



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Eidgenössisches Departement für
Wirtschaft, Bildung und Forschung WBF
Staatssekretariat für Wirtschaft SECO
Direktion für Wirtschaftspolitik

Strukturberichterstattung Nr. 57/4

**Kornel Mahlstein
Christine McDaniel
Tatjana Sachse
Simon Schropp
Scott D. Andersen**

Empirical analysis of the potentials and economic impact of the unilateral easing of import restrictions

Schwerpunktthema:
Potenzial und volkswirtschaftliche
Auswirkungen von unilateralen
Importerleichterungen der Schweiz

**Study on behalf of the State
Secretariat for Economic Affairs
SECO**



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Eidgenössisches Departement für
Wirtschaft, Bildung und Forschung WBF
Staatssekretariat für Wirtschaft SECO
Direktion für Wirtschaftspolitik

Strukturberichterstattung Nr. 57/4

**Kornel Mahlstein
Christine McDaniel
Tatjana Sachse
Simon Schropp
Scott D. Andersen**

Empirical analysis of the potentials and economic impact of the unilateral easing of import restrictions

Schwerpunktthema:
Potenzial und volkswirtschaftliche
Auswirkungen von unilateralen
Importerleichterungen der Schweiz

Berne, 2017

**Study on behalf of the State
Secretariat for Economic Affairs
SECO**

Table of contents

EXECUTIVE SUMMARY	1
A. Summary of the UTL experience in the three countries at issue	2
B. Summary of economic effects of UTL	4
C. Summary of political implications of UTL for the international standing of the liberalizing countries.....	6
D. Best practice concerning implementation of UTL.....	7
I. INTRODUCTION, RESEARCH QUESTIONS, METHODOLOGY APPLIED, AND “ROADMAP” OF THIS REPORT	9
A. Research questions addressed in this report.....	10
B. Selection of case studies	12
C. Methods applied	13
D. Roadmap of the report.....	16
II. CASE STUDY 1: NEW ZEALAND AND ITS EXPERIENCE WITH UNILATERAL TARIFF LIBERALIZATION	17
A. Scale and scope of unilateral tariff liberalization.....	19
B. Background and context of New Zealand’s UTL experience.....	30
C. Analysis of domestic discourse prior to the implementation of UTL	33
D. Assessment of UTL experience.....	38
1. Domestic effects	38
a. <i>Economic effects of UTL on the NZ economy</i>	<i>39</i>
b. <i>Social implications of NZ’s UTL experience.....</i>	<i>54</i>
c. <i>Domestic political implications.....</i>	<i>59</i>
2. International political implications and impact on FTAs	60
E. Lessons learned for the Swiss context.....	61
III. CASE STUDY 2: CANADA AND ITS EXPERIENCE WITH UNILATERAL TARIFF LIBERALIZATION	63
A. Scale and scope of unilateral tariff liberalization.....	64
B. Background and context of Canada’s UTL experience	80
C. Analysis of domestic discourse prior to the implementation of UTL	85
D. Assessment of UTL experience.....	90
1. Domestic effects	90
a. <i>Economic effects of UTL on the Canadian economy</i>	<i>90</i>
b. <i>Social and political implications of Canada’s UTL experience.....</i>	<i>109</i>
2. International political implications and impact on FTAs	110
E. Lessons learned for the Swiss context.....	112

IV.	CASE STUDY 3: NORWAY AND ITS EXPERIENCE WITH UNILATERAL TARIFF LIBERALIZATION	114
A.	Timing, scale and scope of unilateral tariff liberalization	115
B.	Background and context of Norway's UTL experience.....	121
C.	Analysis of domestic discourse prior to the implementation of UTL	124
D.	Assessment of UTL experience.....	127
	1. Domestic economic effects of UTL on the Norwegian economy	127
	2. International political implications and impact on FTAs	140
E.	Lessons learned for the Swiss context.....	141
V.	CONCLUSION AND OUTLOOK.....	143
A.	Is UTL worth it?	144
B.	How to best implement UTL?	149
C.	Is there possible blowback in the international arena?	150
	TABLE OF REFERENCES	153
	LIST OF ANNEXES	162

Table of figures

Figure 1. Timeline of key events relating to UTL, New Zealand	20
Figure 2. New Zealand's tariff distribution, before and after UTL.....	21
Figure 3. Before UTL: Tariff liberalization potential, New Zealand, 2-digit HS level	26
Figure 4. After UTL: Tariff liberalization potential, New Zealand, 2-digit HS level.....	27
Figure 5. Seasonally adjusted real exports of NZ over time – before and after UTL	40
Figure 6. Actual and counterfactual export growth in NZ, 1988-1996, ARDL model	41
Figure 7. Productivity levels in New Zealand, (un)trended, 1980-2000.....	45
Figure 8. G7 and New Zealand productivity levels, 1980-1997, HP filter	46
Figure 9. Level of employment and labor force in NZ, 1970 to 2000	49
Figure 10. Unemployment rates in NZ, 1970-2017	50
Figure 11. Predicted vs. actual employment growth in NZ, ARDL model	52
Figure 12. Income inequality, New Zealand, 1982-2015.....	56
Figure 13. Composition of NZ's exports of merchandise over time (1973-2002).....	58
Figure 14. Timeline of key events relating to UTL, Canada.....	64
Figure 15. Canada's tariff distribution, before and after UTL	67
Figure 16. Before UTL: Tariff liberalization potential, Canada, 2008, 2-digit HS level.....	70
Figure 17. After UTL: Tariff liberalization potential, Canada, 2016, 2-digit HS level	71
Figure 18. Before UTL: Potential tariff liberalization in capital goods, Canada	73
Figure 19. After UTL: Potential tariff liberalization in capital goods, Canada.....	73
Figure 20. Before UTL: Potential tariff liberalization in certain intermediate goods, Canada .75	
Figure 21. After UTL: Potential tariff liberalization in certain intermediate goods, Canada ...75	
Figure 22. Asia's share of Canada's imports, 1995-2015 (%)	83
Figure 23. Real exports, before and after the UTL, Canada, 2000-2015	93
Figure 24. Actual and counterfactual export growth rate, Canada, ARDL model.....	95
Figure 25. Export activity by Canada and G7 during and after the Great Trade Collapse, 2005-2015	97

Figure 26. Productivity levels in Canada, 2000-2015	100
Figure 27. Canada and United States productivity levels and trends	101
Figure 28. Employment and active population levels, Canada, 2000-2015	104
Figure 29. Unemployment rate in Canada, 1990-2016	105
Figure 30. Predicted vs. actual growth of employment, Canada, ARDL model.....	106
Figure 31. Share of duty-free tariff lines, Norway, 2000-2016 (%).....	115
Figure 32. Share of lines 0.1-5% duty, Norway, 2000-2016 (%).....	116
Figure 33. Norway's tariff distribution, before and after UTL	117
Figure 34. Before UTL: Tariff liberalization potential, Norway	118
Figure 35. After UTL: Tariff liberalization potential, Norway	119
Figure 36. Asia's share of Norway's imports, 1996-2015 (%)	124
Figure 37. Traditional exports, Norway, before and after the UTL, 1990-2015.....	129
Figure 38. Actual and counterfactual export growth rate, Norway, ARDL model	130
Figure 39. Mainland productivity levels in Norway, 1998-2011	133
Figure 40. Norway (mainland) and G7 productivity levels.....	134
Figure 41. Employment and active population levels in (mainland) Norway.....	135
Figure 42. Unemployment rate in Norway (2000-2012).....	136
Figure 43. Predicted vs. actual growth of employment, Norway, ARDL model.....	138

Overview of Tables

Table 1. HS chapters representing the broadest and deepest tariff cuts, New Zealand.....	23
Table 2. Duty-free HS chapters before and after UTL, New Zealand	24
Table 3. HS chapters with the greatest potential for effective tariff liberalization (pre-UTL), New Zealand.....	28
Table 4. Effective rates of assistance for assorted products in textiles and clothing sector over time and changes in <i>ad valorem</i> duties, selected industries, New Zealand.....	30
Table 5. HS chapters representing the broadest and deepest cuts, Canada (2008-2016)	68
Table 6. Manufacturing equipment and machinery duty cuts over UTL period, 2-digit HS, Canada	77
Table 7. Trade diversion: Tariff lines with relatively large tariff cuts and increases in the non- FTA import share, Canada	79
Table 8. HS chapters with the greatest potential for tariff liberalization, Norway	120

