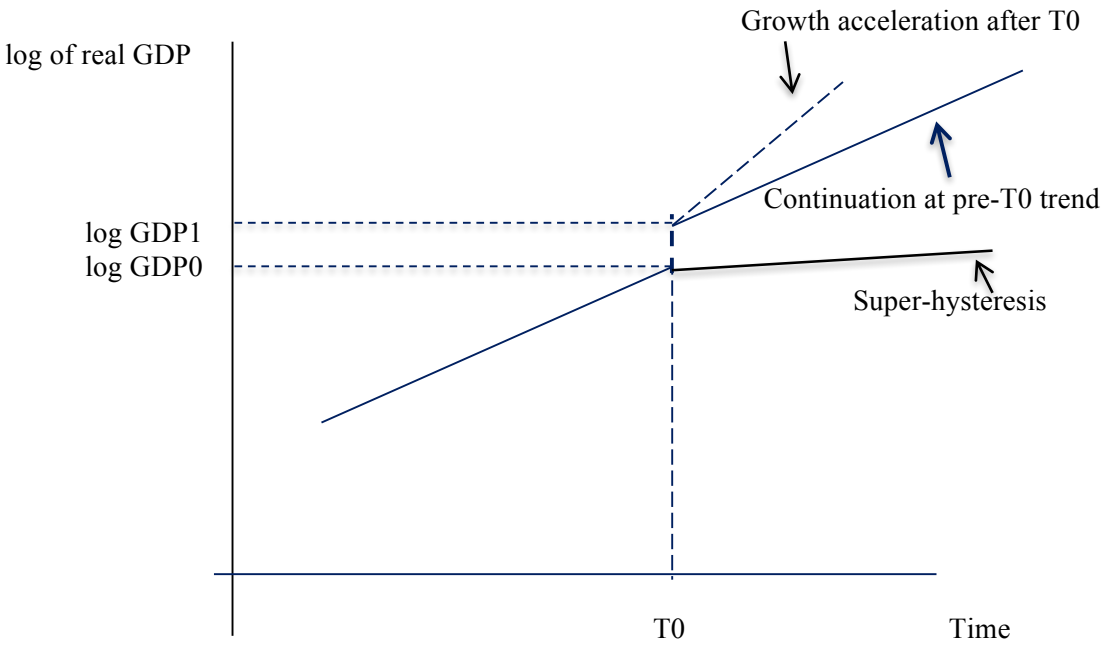
II. On the dynamic gains from trade liberalization

The CGE studies on CETA claim that abolishing trade protection will generate dynamic gains—long-terms benefits in terms of higher labor productivity growth, more innovation and stronger (international) competitiveness. The (empirical and theoretical) literature on this issue is large and beyond reviewing, but it is fair to conclude that there is no robust evidentiary basis for claiming that there are dynamic gains from freeing trade (Ocampo and Taylor 1998, McCulloch 1999, Ackerman and Gallagher 2008, Raza, Tröster and von Arnim 2016). Dynamic gains (or losses) from trade liberalization are inescapably fragile and inherently contingent: these can be large or small as well as positive or negative depending not just on the extent and the timing of the reforms, but also on the structures of the economies involved and on the complementary fiscal, monetary and labor market policies adopted. Consider the common argument that greater exposure to global competition forces firms to invest more in innovation and technical progress. The Schumpeterian counter-argument is that, in oligopolistic conditions, trade liberalization

reduces firms' rents and hence reduces both the incentive to innovate and firms' capacity to finance the R&D investment from internal sources, which will hamper productivity growth. The first effect may well be offset by the second, and their net impact is likely to be small and it could well be negative. Paul Samuelson (2004, p. 136) called the view that dynamic gains from trade are necessarily positive a "popular polemical untruth" because "… it is dead wrong about *necessary* surplus of winnings over losings" (see Gomory and Baumol 2000). We concur with Dani Rodrik (2015) who writes that "numerical models that purport to show significant [*positive*] dynamic/growth effects are suspect […]. Dynamic effects in trade models tend to be highly fragile, and can be easily reversed by tweaking the assumptions appropriately. Not surprisingly, pro-trade pact models tend to choose assumptions on this core that magnify the economic gains." Hence, Rodrik recommends that modelers wisely "stay away from some of the bells and whistles (*e.g.* induced learning and total factor productivity gains) that have been used in the past to produce exaggerated benefits from trade agreements."

Let us outline what is at stake. The claim is that trade liberalization will cause a one-time increase not just in the level of (real) GDP, but more importantly in the (trend or structural) growth rate of GDP. The difference between the static (one-time) effect and the permanent impact on growth is illustrated in Figure 3.

Figure 3: One-time versus permanent shifts in real GDP due to trade liberalization at T0



Suppose that trade is liberalized at time T0 and let us accept that the opening up leads to a restructuring of resources in line with static comparative advantage. This restructuring may consist of a self-selection of firms with only the most efficient firms surviving after trade liberalization and compensating for the supply lost by non-surviving firms (Melitz and Trefler 2012). The result will be a one-time increase in labor productivity and in real GDP, illustrated by

the discrete jump in the level of real GDP from logGDP0 to logGDP1. Economic growth will then continue at the pre-reform trend, unless the trade liberalization does cause a permanent increase in capital accumulation and/or the rate of technological progress. If these were to happen, trend growth would accelerate as is represented by the dotted line, which rises more steeply than the earlier trend line. In this case, trade liberalization does generate dynamic gains as indicated by its permanent impact on trend growth.

How could this realistically happen? We can reasonably exclude the 'bells and whistles' which Rodrik (2015) rightly calls suspect (see De Ville and Siles-Brügge 2015). The only credible way in which trade liberalization may raise trend growth as in Figure 3 is if it induces additional capital formation. Since the extra investment will embody the latest technologies, average capital-stock productivity must rise and this in turn will increase (labor) productivity growth. However, it is ironical that the neoclassical CGE models used to assess the static and dynamic impacts of trade reform do not specify the determinants of capital accumulation, R&D investment or innovation. Instead, private sector investment, in these models, is determined by the availability of national savings: by assumption all savings are automatically used to finance investment (Raza, Tröster and von Arnim 2016). The underlying idea here is that if savings increase, bank deposits will rise which in turn forces profit-maximizing banks which do not want to be left with idle, unused liquidity, to lower their interest rate so as to induce a greater demand for investment loans by firms. Hence, when savings (or the supply of loanable funds) increase, the rate of interest rate will go down until investment (or the demand for loanable funds) increases enough to match the higher savings. Capital formation thus is not affected by changes in the demand (and capacity utilization) or expected profitability—what drives investment is just the availability of savings.

This particular assumption—that capital formation has no dynamics of its own but is wholly dependent on and driven by savings supply—has two major implications, which—together—have an overwhelming influence on the CGE model results. Firstly, the assumption implies that there can never be a deficiency of aggregate demand: if trade liberalization, for instance, leads to (temporary) unemployment or greater income inequality, as a result of which consumption demand falls while savings rise (we assume here that higher-income groups have a higher propensity to save than lower-income groups), then the higher savings will be automatically channeled into higher investment demand—and in the process, aggregate demand will not drop below its full-employment level. This savings-driven investment closure of the model, in other words, guarantees that the economy behaves like in Figure 1 and the possibility of shortfall of an aggregate demand, caused by an (uncompensated) income redistribution triggered by the trade reform, which we highlight in Figure 2, is ruled out right from the outset.

Secondly, since full employment is imposed (by assuming that all savings are automatically invested), trade liberalization must produce (small) static net income *gains*, because the aggregate demand curve stays put as in Figure 1. Part of the additional income is saved and hence invested. This will raise the economy's productive capacity in the next period, and this larger capacity will again be fully used—generating a process of cumulative causation, captured by the trend growth increase in Figure 3. The step-up in growth is, as Raza, Tröster and von Arnim (2016, p. 22) explain, 'simply a multiple of the static gain.' This multiple can be further enhanced by increasing, in a rather ad hoc fashion, the economy's savings rate over time in

response to the higher return on capital, induced by the trade reform (Raza *et al.* 2016). The key assumption underpinning the higher return to capital is, again, that the economy fully employs all capital and labor resources—which is obviously an assumption not satisfied in reality.

The neoclassical CGE model used to assess CETA is thus designed in manner that from the outset guarantees dynamic gains (as illustrated by the trend growth acceleration in Figure 3) and, importantly and asymmetrically, rules out the possibility of a growth deceleration. As is convincingly shown by recent research for the OECD countries by Ball (2014), Blanchard, Cerutti and Summers (2015) and Summers (2015), a temporary recession can lead to a permanent decline in trend growth—an outcome called 'super-hysteresis'. The case of super-hysteresis is illustrated in Figure 3: after a temporary blip in GDP caused by the restructuring following the trade reform, trend growth slows down. The take-away from this literature is that a temporary blip in growth carries a risk of becoming a structural—permanent—slowdown of longer-term growth. This risk of super-hysteresis is fully ignored in the neoclassical CGE models under review here, as these models always operate at full employment. This is just another instance in which strong priors define away what is now widely seen as a major macroeconomic risk—that a short-term disturbance, for instance due to the trade liberalization, leads to permanent damage in terms of a lower rate of growth.

3. Literature review in context

In 1999, on the initiative of corporate lobbies the Canada Europe Roundtable for Business (CERT) was created to advocate for a deeper liberalization of trade and investment between these economies. [ii] Beyond trade liberalization, these initiatives increasingly aimed at deregulating and enforcing international competition across public and private sectors (including, for example, public procurement), while enhancing protection of the interests of capital (e.g. investor rights, intellectual property rights). As EU-Canada negotiations picked up steam in the following decade, other stakeholders produced studies warning of potentially negative economic, social and environmental effects of CETA. [iii] Reactions by advocates of a deeper trade and investment liberalization hinged on standard neoclassical CGE model studies, which were designed to reinstate the known belief among policy-making circles that free trade yields mutual benefits for all trading partners.