EXECUTIVE SUMMARY

1. Switzerland, like many other leading trading nations, is constantly looking for ways to reduce global trade barriers, and trade costs more generally. In light of a lack of palpable progress in the multilateral realm on that front Switzerland may consider pursuing a strategy of *unilateral* tariff liberalization (or dismantlement) of industrial goods, capital inputs, and, possibly, certain agricultural goods over the coming years.
2. Several advanced and open economies have autonomously lowered their import duties, or are in the process of doing so. Singapore, Hong Kong, Norway, Canada, Chile, New Zealand, and Australia successfully implemented a strategy of partial or full tariff reductions for a wide range of products, including agricultural goods.
3. Obvious questions for Swiss policymakers contemplating a similar move towards unilateral tariff liberalization (henceforth “UTL”) are what level of ambition was pursued by the other “unilateral liberalizers”, how UTL was organized and executed, whether the tariff liberalization experiments have reaped the expected results, and, if so, whether these results were sustainable and can easily be replicated. Answers to these questions can yield important “lessons learned” for the Swiss context, and inform Swiss policymakers contemplating UTL action in the future.
4. To that end, the Economic Policy Directorate of the Swiss State Secretariat for Economic Affairs (“SECO”) has commissioned Sidley Austin LLP to conduct various case studies. This report contains three independent case studies of countries that have lived through the UTL experience at different times in the past and under different circumstances. These countries are: New Zealand, Canada, and Norway.
5. In our effort to answer the diverse set of research questions relating to expectations that UTL has set, the experiences it has reaped, and to how the implementation process was communicated and organized, we divided the work into three separate work streams, each employing a different study method: a quantitative/ empirical work stream; a desk research work stream; and a work stream in which we conducted expert interviews with decision-makers involved in the UTL process in each of the three countries.
6. The following sections summarize our findings. *First*, we provide a short summary of the historical context in which UTL occurred in each of the three case study countries, the approach that the respective governments took, and the experiences that ensued. *Second*, we summarize the

Executive Summary

results of our empirical research on the economic effects of UTL in the liberalizing countries. *Third*, we sum up the implications of UTL for the international standing of the three case study countries. *Finally*, we distill some “best practice” concerning implementation of UTL for the Swiss context.

A. Summary of the UTL experience in the three countries at issue

7. New Zealand (“NZ”) was facing insolvency in the early 1980s. According to former officials and commentators, this was a result of domestic issues – decades of excessive government involvement in the economy and excessive federal spending – as well as international issues, such as losing the UK as a key export market. Upon its election into office in 1984, the new Labour Government immediately embarked on massive economic liberalization and a wide-ranging and deep economic reform package that notably included the decision to enact wide-ranging UTL.

8. The UTL cuts were deep, prompt, far-reaching, and implemented in two consecutive waves of tariff liberalization (1988-1992 and 1993-1996). Not even the country’s sensitive agricultural sector was spared from UTL. The vast majority of tariff chapters underwent significant tariff liberalization. Before UTL, the simple average across HS chapters was 15.5%. By 1996, at the conclusion of the second wave of UTL the average tariff was 5.7%, largely in line with OECD averages prevalent at the time.

9. Aided by a shared sense of urgency, the NZ Government’s communication strategy leading up to the UTL was a key success factor. Led by the Treasury Department, the NZ Government was able to garner domestic and international support for its reform efforts by inviting stakeholders to speak up, by asking the opinion of trade associations and domestic think tanks, and by inviting academics to help explain the need for the drastic, and occasionally painful, policy reforms to the public.

10. In hindsight, commentators and politicians agree that NZ’s reform package, including, notably, the decision to open up trade to global competition, was a resounding success that continues to pay dividends.

11. During the time of its UTL, Canada was in solid economic shape and never in existential danger. Nonetheless, the Government of Canada took the 2008/2009 Global Financial Crisis as an occasion to engage in political reforms in order to stay ahead of the game and to enact

Executive Summary

important public policy reforms. By its own account, Canada's UTL action was "primarily aimed at enhancing the competitiveness and productivity of Canadian manufacturers", and seen as "concrete actions to open global markets and keep them open". UTL was thereby part of a broader policy effort to reduce government red tape, boosting competitiveness, and improving the productivity of Canadian manufacturers.

12. Canada's UTL occurred in three waves: 2009; 2010-2014; and 2015.¹ Canada did not pursue an across-the-board liberalization, but instead undertook an *à la carte* approach, in which it focused on eliminating (mostly nuisance) tariffs of certain capital goods (industrial manufacturing inputs, machinery and equipment, etc.) and intermediate inputs (including raw materials) that were increasingly coming from non-FTA partners. The UTL reform notably excluded agricultural commodities and consumer goods. All in all, Canada liberalized more than 1,900 tariff lines. Overall, the simple average most-favored nation ("MFN") applied tariff on non-agricultural products decreased from 3.76% pre-UTL to 2.59% post-UTL – this corresponds to a 30% decline.

13. The Government of Canada pursued a crafty communication and outreach strategy that successfully secured the private sector's buy-in into its liberalization package. Together with its incremental approach to tariff liberalization in multiple waves, the Government's communication strategy minimized domestic opposition and nurtured the confidence of Canadian businesses in the tariff reforms. Canadian businesses were actively supporting the Government's UTL efforts throughout the process.

14. Norway's UTL was not an ongoing process but rather a single reform act that took place sometime in between 2006 and 2007. After its UTL was concluded 94% of chapters were duty free after UTL (up from 74% prior to UTL). Pre-UTL, Norway's simple average tariff on non-agricultural products was already low at 2.29%. The simple average came further down to 0.54% after its UTL – a 76% decrease.

15. Norway's case differs from that of NZ and Canada in a number of ways. *First*, there does not seem to have been an exogenous event that triggered Norway's UTL; rather, the Government of Norway seemed to have seen UTL as a logical extension of the WTO Uruguay Round and its generally liberal trade stance. *Second*, UTL in Norway was not an ongoing process, but a singular event. With the exception of one or two small tariff adjustments, UTL was conducted in one go

¹ A fourth wave is currently underway but does not form part of this study.

Executive Summary

over the course of less than 12 months. *Finally*, best we can tell, the entire UTL reform largely “flew under the radar”, that is, occurred with minimal public discussion, let alone any publicly aired controversy. The absence of public debate may be owed to the narrow scope of Norway’s UTL. Tariff elimination was focused on manufacturing goods and generally did not affect the more contentious areas of agriculture, fisheries, and certain textile products. Also, Norway’s UTL was mainly geared towards eliminating nuisance tariffs – tariffs so low that it costs the Government more to collect them than the revenue they generate, and does not have any protective effect for to import-competing domestic industries. In that sense, Norway’s UTL was less about reducing protection, and more about eliminating compliance costs and making international trade with other countries more efficient.

B. Summary of economic effects of UTL

16. In the absence of relevant publicly available empirical research on this topic, we performed our own original research on the economic effects of UTL. Our findings indicate that UTL in NZ, Canada, and Norway reaped significant positive economic effects, thus confirming current economic theory.

17. Regarding the effect of UTL on exports, economic theory predicts that tariff liberalization implies lower input costs, greater quality, and/or greater variety of intermediate products for downstream businesses, including exporters. Overall, lower import tariffs lead to more efficient resource allocation that particularly benefits exporters who tend to be among the most efficient firms.

18. In the case of NZ we found a statistically significant impact of UTL, at least during the implementation of the more ambitious second wave of UTL (starting in 1993). We estimate that for the 1993-1996 forecasting period UTL has had a measurable average annual effect of 2.4% on NZ’s export growth – an export boost that constitutes 43% of the overall year-on-year growth in exports achieved in NZ during the same period of analysis.

19. A similar picture emerges when we study the impact of UTL on Canada’s export performance. After controlling for a catch-up effect that potentially spilled over from the Great Trade Collapse into the forecasting period we calculate that yearly export growth on average was between 0.36% and 0.75% higher than forecasted on account of UTL for the 2010-2014 period. This effect corresponds to a contribution of between 8% and 16.7% to total year-on-year export growth over the same period.

Executive Summary

20. For Norway, we found a positive, but statistically *insignificant* impact of UTL on “traditional” (non-oil) exports when using a longer forecasting period that encompassed an entire business cycle (2007-2010). Specifically, we measured a UTL-induced annual effect on export growth of 1.2%. However, when using a shorter forecasting period that stopped right before the Great Trade Collapse (2007-2008), we found that yearly export growth on average was 3.5% higher thanks to UTL, thus contributing 45% to Norway’s traditional annual export growth over the same time period. Together, these results indicate a measurable, but potentially short-term, effect of Norway’s UTL on export performance.

21. When it comes to the effect of UTL on productivity, economic literature recognizes trade liberalization as one of the potential avenues for countries to increase productivity levels.² For NZ, we observe a measurable impact of UTL on productivity growth. Specifically, we calculated a UTL-induced annual productivity growth effect of 0.27 percentage points, a contribution of 15% of New Zealand’s overall productivity gain in the period of analysis. For Canada, we estimate that at least 23% of the country’s overall productivity gains between 2010 and 2015 can be explained by UTL. This converts into an average annual contribution of UTL to Canada’s productivity growth of 0.2 percentage points. Only for the case of Norway, were we unable to detect an effect of UTL on productivity.