I. CETA through the lenses of neoclassical CGE models

Over the last 15 years, four neoclassical studies attempted quantifying the economic impact of a EU-Canada trade agreement. All these were based on slightly different versions of the same neoclassical CGE model from GTAP.[iv] By construction (as we explained in Section 2), such model exercises tend to project mutually beneficial gains from trade liberalization. Needless to say, this would not be the first time that such predictions of mutual gains from free trade agreements (FTAs) fail to materialize.[v] After summarizing the main outcomes of these model exercises, we shall highlight the unrealistic assumptions underlying them, because the CGE model results can only be as credible and relevant as the priors on which the analysis has been built.

i. Projected GDP outcomes

In the early 2000s, a first study commissioned by the European Branch of the Canadian Department of Foreign Affairs and International Trade (DFAIT), and realized by Cameron and Loukine (2001), estimated the potential gains from cutting trade costs by reducing or eliminating across the board all tariffs on goods trade between CETA partners, including for agricultural products.[vi] Their study projected small GDP gains up to 0.04% and 0.009% for Canada and the EU-15[vii], respectively (Table 1). The small figures nevertheless supported calls at a bilateral summit in 2002 for launching a comprehensive review of relations and negotiations on the Trade and Investment Enhancement Agreement (TIAE).

These negotiations eventually broke down in 2004, when the EC decided, in view of the fact that the findings of the DFAIT study were not sufficiently compelling, that a deal would not be signed unless it was more comprehensive (Drache and Trew 2010). This policy shift preluded the coming EU strategy for a *Global Europe.* This strategy focused on improving competitiveness by moving beyond tariff elimination towards the elimination of non-tariff barriers and the liberalization of new areas, such as services, investment, public procurement, as well as enhanced access to resources (especially energy) and protection of investor rights and intellectual property rights (EC 2006). Canada soon moved in a similar direction by adopting its *Global Commerce Strategy* (Government of Canada 2008). Facing a competitive drive among developed and emerging economies to sign new bilateral or regional agreements, while the faith or interest in multilateral agreements started to fade away, Canada expressed interest in 2008 in resuming negotiations with the EU over a 'new generation' trade deal.[viii]

Table 1: Longer-term[ix] projections for GDP (in %, differences over baseline)

	Cameron and Loukine (2001) CA-DFAIT report(1)	**Hejazi and Francois (2008)** Joint report(2)	**Kitou and Phillippidis (2011)**(3)	**Kirkpatrick et al. (2011)** EU-SIA(4)
Canada	0.03-0.04	0.76	0.36-0.45	0.18-0.36
EU	0.003-0.009	0.08	0.04-0.05	0.02-0.03

Note: Differences in the magnitude of outcomes projected in the four CGE studies arise from (i) liberalization scenarios based on different assumptions about the *maximum scope of liberalization* achieved under CETA as well as from (ii) decisions on whether and how to project static CGE gains into the future (see footnote viii) for generating *ad hoc 'dynamic' gains*. To summarize the most distinctive features of the four reviewed studies: (1) Maximum scenario: removal of all tariffs on goods only. Method: static CGE simulation only. (2) Maximum scenario: CETA removes all tariffs on goods, removes NTBs on goods and services. Method: static CGE gains projected into the future over 7 years until 2014, forcing all new savings to be invested in domestic production. (3) Maximum scenario: same as in joint report, except tariffs remain for HS6 sensitive product declarations submitted by both parties in the first round of trade talks in 2009. Method: same as joint report, except projection horizon extended until 2024. (4) Maximum scenario: same as joint report. Method: static CGE simulation only.

The same year, the Government of Canada and the EC commissioned a second study, realized by Hejazi and Francois (2008), which magnified projected gains from a more comprehensive trade agreement by making several dramatic assumptions. In addition to taking total tariff elimination for granted, including for agricultural products, their liberalization scenario further modeled a significant reduction in NTBs to trade in goods and services.[x] On top of that, the authors assumed all new savings would be fully invested in domestic productive capacity unleashing by

assumption powerful longer-term capital accumulation effects.[xi] This means that in a model designed to assess the macro effects of trade liberalization, many of which will operate through firms' investment, the investment decisions taken by firms are left unspecified; firms are assumed, quite unrealistically, to invest whatever savings are available. As discussed further below, it is not so much the more comprehensive scope of the newly proposed trade deal that led CGE modelers to project more attractive outcomes. Rather, the several new areas under consideration for liberalization allowed modelers to introduce new layers of unrealistic assumptions, some of which even if striking have been adopted uncritically in subsequent CGE-based studies on CETA.

Compared with the DFAIT report, GDP gains from a more comprehensive deal as projected by the joint study rose by about tenfold to 0.77% and 0.08% for Canada and the EU-27, respectively. These figures helped the initiative gather momentum in trans-Atlantic business communities and paved the way for launching renewed negotiations on a Comprehensive Economic and Trade Agreement at the EU-Canada Summit on May 6, 2009 in Prague. The enlarged scope of CETA negotiations compared to aborted TIEA negotiations mirrored the changing political priorities expressed in the new trade strategies on both sides. It also reflected a changing institutional context, after the ratification of the Lisbon treaty in 2009 made foreign investment the sole competence of the EU over its member states.[xii]

In the wake of the official joint report, which still serves as the main reference for discussion on CETA in policy circles, two more studies proposed quantitative estimates of CETA's economic impact based on the same modeling methodology. Adding a twist to the projections of the joint report, Kitou and Phillippidis (2010) proposed taking into account the HS6 sensitive product declarations submitted by both parties in the first round of trade talks in October 2009, which mostly aimed at keeping some degree of protection for important food and agricultural products. Although inferior because of the significance of remaining barriers to trade in food and agricultural products, their results are aligned with those of the joint report, projecting GDP gains of up to 0.45% and 0.05% for Canada and the EU-27, respectively.

Finally, the EC ordered a Sustainability Impact Assessment (SIA) of CETA to evaluate its economic, social and environmental effects.[xiii] Departing from the controversial 'dynamic' projection methodology used in the two previous studies, but sticking to the maximum liberalization scenario defined in the joint report, Kirkpatrick *et al*. (2011) projected lower GDP gains of up to 0.36% and 0.03% for Canada and the EU-27, respectively. The SIA study is of interest because of the multidimensionality of its assessment and also because some of its sections are partly based on a consultation process integrating civil society concerns into the final report to the Commission. For instance, the SIA report acknowledges in passing that CETA could lead to a rise in inequality and CO2 emissions (e.g. from increased trade-related transport and tar sand extraction). It also inconspicuously mentions that policy space[xiv] could shrink as a result of public procurement liberalization, enhanced intellectual property rights protection or adoption of an ISDS-like legal mechanism.[xv] Yet, after having consulted civil society, the authors of the neoclassical CGE model analysis at the core of the SIA report made no effort to include in their CGE simulations the points that had been raised during the consultation process, even those that were highly relevant from an economic perspective and could have been integrated in a modeling exercise. Consequently, the projections of the SIA report remained

totally unaffected by these 'ornamental' consultations, leaving the model-based claims that CETA would deliver GDP gains unchallenged.[xvi]

ii. Projected trade outcomes

Trade projections in the mentioned studies are reported in a more convoluted way than GDP figures, probably because it may be more challenging to cover up that free trade tends to exacerbate unbalanced trade relations (Stanford 2010). These neoclassical CGE simulations are constructed as balanced scenarios by assuming that all unfavorable shifts in some areas caused by freer trade are offset by gains somewhere else, dismissing cumulative causation effects on weaker partners. Also, as discussed further below, these simulations ignore potentially negative impacts on import demand deriving from unemployment and losses of labor income induced by competitiveness-enhancing policy measures and constraints imposed on government fiscal actions.

As summarized in Table 2, Cameron and Loukine (2001) report that tariff elimination would boost bilateral goods exports up to 15.6% and 34.8% for Canada and the EU-15, respectively. Total Canadian goods exports would increase by up to 0.86%.[xvii] The paltry GDP gains (up to 0.04% and 0.009% for Canada and the EU-15, respectively) illustrate the weakness of the link between trade and GDP, even in neoclassical CGE-based simulations. They also hint at substantial 'beggar-thy-neighbor' trade diversion from third countries as a means to materialize these insignificant 'mutually beneficial' gains from trade.[xviii] Cameron and Loukine (2001) estimate that trade diversion losses for the US alone amount to $562 million, more than half of the combined GDP gains projected for Canada ($236 million) and the EU ($772 million).

Table 2: Longer-term projections for exports (in %, differences over baseline)

	Cameron and Loukine (2001) CA-DFAIT report		**Hejazi and Francois (2008)** Joint report		**Kitou and Phillippidis (2011)**		**Kirkpatrick et al. (2011)** EU SIA	
	Bilateral	*Total*	*B*	*T*	*B*	*T*	*B*	*T*
Canada	11.2-15.6	0.78-0.86	20.4	N/A	N/A	N/A	N/A	0.54-1.56
EU	34.3-34.8	N/A	24.2	N/A	N/A	N/A	N/A	0.05-0.07

Note: B=bilateral, T=total, N/A = not available/reported in the study. See the note under Table 1 for a summary of distinctive features of each study.

Hejazi and Francois (2008) report comparable figures, projecting CETA would boost bilateral exports of goods and services by 20.4% and 24.2% for Canada and the EU-27, respectively. As their maximum liberalization scenario further assumes a significant reduction of NTBs to trade in goods and services,[xix] the latter being a sector of comparative advantage for EU countries, the weaker expansion of EU exports to Canada compared to the previous study is surprising. The tenfold increase in projected GDP gains compared to the previous study (0.77% and 0.08% for Canada and the EU-27, respectively) also signals that gains do not primarily arise as a consequence of increased trade, but are generated by other ad hoc mechanisms to artificially emulate dynamic gains.[xx]

Finally, while the two subsequent studies extensively discuss changes in sectoral production and sectoral bilateral trade, Kitou and Phillippidis (2010) do not report figures for aggregate bilateral or total exports. Kirkpatrick *et al*. (2011) report that total exports of goods and services will expand up to 1.56% and 0.07% for Canada and the EU-27, respectively. This figure is comparable to the estimate Cameron and Loukine (2001) obtained projecting a much less ambitious liberalization scenario leaving aside the removal of NTBs on goods and services trade.

iii. Projections for employment and labor income

All four neoclassical CGE-based studies posit full employment of all factors (labor and capital), assuming away a major challenge of capitalist economies by ignoring unemployment with or without CETA (Table 3). We may be allowed to note that in 2016 around 6.8% of Canada's workers are unemployed, while one in ten workers in the EU is currently unemployed. This comes amidst declining employment rates, which have dropped by more than one point on both sides of the Atlantic since the global financial crisis, hovering around 72% and 64% in Canada and the EU, respectively. Disregarding these major facts, the reviewed CGE-based studies assume labor resources are constant and fully utilized. Moreover, they have given rise to claims that CETA would create new jobs. The Canadian government, for instance, declared on its official website that implementing CETA "would be equivalent to creating almost 80.000 new jobs" in Canada.[xxi] This claim results from a mechanical derivation of the joint report's GDP gain projections and a disregard of the fact that full employment was assumed as a point of departure. However, such a projected outcome can be politically persuasive.[xxii]

Table 3: Longer-term projections for employment and income inequality

	Cameron and Loukine (2001) CA-DFAIT report		**Hejazi and Francois (2008)** Joint report		**Kitou and Phillippidis (2011)**		**Kirkpatrick et al. (2011)** EU SIA	
	Unemployment	*Inequality*	*U*	*I*	*U*	*I*	*U*	*I*
Canada	∄	∄	∄	∄	∄	+	∄	+ or -
EU	∄	∄	∄	∄	∄	+	∄	+

Note: U=unemployment, I=income inequality, ∄ = it does not exist *by assumption*, + is an increase over baseline, - is a decrease over baseline. See the note under Table 1 for a summary of distinctive features of each study.

Similarly, the Canadian government declared CETA "would be equivalent to increasing the average Canadian household's annual income by $1000."[xxiii] This claim is technically correct in the context of the joint report's model simulation, which assumes all households are exactly identical in terms of capital endowments and skills. Yet, it ignores the existence of growing disparities in the distribution of income between capital owners and workers as well as among workers. While Cameron and Loukine (2001) also assume away any form of inequality, the two more recent studies opened the door for a cursory analysis of personal income inequality by distinguishing households according to their skills level (low or high).[xxiv] Without discussing their results, Kitou and Phillippidis (2010) report in their appendix the difference in percent between wages of both categories of households in the baseline and in their scenarios. As all real wages are projected to increase in the same proportion, but skilled households earn more, the income gap will necessarily rise in Canada and in Europe. Finally, Kirkpatrick *et al*. (2011) briefly discuss the impact of CETA on wages. They also project rising real wages, but explicitly

acknowledge personal income inequality would increase in Europe as wages of skilled workers would grow more than those of unskilled workers. Their results also show that the wage gap could rise in Canada, depending on the initial wage level of skilled and unskilled workers. However, even though inequality may rise in some versions of the standard neoclassical model, such an outcome detrimental to aggregate consumption demand has no impact on the rest of the economy. In this model the economy always operates at full employment, because any shortfall in consumption demand implies a rise in savings, which by assumption are instantaneously converted into additional investment demand (as we outlined in Section 2).

II. Methodological problems and common misconceptions

The four reviewed studies all project that liberalization under CETA would yield positive outcomes. However, these studies raise a number of methodological issues, starting with their lack of independence and intellectual diversity. Beyond this issue of a more general nature, CGE-based simulations pose a number of more technical problems. As briefly mentioned in the note under Table 1, longer-term outcomes projected by the four reviewed studies differ mainly because of various modeling choices that are driving the results. The first choice concerns the maximum scope of liberalization envisioned in their scenarios simulating CETA, which determines the size of static gains projected by CGE models. And secondly, the studies differ in whether and how to project those static gains into the future for generating ad hoc dynamic gains. Finally, the most important methodological shortcoming lies in what these CGE-based studies are systematically omitting, namely macroeconomic adjustment costs, risks of imbalances and social costs from policy changes induced by CETA.

i. Identical blinders

All four studies were directly or indirectly commissioned and financed by political sponsors,[xxv] who openly support the liberalization agenda in consultation with corporate lobbies.[xxvi] As illustrated by the Canadian government's heralding of employment projections, public authorities are deeply committed to achieving a deal in favor of businesses and investors backing their efforts. It would be naive to believe that the sponsors were open to receive independent advice that would run counter to their agenda (see De Ville and Siles-Brügge 2015 for ways in which policymakers use CGE model studies to discursively frame the debate on trade agreements in their own terms). Furthermore, all four studies rely on the same database[xxvii] and the same full-employment CGE model from GTAP.[xxviii] Again, the sponsors' specific demand for neoclassical CGE-based projections and the *de facto* exclusion of more realistic or alternative quantitative approaches able to identify and assess not just the benefits but also potential adverse effects from liberalization is no coincidence. The apparently monolithic 'scientific consensus' created by these quantitative studies thus rests on feet of clay.

ii. Simulation scenarios inflating the static net gains from liberalized trade

The design of liberalization scenarios can include exaggerated assumptions about the extent of cuts in trade costs (tariffs and NTBs) as well as omissions about other cuts induced by liberalization (labor incomes, corporate taxes, government spending, etc.). Among available quantitative studies examining CETA, all except Kitou and Phillippidis (2010) assumed in their

maximum liberalization scenarios that bilateral tariffs would be fully removed on all goods, including food and agricultural goods that are still subject to elevated tariff lines. As CETA will not remove those tariff lines, this exaggerated assumption contributed to unnecessarily inflating otherwise insignificant projected gains from tariff cuts (as measured by the Harberger triangles).

Then, all studies except Cameron and Loukine (2001) investigate scenarios in which both NTBs in goods and services trade are cut, based on shaky estimates. Indeed, the joint report does not attempt to specify or quantify these NTBs. Its authors acknowledge their estimate of NTBs in goods as amounting to a 2% trade cost is based on "anecdotal evidence"—which stands in contrast to the apparent precision with which the authors report their results. To us, this looks like a clear case of "misplaced concreteness" as defined by philosopher Alfred North Whitehead. As for services trade liberalization, Hejazi and Francois (2008) impose the stark assumption that CETA would make services trade between the EU and Canada as easy as it is within the EU itself, which implies "cost reductions, estimated to be on the order of 2-10% depending on the service sector".[xxix] Yet, as explained by Raza *et al*. (2014) the way NTBs are defined and estimated matters greatly; simply put: the higher the NTB cuts, the higher the potential gain from 'free trade.' Broadly conceived, NTBs are trade policy instruments other than tariffs, which can be classified as *policy barriers* or *inferred barriers*. While the former include regulations and procedures pertaining to the sale of a product across borders, the latter are inherent to differences in languages, cultures, currencies, etc. Under an agreement such as CETA, only the former are potentially subject to removal. An authoritative study of trade costs by Anderson and van Wincoop (2004) suggests that inferred barriers add approximately 30 percent to production costs, whereas NTBs related to border policy barriers between developed countries represent only one tenth of this, raising production costs by approximately three percent. Yet, lacking due diligence, the joint report and subsequent CGE-based CETA studies ignore this distinction, thus vastly overestimating the potential gains from removing NTBs, especially for trade in services.

In addition, confusing policy barriers and inferred barriers as a single kind of 'trade cost' is incorrect, because policy barriers actually generate many economic, social and environmental benefits, which are left unaccounted for in the CGE analyses. As stressed in a report by Joumard (2016), cost-benefit analysis of existing and new regulation is systematically implemented in developed countries. While regulation costs are easier to estimate, benefits from regulations are more difficult to quantify, especially those of a longer-term nature. This often leads to an underestimation of the value of regulatory requirements. The US Office of Information and Regulatory Affairs nevertheless concluded in its *2014 Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities* that economic benefits of regulations are about 7.7 times larger than costs (OIRA 2015). Modeling exercises approaching NTBs and regulations one-sidedly only in terms of 'costs' are thus making a serious conceptual mistake, because slashing NTBs across the board would significantly reduce welfare and well-being. This looks like a mistake even larger than the misplaced concreteness noted earlier.

iii. Ad hoc methodology fabricating 'dynamic' gains from 'liberalized' investment

Additional methodological problems arise in CETA studies attempting to project into the future static gains estimated in CGE models. As mentioned earlier, projected long-term GDP gains are ten times larger in the joint report's 'dynamic' modeling exercise compared to the older static study by Cameron and Loukine (2001). While static gains from slashing tariffs account for 12 percent of cumulative GDP gains in the joint report and are comparable to those estimated by Cameron and Loukine (2001), cutting NTBs yields gains twice as large, representing 7 percent and 16 percent of cumulative GDP gains for NTBs in goods and services trade, respectively. This means that the remaining 65 percent or two thirds of total GDP gains in the joint study represent 'dynamic' gains[xxx] generated 'outside' the CGE model, using an ad hoc methodology. As discussed below, these 'dynamic' gains are unrelated to liberalization and created out of thin air.

Indeed, although 'dynamic' CGE results are presented as occurring along a time path, the projected path is no more than a sequence of static equilibria linked by an exogenously imposed savings-investment function.[xxxi] For their 'dynamic' projections, Hejazi and Francois (2008) and Kitou and Phillippidis (2010) assume that all new savings created by sources of static gains are retained domestically (in absence of capital outflows) and fully reinvested in domestic production.

This standard explanation stands out as particularly weak, because it sharply contrasts with evidence about declining investment in Canada and the EU, which have seen capital flow out to emerging markets, tax havens and offshore financial centers in recent decades of finance-led liberalization.[xxxii] But the theoretical reasoning also sounds shallow, leaving several questions unanswered. First, why would savings increase in the wake of CETA? In the standard CGE model underlying the joint study, households are equally endowed with capital and could increase their savings and investment as a result of relatively higher returns to capital. However, in the real world where most capital is detained by a small fraction of the population, most households only rely on labor income. It may therefore be more plausible that household savings rise, because relatively lower returns to labor incentivize them to increase self-protection. The shrinking of public welfare to make room for market liberalization may well have the same effect, as suggested in the literature (Storm and Naastepad 2012). Yet, this reason is incompatible with the joint report's optimistic projection of rising average household income in Canada and the EU.

Second, how realistic is it to assume that savings are funding investment, and moreover that additional savings are automatically translated into investment? As has been widely discussed in the literature (Lavoie et al. 2004, Kumhof and Jakab 2016), household savings essentially represent postponed consumption and only marginally fund investment. Neoclassical CGE models assuming full employment of capital resources may claim that the financial sector is a passive yet efficient intermediary channeling all savings into productive investment. But in the real world investment is mostly funded with credit from financial institutions, which are granted the privilege of money creation in fractional banking systems (Kumhof and Benes 2012, Poszar et al. 2010). Absent operative, democratic checks and balances and policy interventions, this

privilege empowers financial institutions to significantly influence decisions about which economic and social sectors deserve to be funded and developed.