22. When it comes to the effect of tariff liberalization on employment economic theory is more ambiguous: while higher productivity and higher exports resulting from UTL may well *improve* employment in the long run, the competitive pressures that UTL imposes on domestic import-competing sectors may *depress* employment, particularly in the short term.³ Our own empirical results on the effect of UTL on employment are mixed. For the case of NZ, we estimate that following the first wave of UTL (1989-1992) employment decreased by 1.2% as a result of policy events taken by the NZ Government. In the second phase of UTL (1993-1996), the estimated annual effects were statistically significant and positive (0.83%). However, our quantitative findings are exacerbated by the confounding effect of other policy reforms that occurred at or around the same time as NZ’s two UTL waves. Yet, resorting to economic theory,

² The economic mechanism through which UTL affects productivity include: better allocation of resources across sectors; stronger competition in domestic import-competing industries; decrease in prices of, improvements in quality of, and increase in variety for important intermediate goods; and shift in resource allocation towards more productive sectors, notably in the export sector.

³ Also, any impact by UTL is likely overshadowed by general business cycles (*e.g.*, the Global Financial Crisis) and other types of domestic policy reforms, notably dedicated labor market, tax, or capital market reforms. This means that UTL, while unlikely to significantly affect employment rates on its own, may amplify and accelerate ongoing dynamics in labor markets.

Executive Summary

we conclude that it may well be that UTL had an indirect positive effect on employment via its proven effect on export and productivity. Examining Canada, we also find some evidence that increased export performance and productivity growth after the UTL had *some* positive spillover effects on the Canadian labor market. These effects would be expected to lead to employment growing faster than it otherwise would have, thus contributing to a speedy recovery of Canada's unemployment rate. Regarding Norway, our empirical model indicates a rather large and statistically significant annual effect on employment. However, this is probably owed to a large-scale labor market reform that come into force at or around the same time as Norway's UTL. We surmise that UTL helped to facilitate and expedite the employment trends triggered by the larger labor reform, leading us to conclude that the contribution of UTL to employment growth in Norway was small but positive.

C. Summary of political implications of UTL for the international standing of the liberalizing countries

23. Did UTL may result in political blowback in the international trade realm? Our research suggests that this is not the case. *First*, few of the trade policymakers whom we interviewed showed concern that UTL may weaken a country's hand in bilateral and multilateral trade negotiations. Countries concerned about loss of so-called "policy spaces" may wish to think creatively about offering interesting bargaining chips beyond tariffs – and potentially even beyond trade measures, such as access to natural resources, training/capacity building, teacher or student exchanges, visa exemptions, and other issues that are of value to trading partners. According to our interviewees there is a general misconception that trade is synonymous with trade in *goods* when in fact modern-day FTAs give much more prominence to trade in services, trade-related intellectual property rights, investment issues, e-commerce, *de minimis* thresholds, and other so-called "trade-and" topics.

24. At any rate, a large subset of our interview partners opined that a successful conclusion of an FTA is more a matter of political resolve by trade policymakers than the remaining policy spaces after UTL. Also, a country that is negotiating FTAs together with other countries may be able to dissociate itself from its previous UTL decisions by conducting FTA negotiations as part of a larger trade bloc (EFTA in the case of Norway). Canadian officials we interviewed even felt that by engaging in UTL – rather than in binding tariff liberalization – the country actually *retained* policy spaces in the multilateral (and bilateral/regional) trade realm. According to one

Executive Summary

interview partner, UTL also helped foster Canada's pro-FTA stance by winning over domestic stakeholders and making them "hungry" for more trade liberalization.

25. *Second*, regarding a country's reputation in the international trade community, all three countries' decisions to unilaterally liberalize appear to have improved their standing in the international community.

26. However, low import tariffs are only one, but by no means the determining, factor that influences a Member's standing and reputation in the international trade arena. Other factors that play a vital role in a country's reputation include the perceived neutrality and non-interest in the subject matter, as well as the caliber of its trade officials. For this reason, small countries like New Zealand, Hong Kong, and Singapore continue to send their most experienced diplomats as WTO ambassadors, place world-class trade experts on the roster of WTO Dispute Settlement Body ("DSB") panelists, and make attempts at attaining chairmanships of pivotal WTO committees at the WTO.

D. Best practice concerning implementation of UTL

27. If Swiss trade policymakers were to consider that UTL is going to be in the nation's enlightened self-interest, the logical next question is the "how to", that is, how to best implement the policy reform so as to maximize stakeholder support and minimize domestic opposition. Here are some lessons that we distilled from the three case studies and that we think are relevant to the Swiss context:

- **Don't wait for the crisis:** In contrast to both Canada and New Zealand, Norway's UTL was not triggered by any outside event and was not part of a larger policy reform package. This shows that a successful UTL reform can be implemented on its own and neither needs an external trigger event that serves as "hook", nor must piggyback as part of a larger policy reform agenda.
 - **A less ambitious scale and scope (at least initially) may create momentum:** Canada and Norway both took an *à la carte* approach to UTL whereby each country carefully calibrated the tariff lines to be liberalized. Both countries liberalized the import of intermediate inputs, which secured applause and support from local producers. Both countries eliminated nuisance tariffs (that, by their very nature, have little domestic advocates) and spared sensitive import-competing industries, particularly agriculture, textile, and footwear. Doing so enabled the governments to forge a strong domestic coalition in favor of UTL, without alienating many domestic groups. All of this helped minimize domestic resistance to UTL and to gather pro-trade momentum.
- Overall, by devising a strategy of least resistance both countries maximized domestic support from tariff liberalization, which also enabled them to avoid having to work out

Executive Summary

assistance plans to compensate the losers of liberalization (mainly workers in import-competing industries).⁴

- **Gradual phase-outs:** Canada's tariffs (and to some extent NZ's as well) were phased out through a gradual process spanning several years and in multiple waves of UTL. This step-by-step process increased predictability, created confidence on the part of domestic stakeholders in the Government's actions, and secured buy-in from private sector and the general public alike. As confidence increased, certain domestic industries were soon requesting the Government to engage in *more*, rather than less, UTL (as was the case with the Canadian retail sector that led to the latest wave of UTL, starting in January 2017).
- **Communicate early, listen, and be flexible:** Canada and NZ's experiences illustrate the benefit of communicating well and early. Both countries were up-front and transparent about their objectives, and communicated their intentions well ahead of time. Through summits, conferences, and inclusive committee work, the Administrations of both countries engaged key stakeholders throughout the UTL process – and in the case of Canada continues to involve them. In both cases, this helped to shape a broad pro-trade coalition consisting of think tanks, trade associations, private sector groups, and labor unions.
- **Listen to experts and follow an evidence-based approach:** Successful UTL appears to be based in part on an administration's willingness to listen to internal and external experts, and to follow an evidence-based approach. In the case of Canada and NZ, credible analyses by seasoned government economists, think tanks, and trade associations prior to the UTL decision seemed to have been a key factor for the success of the reforms.

⁴ At any rate, both countries had in place robust social safety nets that provided affected workers with essential services, such as healthcare and re-training opportunities. These safety net were able to mitigate potential negative consequences suffered by individuals affected by UTL reform (namely workers in import-competing firms unable to compete against international imports).

Introduction

I. INTRODUCTION, RESEARCH QUESTIONS, METHODOLOGY APPLIED, AND “ROADMAP” OF THIS REPORT

28. For decades, Switzerland has been a champion of an open, rules-based international trading order.⁵ As a small, independent, and open economy without abundant natural resources and with a strong focus on high-end manufacturing and services, a liberalized flow of goods and services has been a key success factor for the Swiss economy and a hallmark of Swiss foreign economic policy.

29. Switzerland, like many of the leading trading nations, is looking for ways to reduce global trade barriers and trade costs more generally. In light of a lack of palpable progress in that respect in the multilateral Doha Development Round at the World Trade Organization (“WTO”), and to avoid, or at the very least to reduce, the “spaghetti bowl” problématique – the regulatory heterogeneity resulting from an increasingly dense network of bilateral and plurilateral free trade agreements (“FTAs”)⁶ – Switzerland may consider pursuing a strategy of unilateral tariff liberalization (or dismantlement) of industrial goods, capital inputs, and, possibly, certain agricultural goods over the coming years.⁷

30. Switzerland is hardly the first country to contemplate autonomous tariff dismantling or unilateral tariff liberalization (henceforth “UTL”).⁸ Several advanced and open economies have autonomously lowered their import duties, or are in the process of doing so. Singapore and Hong Kong are prominent examples: for many decades these economies have levied virtually no duties on any imports. Norway decided to abolish a large share of industrial tariffs and to get rid of so-called “nuisance tariffs” in 2006, as did Canada three years later in 2009. Chile, New Zealand, and Australia successfully implemented a strategy of partial or full tariff reductions for a wide range of products, including agricultural goods, in the 1980s and 1990s. Other countries, including Iceland, are currently contemplating similar moves for industrial products.

⁵ WTO (2013).

⁶ See, e.g., Bhagwati (2002).

⁷ In addition to avoiding the headaches of regulatory heterogeneity there are further strategic and economic motivations for unilaterally removing import tariffs. The rationale for keeping most-favored nation (“MFN”) duties in place decreases in importance the more FTAs a country already has in place. For a country that has concluded FTAs with its most important trading partners already, tariff reduction is no longer a powerful bargaining chip in negotiations with new FTA partners (because existing FTA partners already have preferential access). At the same time, with more FTAs in place the gains from removing MFN tariffs become increasingly attractive due to ample administrative cost savings.