Finally, why would funds from domestic savings or credit be invested domestically rather than flow abroad thanks to CETA's financial liberalization? It is peculiar that whereas CETA is claimed to enhance international capital mobility, the ad hoc methodology for projecting 'dynamic' gains would be based on the opposite assumption. Thus, a key assumption of the joint report does not only appear as inconsistent and at odds with empirical evidence, but it is made ignoring important theoretical contributions that have been made in the academic debate.

In sum, all four reviewed studies make use of empirically untenable assumptions in their simulation scenarios, simplify the complex reality of NTBs by resorting to anecdotal evidence, ignore potential benefits and consider only costs of existing institutional arrangements, etc., in order to inflate static gains supposed to arise from liberalizing trade. Some of them further magnify static outcomes by devising an ad hoc methodology to fabricate 'dynamic' gains in essentially static models. The joint report, which serves as the main reference in the policy debate, is guilty on all counts.

Contrary to what many believe, the magnitude of the gains projected in the reviewed studies does not so much result from attempts at modeling CETA's more comprehensive liberalization. Although CETA includes much more than trade, CGE simulations of CETA remain traditional trade simulations. Consequently, much of what is covered in CETA, including foreign capital mobilization, is not properly modeled in those studies. Rather, the projected gains rely on assuming CETA's more comprehensive scope will give rise to new macroeconomic interactions. While it is legitimate and necessary to aim at modeling these, it should be made based on sound evidence and theoretical reasoning in order to give plausible explanations about economic adjustments, including non-negligible macroeconomic and social costs, ignoring which would be irresponsible from a policy point of view.

4. An alternative assessment of CETA through the lenses of the GPM

In light of the methodological problems plaguing the reviewed neoclassical CGE model-based studies highlighted in Section 2, there is a need for an alternative assessment of CETA's economic impact, based on a global policy model that is grounded in more realistic assumptions and is able to comprehensively and consistently trace CETA's (macro-) economic benefits as well as costs.

I. Model

The United Nations Global Policy Model (GPM) is a policy-oriented modeling tool designed for the analysis of historical data trends and the generation of simulations of possible future scenarios (Cripps and Izurieta, 2014). It comprises two main components: a comprehensive global database and a stock-flow consistent macro-econometric simulation model (see Mitchell 2016 for a discussion).[xxxiii] The remainder of this section discusses three features that clearly distinguish the GPM from the above-mentioned neoclassical CGE models so far used to assess the economic impacts of CETA.

i. Scope of the model and data

The GPM database, the World Data, tracks developments on the real and financial side of the economy. It includes series for trade (of manufactured goods, primary commodities, energy and services), prices, but also domestic and international financial flows and balance sheets. It includes macroeconomic accounts of the main institutions (private, public and financial sectors); it integrates labor, wage-profit distribution, population, migration; and it also considers, even if preliminarly environment impacts (CO2 emissions depending on the sources of energy). It is stock-flow consistent and covers 45 years of historical data for 124 countries (plus 5 residual groups covering the entire world), which are regrouped into 30 countries or groups for the purpose of this paper. Stock-flow consistency is obtained by adjusting national series in order to ensure the internal consistency of the databank.[xxxiv] The most recent historical data reaches to 2014 and the model aligns the dataset to 2016 through an algorithm that matches known or preliminary figures available beyond the historical datasets.

Unlike neoclassical CGE models, the GPM is based on the stock-flow consistency of all variables including financial balance sheets. The GPM meticulously tracks the financial flows and stocks of assets and liabilities of the major sectors of the economy. This provides a method for monitoring the plausibility of ongoing financial imbalances (flows) that may or may not result in acceptable accumulation of assets and liabilities (stocks) as time goes on (Cripps and Izurieta 2014). This in turn allows tracing any financial instabilities and unsustainable processes that Minsky was concerned with (Lavoie 2016). The GPM has no 'black holes' and hence is capable of offering structural insights into the dynamics of monetary and financial variables, including their impacts on aggregate demand and long-term economic development, which are ignored in the standard CGE analyses without any justification.

ii. Post-liberalization adjustments: unemployment, income inequality, aggregate demand effects and hysteresis

The GPM does not assume that all workers are interchangeable or that wages (should) adjust swiftly to clear the labor market. In presence of imperfect price adjustment, quantities adjust too. Taking seriously both unemployment and income distribution, the GPM pays particular attention to the workings of the labor market and its interplay with aggregate demand, productivity and long-term development. It thus includes behavioral equations for labor force participation, unemployment, wage setting and primary income distribution. Employment (and unemployment) is determined by the interaction between aggregate demand and supply-side factors such as labor force participation and most prominently the growth of labor productivity. Unlike neoclassical CGE models, the GPM does not assume that economies, when shocked, converge back to the blissful state of full employment—but rather makes adjustment conditional on the policies adopted and the institutional set-up of the economies under consideration. Persistent and self-reinforcing involuntary unemployment may be the outcome—an option that is ruled out by neoclassical CGE modelers. The importance of such hysteresis or even super-hysteresis has been stressed for the current conjuncture by economists as diverse as Ball (2014), Blanchard, Ceruti and Summers (2015), Landesmann (2016) and Lavoie (2016).

The GPM assumes that wages are not merely a reflection of marginal productivity (as is done in the CGE approach), but rather determined by the price mark-up firms impose over labor costs. Consequently, institutions and bargaining power between workers and firms play an important role for income distribution, which is strongly path-dependent and has feedback effects on aggregate demand (Cripps and Izurieta 2014).

When trade liberalization occurs, the GPM acknowledges that a demand shortfall can generate unemployment and income inequality. In this logic, when less competitive firms lose market shares to foreign competitors, they try to preserve profits by firing workers. When a sector contracts, other sectors may suffer as well, and induced losses of labor income can cause a reduction in domestic spending. Unless additional demand from another source (typically foreign demand, government or investor demand) comes to the rescue, this process can lead to further job losses and drive the economy into recession. Instead of sidestepping the problem by assuming full-employment, the GPM reflects this risk, which is acute in periods of low economic growth (Capaldo *et al*. 2016).

Furthermore, aggregate demand is likely to be weakened by the pressures which trade and investment liberalization deals, such as CETA, exert on income distribution in a context of finance-led globalization. Indeed, deeper liberalization will incentivize corporations to improve their competitiveness for preserving market shares, mainly by cutting production costs. As labor represents the main component of production costs, business managers will cut wage costs by replacing labor with more capital-intensive technologies and slowing down nominal wage growth. At the same time, investment liberalization will add to growing financialization, inducing corporations to raise profits and shareholder value, raising the price of capital (Cordonnier et al. 2013). While this distributional shift away from labor income may have a short-lived positive effect on investment attracted by enhanced export competitiveness and financial returns, it also reduces consumption spending on domestic and imported goods and services, as well as debt repayment at a time when the European financial sector is still vulnerable. 'New generation' trade agreements such as CETA can further exacerbate the fall in domestic demand, because they enforce multiple rules reducing policy space, thus preventing authorities from stimulating local production, employment and income. In sum, while the combined effects of a shift in domestic income distribution on demand for exports and imports induced by such an agreement may improve the real exchange rate, the combined effects of simultaneous distributional shifts in favor of capital in several countries may weigh negatively on global aggregate demand. This adjustment mechanism is in line with the growing body of literature showing income inequality hampers economic growth (Berg et al. 2012, Ostry et al. 2014, Foerster and Cingano, 2014).

iii. Scope for policy

Because the GPM does not rely on neoclassical assumptions, such as rational expectations, full employment and efficient markets, which condemn many economists to sterile 'equilibrium thinking', the future simulated by the GPM is not bound to converge towards a presupposed 'natural' development path. By de-naturalizing its assumptions and its narrative about how the economy works and where it is headed, the GPM is able to accommodate the existence of psychological, social and institutional phenomena such as uncertainty, enduring unemployment,

bargaining over income distribution or path-dependency of economic outcomes, etc. [xxxv] Consequently, the GPM leaves more room for considering policy options (Storm 2016).

The GPM also has limitations. A key limitation common to global models is it does not provide individual results for every country in the world. Given the large amount of data processed by the GPM, calculations are simplified by aggregating some countries into regions. Clearly, country aggregation takes a toll in terms of projection precision, but it facilitates detecting major macroeconomic trends. A second limitation is the number of sectors. The GPM only contemplates four broad sectors involved in international trade: energy products, primary commodities, manufacturing and services. However, this limitation is not significant, because the GPM simulation of CETA takes bilateral trade outcomes of more disaggregated CGE studies as a given to then focus on macroeconomic implications (Capaldo *et al*. 2016).

II. Simulation strategy

In order to analyze CETA, Canada and the largest European economies (Germany, France, UK, Italy) are kept as stand-alone countries along with other G20 countries. Other EU countries[xxxvi] are aggregated into a single sub-regional bloc along with 10 other sub-regional blocs excluding G20 countries. In total, the world is thus divided into 30 economic units. For the purpose of presentation, post-simulation aggregations are made for groups encompassing all EU countries, all CETA countries and the rest of the world.

i. Baseline scenario

As in other simulation exercises, the model is first used to project a baseline path for every economic unit. As historical data stops in 2014, the GPM starts by generating stock-flow consistent data for 2015 and 2016. In order to maximize comparability with the reviewed CGE studies, a baseline is then simulated from 2017 to 2023. [xxxvii] The baseline is built using all available information on countries' past and present policies and spending patterns as well as assumptions about future economic policies. These include the continued emphasis of policy makers of CETA members to fiscal policy restraints and relatively accommodative monetary policy, slightly more accommodative fiscal stances in other developed countries, pressures towards adjustment in some of the major developing countries, commitment of the Chinese authorities to a structural transformation away from investment and towards consumption while stabilizing the pace of economic growth, and a moderate slow down in oil supply growth led by Saudi Arabia in order to support prices.[xxxviii]

Table 4 displays projections for the main components of GDP. In Canada, public spending and private investment, which had increased in the wake of the financial crisis and has remained comparatively high since then, will progressively decelerate and even contract, given the trends in prices of oil and major commodities. Meanwhile, slow growth of domestic demand in the EU is self-inflicted as policy-makers in these countries continue to resist the need of stronger fiscal stimulus (Stiglitz 2016). The pursuit of policy convergence in the EU will contribute to shaping economic outcomes in member states. Overall, government spending, private investment and consumer spending will expand at a slower pace in CETA countries and developed countries more generally compared to the rest of the world.