⁸ We use the terms “autonomous tariff dismantling” and UTL synonymously in this report.

Introduction

31. The Economic Policy Directorate of the Swiss State Secretariat for Economic Affairs (“SECO”) has commissioned Sidley Austin LLP to conduct various case studies on UTL,⁹ in an effort to help the Swiss Government learn from the UTL experienced by other countries in the past.

32. Obvious questions for Swiss policymakers contemplating a similar move are whether the tariff liberalization experiments by other “unilateral liberalizers” have reaped the expected results, and, if so, whether these results were sustainable and can easily be replicated.

33. To that end, this report conducts three independent case studies of countries that have lived through the UTL experience at different times in the past and under different circumstances. These countries are: New Zealand, Canada, and Norway. For each of these countries, we aim at answering questions relating to expectations and experiences that UTL has reaped, and to how the implementation process was communicated and organized. We do so by applying a mix of qualitative and quantitative methods.

34. The objective of this introductory chapter is to (i) lay out the research questions motivating this report (Section A), (ii) explain the rationale behind our selection of case study countries (Section B), (iii) discuss the methodology we applied in pursuit of the research questions (Section C), and (iv) provide a roadmap of this report (Section D).

A. Research questions addressed in this report

35. The following pertinent research questions are driving each of the case studies that we are conducting:

- What was the scale and scope (or, level of ambition) of the UTL reform package enacted by the unilateral liberalizer? Specifically, we are interested in the following topics:
 - Which sectors/industries were unilaterally liberalized?
 - Did tariff liberalization occur gradually or in one step?
 - Was the UTL phased in – tariff line by tariff line – or was UTL enacted across the board?
 - How deep were the tariff cuts? Were these cuts substantial or merely a reduction of “nuisance tariffs”¹⁰?
 - What was the *effective* tariff liberalization effect, *i.e.*, the access granted to trade partners that didn’t already have preferred access to the respective market through free-trade agreements or other preferential systems?

⁹ Project 5 in the suite of studies on the potentials and economic impact of the unilateral easing of import restrictions by Switzerland. The project’s original title is “Case studies zu einem autonomen Zollabbau”.

¹⁰ “Nuisance tariffs” are small, but positive tariffs that cause administrative burden, but neither generate much revenue for the government, nor yield substantial protection for domestic import-competing industries.

Introduction

- Prior to the UTL:
 - Was the UTL policy reform part of a larger, more comprehensive, reform package?
 - Were UTL measures flanked by other (unilateral) *trade* liberalization measures, such as reduction of subsidies or elimination of non-tariff barriers (quotas, import controls, technical barriers, customs valuation procedures, etc.)?
 - Who were domestic backers and opponents of the tariff reform policy?
 - What was the process with which policymakers announced, enacted, and implemented the tariff reform, and what communication strategies did policymakers apply to garner domestic support and overcome domestic opposition?
- After the UTL:
 - What were empirically measurable *economic* effects of the UTL efforts in terms of trade activity, overall productivity, and employment?
 - How did the country's economy fare as compared to comparable "non-liberalizers"?
 - How well did efforts and programs aimed at compensating the potential losers of tariff liberalization fare?¹¹
 - Which non-economic (social, political, demographic, societal, technological) consequences were ascribed to the UTL measures, and how was the domestic discourse between different stakeholders and the government affected by the measures at issue?
 - How has the experience affected the trade policy stance of the country at issue?
- Leaving aside the domestic effects, how has the decision to liberalize unilaterally affected the international relations of the case study country at issue? Specifically:
 - How did the decision to unilaterally liberalize affect the general foreign (trade) policy of the country at issue?
 - Has the decision to unilaterally liberalize helped or harmed its international standing (e.g., in international fora such as the WTO)?
 - Did the country see fewer or more FTAs after its decision to unilaterally liberalize?
- All this leads to the important question of "lessons learned" for the Swiss context, particularly:
 - What are parallels and differences with the current Swiss context in terms of basic economic structure (e.g., structure of industry, presence of foreign direct investment, integrated supply chains, etc.) and political circumstances that must be taken into consideration and need to be accounted for?
 - What are the take-aways for the Swiss Government from the country's UTL experience?

¹¹ According to economic theory, import-competing industries may suffer economic losses from UTL, because they lose tariff protection and are more strongly exposed to international competition, which may put them out of business. Economic research has long recognized that it is particularly declining industries that benefit from (and vie for) trade protection (see, e.g., Brainard and Verdier 1994). Compensatory payments may help these ailing import-competing companies and their employees to "soften the blow" suffered from UTL and to facilitate a transition into other fields of operation. Having said that, increased international competition may also help domestic import-competing producer streamline their operations and become more efficient, and therefore more competitive in domestic and world markets.

Introduction

B. Selection of case studies

36. Switzerland is a small, independent, advanced, and open economy with relatively low MFN tariff levels on industrial products. Its economy, while resource-poor, boasts a strong competitive advantage in high-tech manufacturing, pharmaceuticals, luxury goods, and services. To draw useful inferences of UTL for the Swiss case, the ideal case study country should have similar country characteristics.

37. While the Swiss Government has not yet decided on concrete UTL action, let alone settled on any specific menu of industries to be liberalized or on implementation details, it can be assumed that Switzerland's UTL focus will more likely than not be on *industrial* and *capital goods* imports, given the high import content of these products in Swiss production and exports, and given protectionist sensitivities in other goods sectors (mainly food and agriculture). Again, the ideal case study would usefully reflect these sensitivities. Yet, at the same time, we feel that it would be instructive for the Swiss Government to be exposed to a certain variety in UTL experiences, especially concerning process, timing, pacing, and level of ambition of UTL policy reforms in different countries. Hence, we strive to present heterogeneity when it comes to scale and scope, implementation process, and timing of the UTL experience in case study countries.

38. To guide our selection of case study countries, we – in close cooperation with SECO – defined four objective groups of selection criteria, which we explain in turn below:

- Dimension 1: country anatomy;
- Dimension 2: scale and scope of UTL;
- Dimension 3: entry into force of UTL experience; and
- Dimension 4: evidence and data available.

39. *First*, regarding the dimension “country anatomy”, or country characteristics, we believe that for the case studies to be relevant and pertinent to the Swiss Government one ought to select countries that are as similar as possible to Switzerland with respect to regime type, population size, developmental stage, industry make-up and natural resource endowment, climate, and trade policy stance. This dimension makes Australia, New Zealand, Canada, Norway and Iceland natural contestants, while developing countries like Chile, and city-states like Hong Kong and Singapore are less ideal case study countries.

40. For the *second* dimension – “scale and scope of UTL” – we strive for diversity, in order to provide the Swiss Government with insights as to how different UTL processes have worked in

Introduction

the past and in which contexts. Concretely, we were looking for diversity when it comes to: the selection of liberalized industries, the size of tariff cuts, and details concerning the implementation tactics of the UTL in terms of timing, sequencing of liberalized industries and sequencing of tariff cuts over time. Importantly, we wanted to include instances in which the country at issue engaged in a complete dismantling of import tariffs (*i.e.*, liberalization down to a zero tariff), both from a higher base and from a relatively low base (in order to get rid of “nuisance tariffs”).

41. *Third*, with respect to the date that of the UTL experience occurred, we equally looked for diversity, in the hope to find instances in which the UTL has been concluded over a decade ago, which enables us to draw inferences about *long-term* effects of UTL. Yet, we were also interested in cases in which UTL has been enacted relatively recently (and therewith closer to today’s world economy). We ruled out countries, in which UTL reform is ongoing (*e.g.*, Iceland), since that would exacerbate, if not render impossible, quantitative and qualitative analyses of the post-UTL experience.

42. *Finally*, available and reliable data and evidence for any case study needs to be sufficient. Our modelers require publicly available data on relevant macroeconomic metrics that reach back at least five years prior to the UTL experience. These data requirements rule out a number of developing countries, for which reliable data is unavailable, inconsistent in its sources, or of dubitable quality. They also rule out countries whose UTL lies back too far in the past (*e.g.*, Hong Kong or Singapore).

43. Considering these four dimensions in concert and applying them to the circle of countries that have ever engaged in UTL, our choice of case study countries was ultimately relatively straightforward. Together with SECO, we settled on the following three countries for our case studies: New Zealand, Canada, and Norway.¹²

C. Methods applied

44. The research questions raised above are relevant, if diverse, and thus require us to employ a mixture of methods and approaches. We found it useful to divide the work into three separate (but overlapping) work streams, each employing a different study method: a quantitative/empirical work stream; a desk research work stream; and a work stream in which we conducted

¹² The choice between New Zealand and Australia was discussed with the SECO project team. In the end, it was decided to go with New Zealand, because of Australia’s heavy reliance on natural resource and commodity exports.

Introduction

expert interviews with decision-makers involved in the UTL process in each of the three countries. Each work stream was staffed with team members with specific expertise in the respective area.