Table 4: Baseline projection for main GDP components (in % of GDP, growth rate)

	Government spending			Private investment			Consumer spending		
	2016	2017-19	2020-23	2016	2017-19	2020-23	2016	2017-19	2020-23
Canada (% of GDP)	25.3	24.7	24.0	19.6	18.1	16.8	57.3	58.1	58.5
(growth rate)	*0.9*	*0.7*	*1.3*	*-3.4*	*-2.1*	*0.9*	*1.6*	*2.4*	*1.9*
EU Total	22.8	22.8	22.9	17.2	17.5	17.8	57.2	56.8	56.7
	-0.2	*1.5*	*1.5*	*4.1*	*2.3*	*1.8*	*1.8*	*1.2*	*1.4*
Germany	21.5	21.5	21.4	17.1	17.1	17.2	53.9	53.9	54.6
	1.6	*1.5*	*1.1*	*2.4*	*1.4*	*1.6*	*2.0*	*1.6*	*1.8*
France	27.1	26.9	26.6	18.2	18.1	17.8	55.4	55.1	55.5
	-1.0	*0.6*	*0.6*	*1.3*	*0.7*	*0.6*	*0.7*	*0.8*	*1.3*
Italy	21.1	21.4	21.9	15.2	16.4	17.5	60.5	59.6	58.8
	-0.1	*1.7*	*1.8*	*4.6*	*4.3*	*2.5*	*0.5*	*0.3*	*0.6*
United Kingdom	21.7	21.4	21.4	15.2	15.4	16.0	66.2	66.3	66.0
	-0.3	*1.3*	*2.0*	*2.6*	*2.6*	*3.3*	*1.9*	*2.0*	*1.7*
Other EU	22.8	23.0	23.4	18.4	18.9	19.1	54.7	54.0	53.6
	-0.8	*2.0*	*1.9*	*6.7*	*2.6*	*1.7*	*2.5*	*1.1*	*1.3*
CETA Total	23.0	23.0	23.0	17.4	17.6	17.8	57.2	56.9	56.9
	-0.1	*1.4*	*1.5*	*3.4*	*1.9*	*1.8*	*1.8*	*1.3*	*1.4*
Rest of the world	18.3	18.1	17.8	23.7	24.2	24.5	57.3	56.8	56.6
	3.0	*2.9*	*3.2*	*2.8*	*4.5*	*3.6*	*2.8*	*3.1*	*3.6*

Source. GPM simulation. Note: Average annual growth rates indicated in italics refer to the growth rate of the GDP component value, not to its value as a share of GDP.

ii. CETA policy scenario

We use the GPM to project CETA's macro-economic implications and compare them with the baseline. In the GPM, equations describing trade and foreign investment include terms that reflect changes in tariffs and financial deregulation. However, recognizing that the GPM does not have a greatly disaggregated trade structure, and in order to avoid starting up from entirely different grounds, our simulation strategy consists primarily in replicating the bilateral exports growth figures projected in the joint study.

Acknowledging that CETA is more than just a trade deal and that 'trade-only' models are not suited for the task at hand, we refuse to simulate CETA merely as a reduction in bilateral trade cost as was done in the reviewed neoclassical CGE-based studies. Taking seriously the declared ambition of CETA promoters to move beyond trade liberalization for enhancing competitiveness of Canadian and European economies more generally,[xxxix] and for the sake of improving the realism of the CETA simulation, [xl] this CETA policy scenario further assumes that deeper liberalization will intensify several dimensions of international competition with traceable effects throughout the entire economy.

Primarily, deeper liberalization will incentivize corporations to improve their competitiveness for preserving market shares and attracting investors, mainly by cutting production-cum-labor costs and raising shareholder value. By 'target-instrument' approximation, with the GPM we simulate these competitive pressures exerted on firms (and reported on workers) by allowing changes in

variables that influence import demand and export market shares up to the point of matching the bilateral exports projections made in CGE studies.

Secondly, deeper liberalization will intensify pressures on government for granting transnational corporations (and local businesses) a favorable tax treatment and for responding to calls from credit rating agencies to improve fiscal balances. By accounting implication and in line with shrinking policy space, government expenditure on goods, services and transfers will decline.[xli] The scenario thus contemplates very moderate imputations, representing only a fraction of the primary effect, on the equations determining tax rates and government expenditure as a result of the pressures typically exercised by foreign investors in a context of deeper liberalization.

Based on these limited but more realistic assumptions, the GPM scenario explored the macroeconomic and employment implications of such changes by allowing the various parts of the model to adjust endogenously as a result, including feedbacks from distribution, income and aggregate demand. Thus, final changes in total exports, domestic demand, employment, income distribution and other variables are not taken as a given, but endogenously determined by domestic and global feedback built into the GPM.

III. Results

We project a picture that is substantially different from the one presented in the reviewed CGE studies. By comparing the outcomes of the CETA policy and baseline scenarios at the end of the 7-year projection period in 2023, it appears that the Canadian and EU external sectors both gain from CETA (Table 5) as predicted by the reviewed CGE-based studies (and as partly assumed in the GPM simulation, which took their bilateral export growth as a given). However, CETA-induced changes in public and private sectors income and spending patterns (Table 6) exert a larger negative shortfall in aggregate demand, generating long-term unemployment (Table 7) and GDP losses (Table 8). Unless indicated otherwise, differences in outcomes in the CETA scenario compared to the baseline are indicated in percentage of GDP in order to highlight the changing composition of effective demand rather than growth rates of specific variables in absolute terms.

i. External balances

GPM projections show that growing bilateral trade, induced by the removal of tariffs and NTBs in tandem with cost-cutting policies promoted by CETA, will lead to an improvement of external balances in Canada (0.21%) and the EU (0.03%). As Canada's net exports rise (0.19%) and its trade balance progressively turns positive, the Canadian current account deficit is projected to decline. Within the EU, CETA will marginally improve external balances in most countries. German (0.04%) and Italian (0.05%) net exports of goods and services will expand slightly faster than in the baseline. France's external sector will expand most (0.20%) as its trade balance turns positive (0.07%) and its foreign earnings rise (0.13%). Impacted by intra-EU trade diversion, the trade performance of the United Kingdom (-0.01%) and other EU countries (-0.02%) will slightly deteriorate (-0.01%) as reflected in both their declining current account positions.

Table 5: External sector (in % GDP, differences over baseline)

	Current account	Trade balance	Balance on net income and transfers from abroad
Units	*% GDP*	*% GDP*	*% GDP*
Canada	0.21	0.19	0.02
EU Total	0.03	0.01	0.02
Germany	0.04	0.04	0.00
France	0.20	0.07	0.13
Italy	0.08	0.05	0.03
United Kingdom	-0.02	-0.01	-0.01
Other EU countries	-0.02	-0.02	0.00
CETA Total	0.05	0.03	0.02
Rest of the world	-0.01	0.00	-0.01

Source: GPM simulation. Note: Effects are measured by comparing outcomes of the CETA and baseline scenarios at the end of the 7-year projection horizon in 2023.

A likely explanation for how Canada's trade balance can improve while its bilateral trade deficit with the EU increases is that cost-cutting measures, such as pressuring nominal wages growth or compressing real wages, will lower Canada's real exchange rate and boost relative competitiveness of Canadian goods and services vis-à-vis its main trading partners. As the United States absorbs three quarters of all Canadian exports and about 10 times more than the EU, a growing bilateral deficit with the EU can be more than compensated by gaining market shares in the US.

Results show trade diversion induced by cost-cutting measures in CETA countries occur at the expense of the rest of the world, but also within the EU. Indeed, the implementation of such measures in the EU, especially in larger countries with higher labor income shares and enduring unemployment, such as France and to a lesser extent Italy, will boost their exports to the detriment of other EU countries. However, in a context of stagnating demand and weak economic growth, cost-cutting measures improving external positions (partly by cutting imports) and expected to deliver GDP gains have the potential of initiating (or perpetuating) a beggar-thy-neighbor race to the bottom and a vicious circle of self-inflicted wounds.

ii. Changes in the fiscal stance, inequality, idle capital and self-protection

Beyond improving relative competitiveness of Canadian and European goods vis-à-vis the rest of the world, cost-cutting measures induced by CETA also impact the distribution of national income between public and private sectors as well as between capitalists and workers in CETA countries, with consequences for aggregate demand at the domestic level and, to a marginal extent, at the global level.

As deeper liberalization restricts policy space and extends to new sectors of society so far not submitted to market competition, the public sector will slightly retract and leave room for the expansion of the private sector in CETA countries. As economic activity remains sluggish, government revenue will also decline as a consequence of tariff cuts and other tax reforms, such as reduced corporate tax rates, implemented by governments in CETA countries aiming at

attracting investors. By 2023, CETA is projected to add to declining government revenue in Canada (-0.12%) and the EU (-0.16%). Simultaneously, shrinking policy space and pressures for balancing budgets will lead to public spending cuts in Canada (-0.20%) and in the EU (-0.08%). In the EU, these cuts are projected to be higher in countries with larger public sectors, such as France (-0.20%) and Italy (-0.20%). The larger magnitude of foregone public revenue compared to government spending will tend to widen public deficits. In EU countries, this will threaten pushing public finances closer or beyond the Maastricht limits.