45. For the quantitative work stream, we reviewed the available empirical literature dealing with the economic effects of UTL on important macroeconomic indicators. Where no relevant literature was available, we designed our own models, using publicly available time-series data. The economic effects of a policy change can be measured in a number of ways – in terms of its implications on prices, employment, output, consumption, GDP per capita, investment, productivity, trade, migration, government (fiscal) revenue, and economic welfare (consumer and producer surplus), etc. For reasons explained further in **Technical Appendix A**,¹³ we focus on three important economic metrics: exports,¹⁴ labor productivity,¹⁵ and employment.¹⁶

46. As **Technical Appendix A** also explains in more detail, we employed a combination of three empirical methods to examine the economic effects of UTL on export activity, productivity growth, and employment in each of the three case study countries. These three empirical methods are: (i) descriptive statistics; (ii) a before/after approach termed “events studies”,¹⁷ and (iii) so-called “difference-in-difference” (“DID”) approaches, in which we compare the evolution of

¹³ **Technical Appendix A** (“Methods and Empirical Approaches”) is attached to this report.

¹⁴ The assumption here is that lower import tariffs generate benefits for upstream and downstream industries in the importing country through linkages across sectors. In particular, lower tariffs mean lower input costs for downstream businesses. As many exporters depend on imported intermediate goods and commodities, exporters are among the key beneficiaries of lower import tariffs. Furthermore, since exporters tend to be among the most efficient firms, the benefit of a policy reform like UTL to the entire economy is particularly pronounced. See **Technical Appendix A** for details.

¹⁵ The economic literature recognizes trade liberalization as one of the potential avenues for countries to boost labor productivity levels (IMF, 2016). The economic mechanism through which UTL affects productivity include: better allocation of resources across sectors; stronger competition in domestic import-competing industries; decrease in prices, improvement of quality; increase in variety for important intermediate goods; and shift in resource allocation towards more productive sectors, including the export sector. See **Technical Appendix A** for details.

¹⁶ The effect of UTL on employment is somewhat ambiguous: while higher productivity and higher exports resulting from UTL could improve employment, the competitive pressure that UTL unfolds on domestic import-competing sectors may depress employment, at least in the short- to medium term. See **Technical Appendix A** for details.

¹⁷ An event analysis econometrically compares the time period before and after a certain policy event, or “shock” (here: UTL). For our purposes, any event study consists of (1) estimating an accurate model of economic performance in the pre-UTL period; (2) constructing a “counterfactual” by forecasting the economic performance that would have prevailed in the absence of the UTL experience, using the estimated model’s parameters in the post-implementation period; and (3) determining whether the difference between the *observed* (actual) economic performance and the *estimated* (counterfactual) economic performance is statistically different from zero. As **Technical Appendix A** reports in more detail, to implement event studies for the respective case study countries and various economic performance metrics, we rely on a commonly used event-study technique, the autoregressive distributed lag (“ARDL”) model.

Introduction

specific economic metrics in each case study country that in a comparator country, that is, a country in which UTL has not occurred.¹⁸

47. For the desk research work stream, we took a deep dive into the existing literature on domestic (trade) policy in each case study market. We reviewed government reports, newspaper articles, recorded speeches, as well as publications by academics, think tanks, and other commentators. We studied the public record concerning political and economic motivation driving the decision to liberalize unilaterally, the domestic discourse that ensued, and how UTL measures have changed the political, social, demographic, societal, and technological agenda in each country at issue. Furthermore, to get a fulsome picture of the timing, scale, and scope of tariff liberalization, we also reviewed the evolution of tariff schedules applied by the three case study countries over time. We thereby dove into each country's tariff commitments on the 2-, 4-, and 6-digit level of the Harmonized System ("HS") prior to and after the UTL policy reform. While generally this information is readily available, in the case of New Zealand, where the first wave of UTL occurred in the late 1980s, this required in-depth research of hard-copy material and a good deal of manual coding.

48. Finally, in addition to the desk research, we conducted 12 background interviews with trade negotiators, economists and trade policymakers from each case study country.¹⁹ All interviewees were high-level trade officials with an in-depth knowledge of the UTL experience that occurred in their respective home country. The majority of our interview partners were personally involved in the decisions and/or implementation of the UTL reforms in their countries. These interviews proved essential for our understanding of the internal dynamics and conflicts that occurred prior to, during, and after the decision to liberalize unilaterally. Among others, we asked our interviewees how the decision to unilaterally liberalize fitted with the country's overall foreign (trade) policy stance, how the execution of the UTL may have impacted its negotiating power, including vis-à-vis FTA partners, and how UTL may have impacted its standing and reputation, in particular in multilateral fora.

¹⁸ A "difference-in-difference" approach compares a case study country in which UTL occurred (the "treatment group") with a "control group", that is, an economy which is as similar as possible (ideally identical) to the treatment country in all economic aspects (size of the economy, population, economic development, trade outlook, etc.), *except for* the decision to liberalize unilaterally at the time the treatment country employed its UTL. Comparing differences in economic performance between the treatment and the control group enables us to learn more about the true effects that the decision to unilaterally liberalize has had on the case study country at issue.

¹⁹ All interviews were conducted off the record. Many pieces of information were given to us in confidence. To protect the identity of these helpful individuals, we provide no further information or minutes of the interviews.

Introduction

D. Roadmap of the report

49. This report is structured as follows: Chapters II-IV contain individual case studies reviewing the UTL experience of New Zealand, Canada and Norway, respectively. Every case study is thereby structured as follows: *First*, we provide a timeline of events, and report on the scale, scope, and timing of the country's respective UTL experience. *Second*, we provide background and context to the UTL experience, since in some cases UTL was but one aspect of a larger policy reform, and since the global economic outlook generally had an influence on the decision to liberalize as well. *Third*, we conduct an analysis of the domestic process leading up to the implementation of the UTL, including objectives communicated by the government; discourse with, opposition from, and support by certain domestic stakeholders; and the implementation strategy opted for by the government. *Fourth*, we provide an assessment of the UTL experience *ex post*, including: the domestic economic effects of the UTL experience on important macroeconomic indicators (exports, productivity, and employment);²⁰ domestic social and political effects; and international political and diplomatic implications, especially in the trade-policy realm. *Finally*, we summarize some "lessons learned", that is, implications and recommendations of the case study for the Swiss context.²¹

50. Following the three case studies, Chapter V contains a summary of lessons learned from the three case studies, bearing in mind parallels and differences with the current Swiss context. The chapter provides the reader with "do's and don'ts" for the Swiss Government, were Switzerland to decide to unilaterally liberalize its own tariffs in the future.

²⁰ Further information on our economic modeling exercises is contained in **Technical Appendix B (New Zealand)**, **Technical Appendix C (Canada)**, and **Technical Appendix D (Norway)**.

²¹ We note that we are not making any explicit recommendations to SECO or the Swiss Government as to whether, and, if so, how to pursue its own UTL strategy. This is neither our mandate, nor our intention. Rather, we merely provide some "lessons learned" that the SECO and the Swiss Government may find useful when contemplating its own UTL actions.

Case study 1: New Zealand

II. CASE STUDY 1: NEW ZEALAND AND ITS EXPERIENCE WITH UNILATERAL TARIFF LIBERALIZATION

51. New Zealand (henceforth “NZ”) was one of the richest countries in the mid-20th century,²² but the country was facing bankruptcy by the early 1980s. According to former officials and commentators, this was a result of domestic issues – decades of excessive government involvement in the economy including state ownership of assets, price and wage controls, and extensive import controls, and excessive federal spending²³ – as well as international issues, such as losing the UK as a key export market. The newly elected Labour Government took control in 1984 and was forced to act to save the country from insolvency. The Labour Administration immediately embarked on massive economic liberalization and a wide-ranging and deep economic reform package that notably included the decision to enact wide-ranging unilateral tariff liberalization (“UTL”).

52. The NZ Government saw UTL as a key component of its broader economic liberalization reform plan, and as a way to open the domestic tradeable sector by removing price distortions and exposing NZ’s farmers and manufacturers to global prices and competition. Policymakers believed that the increased competition would boost incentives to innovate and create new, lower cost, and more productive ways of doing business.²⁴ The UTL cuts were deep, prompt, far-reaching, and implemented relatively rapidly in two consecutive waves of tariff liberalization (1988-1992 and 1993-1996). Even the country’s sensitive agricultural sector was not spared. Few, if any, government resources were redirected towards alleviating adjustment costs.

53. Aided by a shared sense of urgency, the Government’s communication strategy leading up to the UTL was a key success factor. Led by the Treasury Department, the Government was able to garner domestic and international support for its reform efforts by inviting stakeholders to speak up, by asking the opinion of trade associations and domestic think tanks, and by inviting academics to help explain the need for the drastic, and occasionally painful, policy reforms to the public.²⁵

²² NZ had one of the highest income levels in the 1950s, according to the *Penn World Tables*; only Luxembourg, Switzerland, and the United States had higher real levels of GDP per capita at the time. See *Penn World Tables*; available online at <http://cid.econ.ucdavis.edu/pwt.html>.

²³ See Bollard (1994) and Wood (1995).

²⁴ As will be discussed below in more detail, in addition to UTL, this meant exposing tradable sectors to import competition by reducing agriculture and industrial subsidies, easing import costs, and increasing market access abroad.

²⁵ On the international front, the Organisation for Economic Co-operation and Development (“OECD”) viewed NZ as a test case for economic reform in a Western developed country, and the International Monetary Fund (“IMF”) was

Case study 1: New Zealand

54. The UTL experience, as part of a larger trade policy reform triggered some adjustment pain and set off a certain “reform fatigue” in private sector and broader population alike, but the economic and social payoffs were reaped relatively early into the reform period, and ultimately led to a dramatic increase in the country’s competitiveness and economic growth.

55. In hindsight, commentators and politicians agree that NZ’s reform package, including, notably, the decision to open up trade to global competition, was a resounding success that continues to pay dividends. Internationally, the country’s trade liberalization, and therewith its UTL, was equally considered a success, as highlighted by comments from the World Trade Organization (“WTO”) in 1996 and the Office of the U.S. Trade Representative in 1997.²⁶

56. In what follows we present an overview of the UTL experience that NZ went through as part of its larger economic reform package from 1984 to 1996. We proceed as follows: Section A provides a timeline of events, and summarizes the scale, scope, and timing of the UTL experience, including the degree to which New Zealand has utilized its liberalization potential and to which it has engaged in full tariff elimination (zero tariffs). Section B offers background and context to the UTL experience, putting NZ’s UTL experience in the context of the massive policy reform that the country was forced to undergo in the 1980s and 1990s. Section C conducts an analysis of the domestic process prior to the implementation of the UTL, including objectives communicated by the government; discourse with, opposition from, and support by certain domestic stakeholders; and the UTL implementation process chosen by the Government. Section D provides an *ex-post* assessment of the UTL experience after the UTL was enacted. More specifically, we report on the results of our genuine quantitative analysis of the domestic economic effects of the UTL experience on exports, productivity, and employment. Furthermore, we analyze the domestic social and political repercussions that followed the UTL, and report on international political and diplomatic implications in the trade-policy realm, as conveyed to us by NZ trade policymakers close to the file. Finally, Section E draws lessons learned from the NZ case study for the Swiss context.

interested in debt reduction and helped pave the way with international relationships. See OECD (2005), Bollard and Hunt (2005).

²⁶ See WTO (1996), stating: “New Zealand has transformed its economy from among the most heavily protected and regulated into one of the most market-oriented and open in the world”; and USTR (1997), opining: “New Zealand’s open trade and investment policy continues to be a bellwether for regional and global trade and investment liberalization”.

Case study 1: New Zealand

A. Scale and scope of unilateral tariff liberalization

57. Figure 1 summarizes the timeline of key events related to New Zealand's UTL experience, starting with the new Labour Government taking office in 1984.²⁷

58. The Labour Administration began its economic overhaul by announcing that it was planning to massively liberalize foreign trade in 1985. Trade liberalization was one part of a comprehensive package of economic reforms aimed at creating a more market-oriented economy. The Government started its trade overhaul by dismantling distortive agricultural subsidies and in 1986 announced a decision to reduce tariffs across a set of industries,²⁸ and to convert all specific tariffs to *ad valorem* equivalents.²⁹

59. The new Government began its trade liberalization agenda in earnest in 1988 after the establishment of a working party (the "Tariff Working Party") a year prior.³⁰ Over the next few years, the NZ Government implemented UTL in two waves – the first one between 1988 and 1992, and the second between 1993 and 1996.³¹

60. Under the first wave, many of the industrial tariffs were cut by half.³² This resulted in two-thirds of the duties reduced to an *ad valorem* rate of less than 10%. This wave was flanked by the transformation of compound tariffs, mixed tariffs and specific tariffs into simple *ad valorem* rates,³³ and a dismantling of quotas, tariff-rate quotas, and import licensing.³⁴

61. The second wave of UTL completed tariff reductions on industries flagged by an earlier government report as needing major reform.³⁵ While the first wave was a hybrid consisting of

²⁷ See Evans and Richardson (1998), p. 11, for more details.

²⁸ The Industry Development Commission (an independent government agency) formulated special plans for 15 industries that it deemed as receiving excessive government support: textiles, motor vehicles, carpets, tires, general rubber, shipbuilding, plastics, electronics, packing, wine, tobacco, writing instruments, fruit growing, eggs and milk. Other industries came first for tariff liberalization. See Evans and Richardson (1998), pp. 10-11, for more details.

²⁹ To recall, *ad valorem* taxes are imposed on the basis of the monetary value of the taxed item. A specific tariff is levied as a fixed fee based on the type of item (e.g., \$1,000 on any car), whereby the tax base was defined in terms of physical units such as gallons, pounds, or individual items. Switzerland uses specific tariffs.

³⁰ The Tariff Working Party was composed of Customs and Commerce Ministry officials, and tasked with developing a tariff reduction plan. See Ministry of Commerce (1987).

³¹ See Evans and Richardson (1998), p. 11.

³² See IMF (1996).

³³ In general, simple *ad valorem* rates are more transparent and less restrictive. Mixed tariffs are expressed as either a specific or an *ad valorem* rate, depending on which generates the most (or sometimes least) revenue. Compound tariffs include both *ad valorem* and a specific component. Specific tariff rates may conceal tariff peaks and lead to complexity, opacity, and unpredictability in the tariff schedule. See Evans and Richardson (1998); Vangelis and Vitalis (2007); and Nagel (1998).

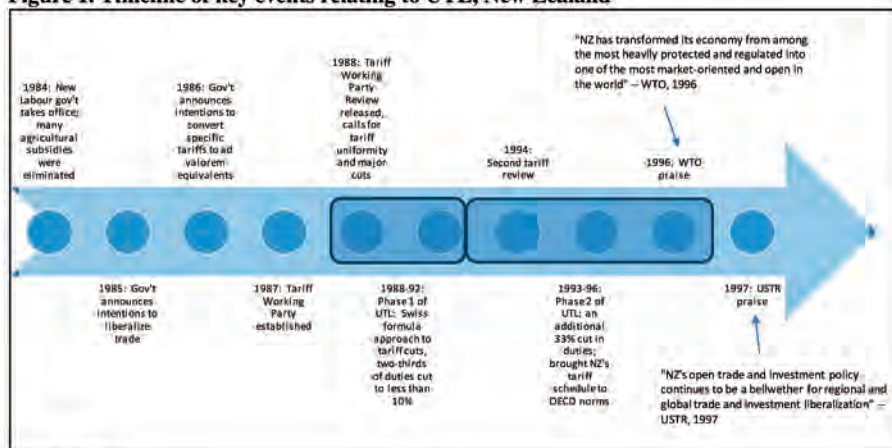
³⁴ See Winkelmann and Winkelmann (1998).

³⁵ See footnote 28, above.

Case study 1: New Zealand

tariff and non-tariff measures, the second wave uniquely focused on tariff liberalization.³⁶ Over the course of three years, NZ cut duties across the board by 33% for nearly all tariff lines.

Figure 1. Timeline of key events relating to UTL, New Zealand



Source: Authors.

62. NZ's UTL was significant in scale and scope. The vast majority of tariff chapters underwent significant tariff liberalization. The Government followed the "Swiss formula" for rationalizing their tariff structure, whereby the highest tariff items are reduced by the highest percentage.³⁷ Before UTL, the simple average across HS chapters was 15.5%. By 1996, at the conclusion of the second wave of UTL the average tariff was 5.7%,³⁸ largely in line with OECD averages prevalent at the time.³⁹

63. Figure 2 reports the extent to which NZ cut tariffs over the two waves of UTL. The figure shows the percent distribution of average *ad valorem* tariffs, by HS2 chapter before the UTL (1984, left panel) and after the UTL (1996, right panel). The vertical axis denotes the proportion

³⁶ Some other non-trade reforms, such as privatization and labor market reforms were going on concurrently to the second wave of UTL during early to mid-1990s (see Evans, 1994).

³⁷ For an explanation of the Swiss formula, see https://www.wto.org/english/tratop_e/agric_e/agnegs_swissformula_e.htm.

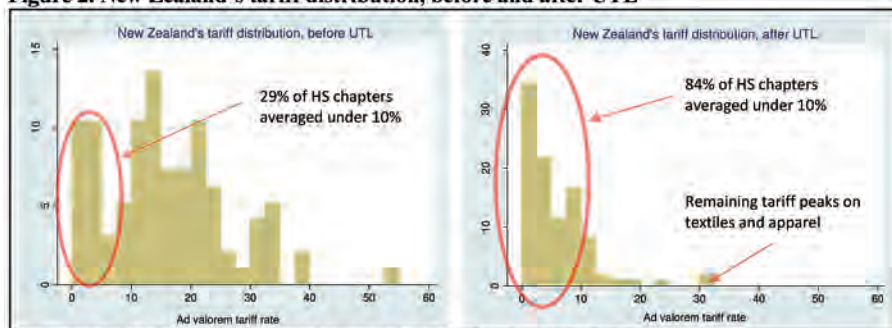
³⁸ This is the simple average across HS2 chapters in 1996, see "NZ HS2" tab of **Appendix 1**.