Table 6: Public and private sectors (*Units*, differences over baseline)

	Gov. income	Gov. spending	Capital income share	Private invest-ment	Average annual earnings	Private savings
Units	*%GDP*	*%GDP*	*%GDP*	*%GDP*	*€/empl*	*%GDP*
Canada	-0.12	-0.20	1.74	0.02	-1788	0.14
EU Total	-0.16	-0.08	0.66	-0.01	-651	0.11
Germany	-0.10	-0.03	0.76	0.00	-793	0.12
France	-0.26	-0.20	1.34	0.03	-1331	0.30
Italy	-0.25	-0.20	1.00	-0.02	-1037	0.13
United Kingdom	-0.06	-0.02	0.29	-0.01	-316	0.02
Other EU	-0.17	-0.05	0.42	-0.01	-407	0.08
CETA Total	-0.16	-0.09	0.76	0.00	-742	0.11
Rest of the world	0.00	0.00	0.00	-0.01	-4	-0.02

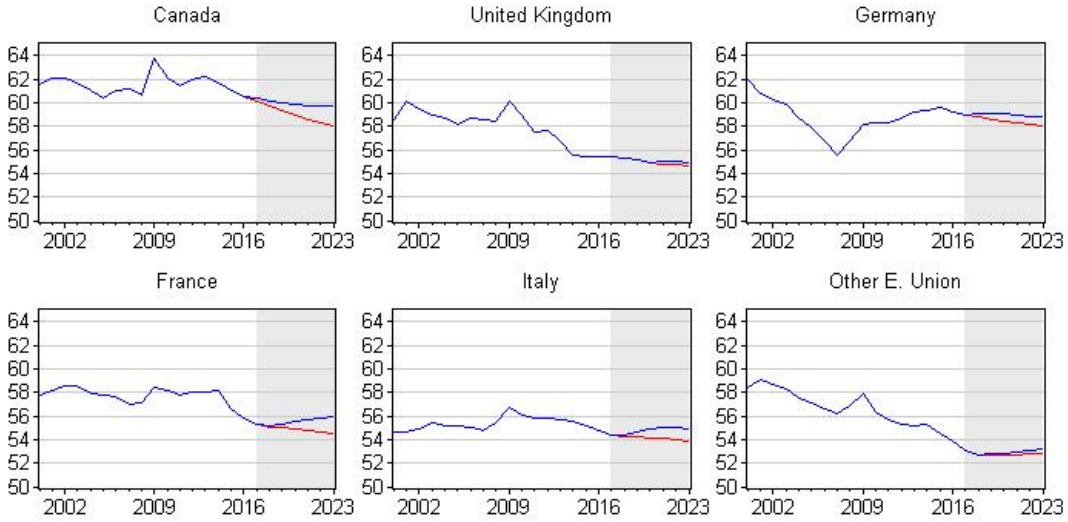
Source: GPM simulation. Note: Effects are measured by comparing outcomes of the CETA and baseline scenarios at the end of the 7-year projection horizon in 2023.

In parallel to CETA-induced austerity policies, competitiveness-enhancing pressures unleashed by CETA will deploy significant distributional effects entailing economy-wide implications. A growing share of national income is projected to accrue to capital, mirroring the longer-term decline of labor income shares in CETA countries (Figure 4). In Canada, CETA will transfer 1.74% of national income from workers to capital owners. In the EU, capital owners will pocket an additional 0.66% of GDP, exacerbating rising inequality and social tensions. The shift in functional income distribution will be most pronounced in countries most vulnerable to international competition induced to implement the most significant cost-cutting and austerity measures, such as France and Italy, where the share of labor in national income will decline by 1.34% and 1% of GDP, respectively.

Yet, unlike in neoclassical CGE models, which consider that monetary and financial phenomena are irrelevant to long-term economic development because all savings are assumed to be productively reinvested, rising capital income will continue failing to materialize in steady private investments. As prospects for future sales remain uncertain in the face of weak external demand, declining government spending and stagnating consumer purchasing power, private investments will not keep pace with the expansion of profits and rise only sluggishly in Canada (0.02%) and marginally decline in the EU (-0.01%). In the long run, feedback effects from declining Canadian and European demand for domestic and foreign goods will further slow productive investments in the rest of the world (-0.01%). These small figures stand in sharp contrast with CGE simulations projecting private investment to skyrocket in the wake of CETA, generating unprecedented 'dynamic' GDP gains.

As productivity gains increasingly translate into higher profits and idle capital, employment creation and worker earnings are bound to stagnate. In Canada, approximately one in every two additional euros that would have accrued to labor under a constant functional income distribution will be pocketed by capital owners as a consequence of CETA, resulting in an average annual earnings loss of €1788 per Canadian worker by 2023. This projection stands in sharp contrast with the claim of the Canadian government that removing tariffs and NTBs between Canada and the EU would earn Canadian families a $1000 check every year. In the EU, projected average annual earning losses amount to €651 per worker by 2023, ranging from €316 in the United Kingdom to €1331 in France.

Figure 4: Labor income share (% of GDP) - baseline (blue), CETA scenario (red)



Source: Historical data and GPM simulations.

Just as capitalists are unwilling to invest in a context of uncertain future sales, workers facing growing uncertainty about their own employment and professional development prospects in a context of flexibilized labor markets and deteriorating public welfare will tend to consume less and save a growing proportion of their income as a means of self-protection. Keynes' 'paradox of thrift' kicks in: as private savings increase in Canada (0.11%) and in the EU (0.14%), households will contribute to the vicious circle of self-inflicted wounds that was initiated by business managers and capital owners seeking higher financial returns and further facilitated by the flawed belief of policy-makers that cutting 'trade costs and more' would generate monetary welfare gains in a 'trickle-down' economy.

iii. Employment, GDP growth and cumulative monetary welfare losses

Based on the assumptions of the GPM, CETA provisions for cutting trade costs (tariffs and NTBs) and more (wage growth, corporate taxes, government spending) are a recipe for cutting aggregate demand and employment, with negative feedback effects on public and private income and spending, eventually harming GDP growth.

Overall, the additional dose of competition and policy space restrictions injected by CETA in a context of tepid recovery and continued finance-led globalization will destroy more jobs than it will create in the foreseeable future. In the wake of CETA, permanent demand shortfalls caused by commercial strategies and policies of 'cutting trade costs and more' are projected to wipe out 227 thousand jobs in CETA countries, 204 thousand of them in the EU. CETA will destroy approximately 20 thousand jobs in Germany, more than 40 thousand jobs in France and Italy, approximately 10 thousand in the United Kingdom and 90 thousand in other EU countries. It will further destroy approximately 80 thousand more jobs in the rest of the world as declining public and private demand in CETA countries reduces demand for foreign goods. In the long run, CETA will raise dependency ratios by 0.21% and 0.20% in Canada and the EU, respectively. This will further pressure social security systems already under strain in all CETA countries.

Table 7: Employment (*Units*, differences over baseline)

	Employment	Dependency ratio
Units	*Jobs*	*%*
Canada	-23'000	0.21
EU Total	-204'000	0.20
Germany	-19'000	0.08
France	-45'000	0.39
Italy	-42'000	0.46
United Kingdom	-9'000	0.06
Other EU countries	-89'000	0.21
CETA Total	-227'000	0.20
Rest of the world	-80'000	0.01

Source: GPM simulation. Note: Effects are measured by comparing outcomes of the CETA and baseline scenarios at the end of the 7-year projection horizon in 2023.

As illustrated by enduring increases of unemployment across developed countries after the financial crisis, jobs destroyed through shortfalls in aggregate demand reinforce the hysteretic behavior of the economy. Because adjustment mechanisms assumed to work in neoclassical models fail to operate in the real world, economies do not automatically return to their 'natural' growth rate and development path. With temporary unemployment progressively turning into a long-term economic and social issue, any job losses, even if gradual, and related loss of labor income, need to be avoided.

Increases in unemployment projected using the GPM stand in sharp contrast with CGE projections ignoring any such changes. Projected job losses may seem small at first, but their long-term nature and long-term macro-economic and social implications should sound as a warning to economic policy advisers and policy-makers. Enduring hikes in unemployment represent a complex economic and social challenge of high policy relevance, not least because of its negative impact on GDP growth.

Eventually, the vicious circle of self-inflicted wounds initiated by cutting 'trade costs and more' that is perpetuated through unemployment nurturing demand and productivity shortfalls will take

a toll on GDP growth. Between 2017 and 2023, average annual growth rates will decline by 0.12% and 0.06% in Canada and the EU, respectively. By the end of the period, cumulative monetary welfare losses will reach 0.96% in Canada and 0.49% in the EU, with losses ranging from 0.23% in the United Kingdom to 0.78% in Italy. The rest of the world will experience a smaller but visible cumulative decline in monetary welfare of 0.06%.

Table 8: GDP growth (in % points, differences over baseline)

	Average growth rate	Cumulative welfare loss
Units	*%*	*%GDP*
Canada	-0.12	-0.96
EU Total	-0.06	-0.49
Germany	-0.05	-0.37
France	-0.09	-0.65
Italy	-0.11	-0.78
United Kingdom	-0.03	-0.23
Other EU countries	-0.07	-0.53
CETA Total	-0.07	-0.53
Rest of the world	-0.01	-0.06

Source: GPM simulation. Note: The reduction in average GDP growth rate is computed over the 2017-2023 period. Cumulative welfare losses are measured by comparing outcomes of the CETA and baseline scenarios at the end of the 7-year projection horizon in 2023.

GDP may only be an indicator of monetary welfare subject to many flaws, but it remains the major compass for policy-makers. As such, alternative projections based on the GPM showing that CETA will hurt GDP growth should be taken seriously, especially when we consider the realism of the assumptions underpinning GPM projections and the proposed CETA policy scenario.

5. Conclusion

Existent neoclassical CGE analyses of CETA project small but significant GDP gains for all countries involved. However, these outcomes cannot be taken at face value and must be seriously qualified for the simple reason that they are determined by a few critical, and unrealistic, modeling assumptions. Basing their projections of the impact of CETA on the assumptions of full employment, neutral (if not invariant) income distribution, and the automatic funneling of all savings into investment, these CGE models dismiss any potential macroeconomic costs beforehand and without justification, excluding from the outset any proven risk associated with deeper liberalization.

This paper addresses these shortcomings using the United Nations Global Policy Model (GPM), which is based on a more complete stock-flow-consistent depiction of the macro-economy and on more plausible assumptions about the economic adjustments likely to occur under CETA. This more comprehensive and empirically grounded analysis, which traces CETA's effects throughout the economy, leads to very different results.

Simulating a more realistic liberalization scenario reflecting a 'new generation' trade agreement designed to cut 'trade costs and more', our results show that cost-cutting and competitiveness-enhancing measures induced by CETA have negative long-term effects. Despite improving external balances in Canada and in some EU member states, demand shortfalls resulting from intra-EU trade diversion along with reductions of labor cost (and income), tax revenue and government spending will generate uncertainty, incentivizing households to increase precautionary saving and businesses to postpone investment as prospects for future sales deteriorate. By 2023, 227 thousand jobs would be lost in CETA countries, 204 thousand of them in the EU, and 80 thousand more in the rest of the world, adding to the already declining labor income share. In the long run, slower wage increases will transfer an additional share of national income from labor to capital owners. By 2023, the share of national income accruing to capital will have risen by 1.76% and 0.66% in Canada and the EU, respectively. Consequently, workers will have foregone average annual earnings of €1776 in Canada and between €316 and €1331 in the EU depending on the country. Aggregate demand shortfalls nurtured by higher unemployment will also hurt productivity and cause cumulative welfare losses amounting to 0.96% and 0.49% of national income in Canada and the EU, respectively. Besides hurting GDP, these effects induced by CETA will add to rising inequality and social tensions in an already complex and volatile political context.

These results point to several conclusions. First, quantitative studies that are by construction blind to proven risks related to comprehensive liberalization do not represent an adequate basis for informing policy-makers about the economic implications of CETA. Alternative approaches to modeling, which acknowledge the risks of trade liberalization and can quantify their impact, are required for providing meaningful insights as to the likely consequences of CETA.

Second, seeking to boost exports as a substitute for domestic demand is not a sustainable growth strategy for Canada or the EU. Under current austerity conditions, high unemployment and low growth, improving competitiveness by lowering labor cost can only harm the economy. Were policy-makers to adopt CETA and go down this road, they would soon be left with only one option for reviving demand in the face of growing social tensions: increase private lending, possibly through renewed financial deregulation, opening the door to unsustainable debt and financial instability. Instead of repeating the same errors over again, policy-makers should rather stimulate economic activity through coordinated and lasting support of labor income and seek ways of initiating a much-required socio-ecological transition.

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7. Endnotes

[i] According to European treaties, international trade and investment are the exclusive competence of the Union. Yet, because CETA covers more than this and infringes on other areas that are of the exclusive competence of EU member states, the Commission decided on 5 July 2016 to propose CETA as a mixed agreement to the European Council. Consequently, national parliaments of all EU member states first need to ratify the proposed agreement before it can enter into force definitively. However, with the backing of the European Parliament, the Commission could still order CETA to enter into force on a provisional basis while national parliaments are deliberating (Vaudano 2016a).

[ii] See CERT website: http://canada-europe.org/en/AboutUs/index.htm

[iii] Civil society concerns are not limited to macro-economic implications of CETA, which are the subject of the present paper, and often touch upon broader environmental, social and political issues. Broadly speaking, there is a convergence of views among civil society organizations that the positive CETA narrative promoted by corporate interests through sponsored studies is biased, because it remains deliberately blind to all but corporate profits. Many civil society organizations further claim CETA is part of an ongoing assault of 'neoliberalism' on democracy, soon to be followed by other free trade agreements, such as the Transatlantic Trade and Investment Partnership (TTIP) and Trade in Services Agreement (TISA). According to them, CETA would have enduring negative effects for the economy, society and the environment. To summarize an existing synthesis by Joumard (2016), CETA would undermine democracy in three ways by (i) jeopardizing the provision of public goods and services and by further (ii) corrupting rule-making processes and (iii) justice-making processes. Firstly, abundant evidence shows free trade deteriorates the provision of goods and services that need to be produced and allocated on criteria other than purchasing power (EPSU, CUPE, NUPGE and PSAC 2010). Besides ripping a €311 million hole in the EU budget caused by foregone tariff revenue (GUE/NGL 2016), the only genuine EU own resource, CETA directly threatens to liberalize a wide range of public services (Fritz 2015) and to deteriorate the quality and raise the price of essential public goods and services, such as access to water (European Water Movement 2015), healthcare (Thibeault 2014), education (Fritz 2015) or climate stability (Global Justice Now 2015, The Council of Canadians 2015). CETA would also undermine efforts to promote local supply chains (Chapelle 2014) and local cultural production (Vlassis 2013, Deutscher Kulturrat 2016) and make it more difficult to defend the precautionary principle that has been key

in preventing imports into the EU of genetically-modified crops or hormone-treated beef (The Council of Canadians 2016). A pervasive issue with CETA is that it *inverted the logic* so far prevailing at the World Trade Organization, and required signatories to explicitly list the sectors they do *not* want to subject to international competition. This new approach means all activities or sectors that may emerge in the future will de facto be submitted to market discipline. Secondly, CETA will set up two new institutions granting transnational corporations (TNCs) special rights for rule-making and justice-making. Indeed, CETA foresees to establish a Regulatory Cooperation Forum, supervised by two senior officials from Canada and the EU. They would be in charge of inviting interested parties to a regular private discussion, giving them an opportunity to propose or sabotage regulatory initiatives, *before* any democratically elected representative is informed of any proposal. Yet, given the cost of participating in these discussions and absent any obligation to ensure fair representation or even impartiality, this forum is doomed to turn into one additional channel for TNCs to design laws and standards maximizing their profits rather than public interests, leaving citizens only the possibility to react to already well advanced corporate initiatives (Joumard 2016). Finally and in order to prevent any interference with corporate rule-making, CETA also envisions to create a special and unilateral justice mechanism allowing TNCs to sue governments in case their decisions hurt their expected profits, *even in case no investment has yet been made* (Eberhardt et al. 2014, Barlow 2015, Wallach 2012). Plans for an Investor-State-Dispute Settlement (ISDS) mechanism that were not in the original mandate of CETA negotiators, but were included in the first version of the CETA agreement crafted under the influence of TNCs, which was signed by Canadian Prime Minister Harper and EU Commission President Barroso on 26 September 2014 in Ottawa, have since been amended. The ISDS mechanism was retooled and rebranded as an Investor Court System (ICS), but issues remain, and the question why TNCs deserve disposing of a parallel justice mechanism has not received a satisfactory answer (Vaudano 2016b). Note also that besides this debate animated by civil society, there is also the debate among economists of whether bilateral or regional trade agreements harm prospects of multilateral trade (for instance, Bhagwati 2008, Freund and Ornelas 2010).

[iv] As stressed by Taylor (2016), CGE models are not inherently neoclassical constructs. CGE models were pioneered by development planners, such as Leif Johansen and Hollis Chenery, and early incarnations were built in a Keynesian framework. The underlying structure of all varieties of CGE is the macroeconomic accounting system and as such they postulate that income must equal expenditure and production. The central differences, which place CGE models within one or another theoretical strand, relate to *behavioral specifications* that are supposed to encompass how the main parts of the system work, and assumptions about how the system comes into 'equilibrium' (often called *'closures'*). On behavior, the main differences lie on whether the economic system as a whole responds to *individual choices or to aggregative forces*. For example, in a *neoclassical* model there will be more 'production' in a system where the cost of labor is cheapest, as the model is constructed to represent the behavior of the individual entrepreneur. But in a *Keynesian* model that is not necessarily the case because what determines production is what happens after taking into account the response of the system as a whole; if costs are the lowest for all producers then incomes (the payments for costs) are the lowest and therefore demand for products will be lower than otherwise: if costs are depressed at the aggregate level, incomes and demand are depressed and hence production will be lower. On closures, *neoclassical* CGEs would stipulate that supply conditions on goods and labor markets come first (producers put into market as many goods as the conditions fit, and the workforce offers as many hours work and skills as desired or possible) and demand will match in virtue of price mechanisms (the price of goods will adjust to empty the shelves and the wage rate will adjust to leave no-one unemployed). *Keynesian* models, on the other hand, do not assume that price mechanisms will work to close the system and therefore the system may eventually be in excess supply (or demand) of goods and labor (under 'general conditions', originally stated by Keynes in the 'General Theory', the usual constraint is demand, of goods and labor). The imposition of more realistic assumptions and adjustment mechanisms can be implemented in CGE models as well (for instance, Storm 1997, Taylor, Sarkar and Rattsø 1984, Raza et al. 2016), but results tend to highlight the absence of any significant gains from trade and potentially adverse effects of liberalization that are absent from neoclassical CGE models.

[v] The experiences of the Canada-US Free Trade Agreement (CUFTA) and the North America Free Trade Agreement (NAFTA) should be of particular interest for understanding the potential implications of neoclassical CGE model simulations of CETA, not only because they involve two developed economies with asymmetric trade relations, but also because of the broad scope of both agreements. Comparing the positive predictions that most economists made regarding the benefits of CUFTA and NAFTA with the subsequent real-world economic effects, Stanford (2016) noted the following: “Fifteen years later, however, there remains lingering disappointment (in all three countries)

regarding the real-world record of continental free trade in delivering those promised gains. In Canada, the improvements in productivity and inflows of investment predicted by the key quantitative models have definitively not materialized (Sharpe 2003, Globerman and Shapiro 2003). In the United States, the long-run weakness of manufacturing and the persistence of large trade deficits (including large and sustained bilateral deficits with both of its NAFTA partners) have sparked popular concern about the impacts of globalization generally, and NAFTA in particular, on U.S. jobs and incomes (Scott 2003). Even in Mexico, predicted almost universally to be the biggest 'winner' under NAFTA, the economy—after growing rapidly in the run-up to NAFTA—has not met expectations since the agreement came into force (Esquivel and Rodriguez-Lopez 2003, Ramirez 2003). In each case, economists sympathetic to free trade can point to various mitigating factors in explaining this disappointing performance. But based on these experiences it will be difficult to negate the general perception that the predictions of such models are a not a sufficiently robust guidance to policy-making."

[vi] There are particular concerns about the liberalization across the Atlantic of trade in agricultural goods, particularly because of diverging regulatory approaches towards products that may involve risks for public health, such as genetically modified crops or hormone-treated beef.

[vii] For the 12 former EU candidate countries and Turkey, projected GDP gains were estimated to be tenfold, hovering around 0.8% of GDP.

[viii] Analyzing the Canadian policy document, Drache and Trew (2010) note the following: "Canada's Global Commerce Strategy of 2008 mirrors Global Europe to some extent with its emphasis on responding to competitive pressures from China, India, Brazil and Russia. Governments in Europe and the United States "are increasingly competing against one another to *help their businesses and investors* gain an edge in the race for market share, technological advantage, foreign investment and other global value chain opportunities," says the report, suggesting that "*Canada must do the same*" (Government of Canada, 2008: 3)."" *Emphasis added*.