³⁹ By 1996, NZ's applied tariff rate (simple mean) across all products has nearly converged with the OECD average, and actually was below the OECD in 1997; see World Development Indicators, World Bank.

Case study 1: New Zealand

of tariff lines and the horizontal axis denotes the ad valorem (AV) rate.^{40,41} Note, in order to concord tariff and trade data, and in light of data availability, we use 1984 as the pre-UTL year for tariffs and 1988 as the pre-UTL year for trade. We use 1996 as the post-UTL year for both tariffs and trade.

Figure 2. New Zealand's tariff distribution, before and after UTL



Source: Authors' calculations based on Excel file entitled "Final trade and tariff tabs for SECO".

Note: The figure reports all HS chapters on the 2-digit level, including agriculture and commodities; the x-axis shows *ad valorem* tariffs (in %); the y-axis depicts distribution density (bars add up to 100%).

64. As Figure 2 shows, NZ applied extensive tariff cuts over the period of 1984-1996 (which very broadly captures both the first and second waves of UTL).⁴² This can be seen by a shift to the left of the vertical bars when comparing the left and the right panel. The overall effective rate of protection dropped sharply across all sectors: agriculture, manufacturing, and consumer goods. Before UTL, 29% of HS2 chapters had an average duty under 10% (28 out of 96 HS chapters on the 2-digit level), while post-UTL that share increased to 84% (81 out of 96 HS2 chapters). There

⁴⁰ The following tariff data is taken from the accompanying Excel file entitled "Final trade and tariff tabs for SECO" (Appendix 1) which contains an overview of pre- and post-liberalization tariff data for New Zealand, Canada, and Norway on the HS-2, HS-4, and HS-6 digit level. This file is accompanied by a user manual (see Appendix 2, "User Manual for Tariff liberalization file").

⁴¹ Compiling the tariff and trade data for NZ proved to be remarkably difficult. Online access to tariff schedules for NZ was only available from the year 1992. As a result, for the pre-UTL tariff data we were forced to resort to the *New Zealand Customs Act of 1977*. Compiling the pre-UTL trade data (used later on in Figure 3) was even more complicated. To that end, we used the latest available import data on the *New Zealand Statistics* website, which was for the year 1988. To combine import tariff and trade data, we had to manually establish concordance between the tariff data contained in the 1977 *Customs Act* (which utilized as a classification system the Standard International Trade Classification, or "SITC") and the trade data, reported under the Harmonized System (HS88). By identifying the similar 2-digit codes and merging the trade and tariff descriptions, we were able to get a comprehensive pre-UTL data set for 1984 (with 1988 trade data). Since the HS88 classification that we used for the pre-UTL period is largely equivalent to the HS96 classification, it was then fairly straightforward to connect the pre-UTL data with the post-UTL trade and tariff data for 1996, the data of which we obtained from the WTO website.

⁴² Figure 2 shows the changes in NZ's MFN rate only. We note that prior to its UTL reform, NZ offered duty-free or preferential rates only to imports from Australia and Canada (21% and 2.6% of imports, respectively, in 1984). In other words, approximately 24% of imports were coming from preferential rate partners and 76% from all other countries that were facing the regular ("non-FTA" or "MFN") rate.

Case study 1: New Zealand

were five HS2 chapters with zero percent average duty (*live animals, vegetable plaiting materials, art collections, ores/slag/ash, worn textiles and clothing*). Also pre-UTL, there were 31 HS2 chapters with an average tariff of 20% or higher; post-UTL, only three HS2 chapters show tariffs as high as 20% *ad valorem* or higher (these tariff lines are *apparel* and clothing knitted and not knitted, and carpets, respectively).

65. The interested reader is further directed to **Appendix 1** (an Excel file entitled “Final trade and tariff tabs for SECO”), worksheet “NZ HS2 tab”. There, we provide further evidence of the sizable tariff reductions effectuated across all HS chapters over the course of 8 years (1988-1996). To see how to use this spreadsheet, for example, consider vehicles, HS87. Worksheet “NZ HS2 tab” of **Appendix 1** shows:

- Before UTL, there were 45 tariff lines in “vehicles” (HS chapter 87), with a simple average duty of 32.95% and a maximum of 55%. 82.35% of imports came from non-FTA partners. Only 6% of the lines were duty free;
- After UTL, there were 170 lines in that chapter, with a simple average duty of 9.7% and a maximum of 27.5%. 81% of imports came from non-FTA partners. 37.5% of lines were duty free.⁴³

66. To take a closer look at the actual tariff cuts resulting from the UTL reform, Table 1 lists the 25 HS2 chapters with the broadest and deepest cuts for sectors with at least 50% imports from non-FTA partners. In other words, we report on those tariff lines that experienced the largest increase in duty-free access, and that experienced the largest overall decrease in *ad valorem* duty, as compared to the pre-UTL period (1984). The table lists the HS2 code; the increase in the share of duty-free tariff lines over the UTL period (in percentage points); the *ad valorem* (“AV”) duty cut over the UTL period (in percentage points); and the share of imports from non-FTA partners (in %); and the HS chapter’s share of imports in NZ before UTL (in %).

67. The HS lines in Table 1 are sorted by the size of overall decrease in *ad valorem* duty, with the largest cuts at the top.⁴⁴ For instance, looking at vehicles (HS87), we can report that 31.5% of tariff lines became duty free over the period 1984-1996, while the average *ad valorem* duty decreased by 23.28 percentage points over the same period. In addition, 82% of imports were

⁴³ Overall, the average tariff rate in every HS2 chapter decreased with five exceptions – sectors in which the average tariff actually increased (*ores; tobacco; printed books; albuminoidal substances; and worn clothing*). However, this tariff increase coincided with the elimination of specific duties, subsidies, quotas, and import licenses, all of which were replaced with simple *ad valorem* rates (reforms that our numerical tariff analysis cannot take into account). This means that overall, even in those sectors the *effective* rate of protection declined. See Table 4, below.

⁴⁴ We note that HS chapters HS1-24 (agricultural sectors) are not contained in this table, because they fall short of the 50% non-FTA threshold.

Case study 1: New Zealand

from non-FTA partners in 1988, which shows the liberalization potential pre-UTL (more on that, below).

Table 1. HS chapters representing the broadest and deepest tariff cuts, New Zealand

HS Description	HS code	Increase in the share of duty free lines (in percentage points)	AV duty cut (in percentage points)	Share of imports from non-FTA partners, pre-UTL (%)	Share of imports, pre-UTL (%)
Manufactures of straw, of esparto or of other plaiting materials; basket	46	83.33	28.00	99.82	0.04
Knitted or crocheted fabrics	60	31.41	27.07	65.00	0.39
Vehicles other than railway or tramway rolling- stock, and parts and acco	87	31.50	23.28	82.35	9.11
Impregnated, coated, covered or laminated textile fabrics; textile article	59	44.48	21.76	69.34	0.53
Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings;	58	50.45	21.36	91.39	0.17
Arms and ammunition; parts and accessories thereof	93	42.92	19.70	81.33	0.42
Clocks and watches and parts thereof	91	84.55	19.66	93.61	0.31
Natural or cultured pearls, precious or semi- precious stones, precious r	71	42.85	17.55	77.14	0.48
Electrical machinery and equipment and parts thereof; sound recorders	85	29.79	15.84	87.88	10.59
Essential oils and resinoids; perfumery, cosmetic or toilet preparations	33	32.05	15.13	52.87	0.56
Wool, fine or coarse animal hair; horsehair yarn and woven fabric	51	33.14	14.30	64.63	0.18
Cotton	52	89.66	14.07	94.74	0.97
Footwear, gaiters and the like; parts of such articles	64	33.32	13.85	86.54	0.49
Musical instruments; parts and accessories of such articles	92	84.62	13.75	97.96	0.15
Glass and glassware	70	54.57	13.70	78.63	0.84
Fish and crustaceans, molluscs and other aquatic invertebrates	3	69.47	13.22	74.35	0.07
Photographic or cinematographic goods	37	75.63	12.66	82.63	0.76
Explosives; pyrotechnic products; matches; pyrophoric alloys; certain co	36	36.56	12.41	79.97	0.11
Silk	50	70.00	11.75	97.73	0.03
Iron and steel	72	43.88	11.24	74.23	2.58
Tanning or dyeing extracts; tannins and their derivatives; dyes, pigment	32	53.70	11.21	66.57	0.72
Man- made filaments	54	65.68	10.78	82.17	0.65
Tools, implements, cutlery, spoons and forks, of base metal; parts there	82	37.42	10.40	84.37	0.77
Man- made staple fibres	55	53.09	10.31	90.83	1.10
Optical, photographic, cinematographic, measuring, checking, precision,	90	49.21	10.09	89.04	3.84

Note: HS chapters with the share of duty free lines increasing by at least 29 percentage points, AV duty cut of at least 9.8 percentage points, and at least 50% of imports from non-FTA partners. The last column, share of imports, is reported for descriptive purposes only, it was not used as a criteria. These HS chapters represented 36% of imports.