[ix] All reviewed studies are based on the same database and on the same *static* CGE model from GTAP, assuming full employment and instantaneous clearing of all markets through flexible prices and wages, which allows comparing the situation just before and after liberalization. Yet, the table refers to 'longer-term' projections for two reasons. First, some authors declare that even though post-liberalization economic adjustments are instantaneous in static CGE models, they take time to unfold in the real world. For instance, Kirkpatrick et al. (2011) indicate that their "results should be understood as representing the outcome of CETA by approximately 2020." Second, unlike Cameron and Loukine (2001) and Kirkpatrick et al. (2011), Hejazi and Francois (2008) and Kitou and Phillippidis (2010) pretend to simulate *dynamic* gains by projecting static gains simulated in their CGE model further into the future using an ad hoc methodology, which artificially inflates projected gains from trade. Hence, even if some simulations are purely static and others allegedly dynamic, all pertain to a longer-term time horizon. A more detailed discussion on this key methodological issue proceeds in section 3.II.iii.

[x] Box 2.2 on page 53 in Hejazi and Francois (2008) describes the policy scenario used in their simulation. Although they pretend distinguishing a reduction in NTBs in goods from a liberalization of services, which they indiscriminately also label reductions in 'trade costs', both effects are eventually modeled in the same way as reductions in bilateral trade costs. In quantitative terms, they estimate that removing NTBs in goods reduces costs by 2%, while liberalizing services amounts to a cost reduction of between 2% and 10% depending on the sector. A more detailed discussion proceeds in section 3.II.ii.

[xi] As noted in Section 2, the equality of investment with savings in standard CGE trade models is either imposed as an identity, or results from an artificially imposed interest rate clearance mechanism that ensures that investment responds fully to the equilibrium interest rate. Other determinants of investment, including expected demand, profitability and business confidence are ignored. This specification of investment seems particularly absurd in a model supposed to assess the effects of *comprehensive* liberalization, where investment itself is particularly responsive to changing market conditions.

[xii] See article 207 of the Treaty on the Functioning of the European Union. By contrast, trade has been the sole competence of the EU over its member states since the adoption of the Treaty of Rome in 1957. See its article 113, and Meunier and Kalypso (2005) for a discussion.

[xiii] For a list of completed and ongoing SIA, see: http://ec.europa.eu/trade/policy/policy-making/analysis/sustainability-impact-assessments/assessments/

[xiv] Kirkpatrick et al. (2011)'s discussion of 'policy space' is carefully circumscribed: "Some use the term 'policy space' to mean all 'regulatory flexibility' in terms of the breadth that government is afforded in making policies. *However, 'policy space' as used as an SIA indicator exclusively refers to regulatory flexibility that if reduced*

directly results in the inability of governments to make policies that have clear economic, social or environmental benefits. In other words, reductions in policy space as defined herein should lead to negative externalities (for example, hurting human and/or environmental health, increasing the cost of goods and services, reducing quality of goods and services, hurting wages and employment, among other negative effects). It does not refer to the wider concept of reductions in regulatory flexibility that can create positive impacts (for example, improving the efficiency with which businesses operate and creating positive spill-over effects on employment and income, among other effects). As a note, the costs and benefits from reductions in policy space are typically difficult to calculate and vary among circumstances." *Emphasis added.*

[xv] See endnote iii.

[xvi] It is valuable to include civil society concerns in some less visible section of the final version of the SIA study, but the fact that these concerns are fully ignored in the core CGE modeling exercise represents a missed opportunity for the SIA study to improve the simulation of CETA and, eventually, obtain more realistic projections. While not all civil society concerns can be addressed in an economic modeling framework, some are very relevant from an economic perspective. For instance, drawing on civil society criticisms of CETA (partly summarized in endnote iii), at least three general implications could be modeled to improve the realism of model simulations. First, liberalization and the expansion of the private sector under CETA will extend market competition to new sectors and intensify the drive of firms for competitiveness, pressuring wages and exacerbating inequality. Second, promoting the privatization of the provision of public goods and services will tend to curtail the public sector, reduce government spending and cut public jobs, generating unemployment. Finally, CETA will strengthen the grip of businesses on rule- and justice-making, shrinking policy space and deterring public action (such as raising corporate taxes, imposing stricter environmental regulations, supporting local supply chains, etc.) to restore public well-being if it comes at the cost of (expected) corporate profits. Not modeling any of this in an exercise simulating the impact of a 'new generation' or 'mega' trade deal involving much more than just cutting trade costs may be a deliberate choice, but it also represents a methodological shortcoming.

[xvii] A similar figure for the EU-15 is not reported in their study, which primarily emphasized the Canadian perspective.

[xviii] For an elaborate theoretical discussion of the reasons why gains from trade tend to become increasingly smaller in mainstream trade models, see Ocampo and Taylor (1998) and Ackerman (2008).

[xix] See endnote x.

[xx] See note under Table 1.

[xxi] See Canadian government website: http://www.international.gc.ca/trade-agreements-accords-commerciaux/agr-acc/ceta-aecg/benefits-avantages/sectors-secteurs.aspx?lang=eng

[xxii] The extrapolated new jobs figure cited by the Canadian government is obtained by multiplying the additional output projected under the CETA scenario by the average employment intensity of Canadian output.

[xxiii] See endnote xxi.

[xxiv] *Personal* income distribution is distinct from *functional* income distribution. While the former only looks at inequality between individuals, often irrespective of the source of their income (labor income or capital income), the latter looks at the aggregate distribution of national income between capital and labor.

[xxv] The oldest study by Cameron and Loukine (2001) was commissioned financed by the Canadian DFAIT. The joint report by Hejazi and Francois (2008) was produced by the Government of Canada (led by DFAIT) and the European Commission, led by the Directorate General of Trade (DG Trade), in response to a request formulated by Leaders at the 2007 EU-Canada Summit. The third study by Kitou and Phillippidis (2010) simply added a minor twist to the joint report scenario. At the time, Elisavet Kitou worked as an economic advisor to British ministry of the environment, and George Phillippidis worked as a researcher at the Joint Research Centre (JRC), which is the European Commission's in-house science service. Finally, the study by Kirkpatrick et al. (2011) was commissioned and financed by the European Commission, led by the DG Trade.

[xxvi] See, for instance, *Global Europe,* published by the European Commission in 2006, and *Global Commerce Strategy,* published by the Canadian Government in 2008, which both make a strong case for the liberalization agenda, in accordance with the demands made since the early 2000s by the Canada Europe Roundtable for Business (CERT) and other business lobbies.

[xxvii] While the study by Cameron and Loukine (2001) is based on an older version of the GTAP database from 1995, the joint report and the two subsequent studies use version 7 of the GTAP database with the year 2004 as a benchmark.

[xxviii] For a history of GTAP, see https://www.gtap.agecon.purdue.edu/about/history.asp
[xxix] See Hejazi and Francois (2008), pages 41 and 44.
[xxx] Because the joint report does not disaggregate static gains into their specific sources (i) tariff elimination (ii) removal of NTBs in goods and (iii) liberalization of services trade, they are allocated proportionately across the three sources according to their share of total (static plus dynamic) gains. Stanford (2010) used the same approach, but for Canadian gains only. The estimates for Canada and the EU are as follows (i) tariff elimination accounts for 17% and 8% (ii) removal of NTBs in goods accounts for 10% and 5% and (iii) liberalization of services trade accounts for 22% and 11% of total GDP gains in Canada and the EU, respectively.
[xxxi] To reach their objective, CGE modelers generally take projections of a few critical variables from external sources, such as the IMF, and then align CGE outcomes with them in each future year, selecting one among many possible equilibria for projected CGE outcomes based on an arbitrary choice. Thus, although static CGE results are often presented as occurring along a time path, the projected path is no more than a sequence of static equilibria linked by an exogenous investment or savings function.
[xxxii] The main drafter of the joint report, Associate Professor Walid Hejazi, who praised capital outflows into tax havens and offshore financial centers one year prior to preparing the joint report (Hejazi 2007) should have known better.
[xxxiii] Unlike *parametric* CGE models relying on many exogenous inputs for specifying relations among variables, such as price elasticities, leaving much room for subjective choices driving final results (Raza et al. 2014), the GPM is a macro-*econometric* model. Each variable in the GPM model is specified either by an accounting identity or an econometric specification, while global closure rules and explicit dynamic behavior ensure model convergence at each point in time. With very limited exceptions, the model is fully endogenous throughout both the historic period and the simulation period (Cripps and Izurieta 2014).
[xxxiv] For example, trade statistics are not consistent when aggregated to the global level: it appears that the planet as a whole is running a trade deficit.
[xxxv] Neoclassical models typically see human societies and economies through Newtonian lenses, applying concepts and mathematical methods coming straight out of 17th century physics to analyze modern economies. It is therefore not a coincidence that they assess trade liberalization using so-called *'gravity'* models or computable *'general equilibrium'* models. Departing from these misplaced positivist epistemological premises and dismissing the simplistic view that economies are submitted to eternal natural laws and bound to return to an equilibrium pre-defined by 'nature' like some physical phenomena are, the modeling approach of the GPM acknowledges economies are integral parts of human societies and accommodates the existence of hysteresis or even super-hysteresis (Landesman 2016, Lavoie 2016), i.e. the fact that historical events affect future development paths.
[xxxvi] Other EU countries include Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.
[xxxvii] The equal time frame to the joint report improves comparability but cannot rule out differences resulting from initial conditions.
[xxxviii] The baseline and CETA scenarios do not include any assumption about Brexit and its potential consequences, apart from taking into account the moderate economic slow down in the UK due to uncertainty around the popular vote period and its immediate aftermath. The decision to leave the Brexit issue aside is motivated by two main reasons. First, to maximize comparability with CGE studies on CETA, which did not speculate about Brexit. Second, to avoid any distraction and focus the analysis on CETA's economic implications. However, the authors acknowledge that Brexit has the potential of increasing uncertainties and perhaps exacerbating complicating the effects analysis of CETA liberalization changes on financial instability and policy stances outcomes.
[xxxix] See footnote viii.
[xl] See the criticism addressed to neoclassical CGE-based studies, especially to Kirkpatrick et al. (2011), in endnote xvi.
[xli] As an example, in the joint report, Francois and Hejazi (2008) claimed Canada would become more competitive by opening public procurement to foreign competition. Based on their estimates for intra-EU liberalization, they claim that the costs of public procurement (which also represent public spending supporting aggregate demand) could be reduced by as much as 30 percent. Kirkpatrick and colleagues (2011) also acknowledge pressures on government spending as a consequence of reduced 'policy space', but they did not model this effect in their simulations (see end of Section 3.I.i. and endnote xiv).

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