Source: Authors based on **Appendix 1**, worksheet “NZ HS2 tab”.

68. The main inferences to take from Table 1 is that (i) the broadest and deepest cuts covered a broad range of consumer goods and industrial goods and were not concentrated in any one particular area; (ii) the sectors were relatively exposed to imports from non-FTA partners; and (iii) most of the chapters represented small trade volumes, although there were a few outliers (e.g., electrical machinery was 10.59% of imports); together, these chapters represented 36% of NZ imports.

69. Table 2 analyzes the dynamics of *duty-free* tariff lines prior to and after NZ’s UTL experience. The table differentiates between three groups of products: (i) those chapters that were initially duty-free and remained duty-free after the UTL,⁴⁵ (ii) HS chapters that provided duty-free

⁴⁵ Three HS chapters were 100% duty-free before UTL and remained duty-free, namely *live animals*, *vegetable products*, and *art and antiques*.

Case study 1: New Zealand

access prior to the UTL but that had a positive tariff post-UTL;⁴⁶ and (iii) those HS chapters that had initially had a positive tariff pre-UTL, which then became duty-free post-UTL. As Table 2 shows, tariffs in eight HS chapters were completely abolished. These tariff lines together made up 2.3% of total imports in 1988.

Table 2. Duty-free HS chapters before and after UTL, New Zealand

Chapters that were 100% duty free before UTL and remained 100% duty free after UTL:

- Live animals (01)
- Vegetable products (14)
- Art and antiques (97)

Chapters that were 100% duty free before UTL but did not remain 100% duty free after UTL, as compound or specific duties and other forms of protection were reduced or eliminated and replaced with simple AV duties:

- Ores, slag, ash (26)
- Worn clothing (63)

Chapters that became duty free after UTL (1996):

- Lac, gums, resins, vegetable saps (13)
- Silk (50)
- Cotton (52)
- Vegetable textile fibres (55)
- Nickel (75)
- Base metals (81)
- Aircraft (88)
- Musical instruments (92)

Source: Authors based on **Appendix 1**, worksheet "NZ HS2 tab".

Notes: The numbers in parentheses refer to HS2 chapter headings.

70. Next, we consider the degree of *effective* tariff liberalization performed by UTL. For the purposes of this study, effective UTL is a function of the initial tariff level and the share of imports from non-FTA or non-preferential partners (imports that are subject to the full import duty).⁴⁷

⁴⁶ Two chapters did not remain duty-free (*ores* and *worn clothing*); and eight chapters became duty free as a result of UTL. As noted above (see footnote 43), NZ's first wave of UTL (1988-1992) occurred in conjunction with other trade liberalization policies, and these dynamics explain why the HS chapters *ores* and *worn clothing* went from duty-free to above-zero duties. Complex and specific tariffs do not appear in the *ad valorem* analysis, and so when they were removed and replaced with simple *ad valorem* duties it can appear as if the *ad valorem* duty increased. See also Table 4, below.

⁴⁷ Where tariff cuts are high in sectors in which non-preferential imports are high, countries are *truly* liberalizing their imports. Conversely, where cuts are small and much of importation occurs on a preferential (non-MFN basis), UTL is more "smoke and mirror" than substantial. All else equal, we would expect the potential for effective tariff liberalization to increase where the size of initial tariffs is high and the share of non-FTA imports is high as well.

Case study 1: New Zealand

71. Figure 3 plots the *potential* for tariff liberalization prior to NZ's UTL reforms. The horizontal axis shows *ad valorem* tariffs (in %), while the vertical axis depicts the fraction of imports originating in non-FTA countries (in %). The greater the initial tariff and the greater the share of imports from non-FTA countries that faced the tariff, the greater the potential for effective tariff liberalization. These are the products in which tariff cuts would lead to a high impact, since most imports are sourced from non-FTA partners. The chart thus illustrates NZ's initial potential for *effective* UTL action. The chapters with the greatest potential are in the upper right quadrant (for convenience these HS chapters are marked as orange dots; all other HS chapters are denoted by blue dots).

72. As Figure 3 shows, before the UTL, there were 34 HS2 chapters with a simple *ad valorem* average higher than the median *ad valorem* tariff, and a 50% or greater share of imports from non-FTA partners.⁴⁸ These 34 chapters in the upper right quadrant of Figure 3 had the greatest liberalization potential, and include electrical machinery, vehicles, paper and paperboard, footwear, apparel, clothing, and fabrics.

⁴⁸ We opted for the median pre-UTL tariff (here 14.2%) as the dividing line between what constitutes a higher and a lower tariff rate. We prefer the median to the mean, because the sample size was not large and included outliers; hence we consider the median more representative of the pre-UTL tariff. Similarly, we chose 50% as the benchmark import share as there was no particular reason to choose a number above or below the half-way point. Ocular scrutiny of the figures reveals that different criteria would affect the number of chapters in the upper right quadrant, albeit only slightly.

Case study 1: New Zealand

Figure 3. Before UTL: Tariff liberalization potential, New Zealand, 2-digit HS level



Source: Authors based on **Appendix 1**, worksheet "NZ HS2 tab".

Notes: The figure reports all HS chapters on the 2-digit level, including agriculture and commodities; the x-axis shows *ad valorem* tariffs (in %); the y-axis depicts the fraction of imports originating in non-FTA countries (in %). HS chapters in the upper right quadrant (orange dots) have the biggest potential for effective UTL. The numbers next to the orange dots correspond to HS chapter headings.

73. Figure 4 depicts the degree to which NZ seized upon its liberalization potential *after* the UTL. It reports the same *ad valorem* tariffs for non-FTA imports.

Case study 1: New Zealand

Figure 4. After UTL: Tariff liberalization potential, New Zealand, 2-digit HS level



Source: Authors based on **Appendix 1**, worksheet “NZ HS2 tab”.

Note: See Figure 3.

74. Post-UTL, only few sectors remain in the upper right quadrant: footwear (HS64), apparel and clothing (HS61; HS62), and headgear (HS65) were among those chapters that continued to display high tariff protection (and thus continued to display considerable tariff liberalization potential).⁴⁹

75. Comparing Figure 3 and Figure 4, we see that nearly all the 34 orange dots from Figure 3 moved to the left over the course of the two waves of UTL, indicating a significant reduction in import tariffs across a vast number of industries. This reflects the level of effective tariff liberalization seized by NZ. All of these 34 HS chapters remained above the 50% non-FTA import threshold (Figure 4). This shows that non-FTA imports further consolidated their share of imports after liberalization, as expected.

76. Table 3 provides a deeper dive into the liberalization potential. The table zooms into the orange dots in the upper right quadrant of Figure 3, and reports on those HS chapters that meet the

⁴⁹ As will be discussed below in more detail, while the import tariff for these goods was hardly affected by NZ’s UTL, these sectors did experience a significant reduction in protection, mostly by elimination of specific duties, subsidies, import quotas, and import licenses, all of which were replaced with simple *ad valorem* rates (reforms that our numerical tariff analysis does not take into account). This means that overall, the *effective* rate of protection even in those sectors declined. See Table 4, below.

Case study 1: New Zealand

criteria for the greatest potential for effective tariff liberalization. Sorted by HS2 code, the table reports the simple *ad valorem* duty (in %) pre-UTL for each HS2 chapter that is above the median tariff rate, as well as the percentage of imports originating in non-FTA countries, as long as that percentage is above 50%. As reported above, with the exception of a few HS codes in the clothing and footwear sectors, NZ seized on its effective liberalization potential (as reported in Figure 4), cutting *ad valorem* tariffs by up to 40%.

Table 3. HS chapters with the greatest potential for effective tariff liberalization (pre-UTL), New Zealand

HS Description	HS code	Simple average of AV duties (%)	% of imports from non-FTA partners
Cocoa and cocoa preparations	18	17.5	58.4
Essential oils and resinoids; perfumery, cosmetic or toilet preparations	33	22.3	52.9
Soap, organic surface-active agents, washing preparations, lubricating p	34	17.7	58.3
Explosives; pyrotechnic products; matches; pyrophoric alloys; certain co	36	15.8	80.0
Plastics and articles thereof	39	18.3	75.4
Rubber and articles thereof	40	20.1	81.7
Articles of leather; saddlery and harness; travel goods, handbags and sir	42	29.4	89.6
Manufactures of straw, of esparto or of other plaiting materials; basket	46	30.0	99.8
Paper and paperboard; articles of paper pulp, of paper or of paperboar	48	22.5	71.3
Wool, fine or coarse animal hair; horsehair yarn and woven fabric	51	20.3	64.6
Wadding, felt and nonwovens; special yarns; twine, cordage, ropes and	56	23.1	58.7
Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings;	58	26.5	91.4
Impregnated, coated, covered or laminated textile fabrics; textile article:	59	26.5	69.3
Knitted or crocheted fabrics	60	39.7	65.0
Articles of apparel and clothing accessories, knitted or crocheted	61	39.7	83.4
Articles of apparel and clothing accessories, not knitted or crocheted	62	54.9	82.9
Footwear, gaiters and the like; parts of such articles	64	32.5	86.5
Headgear and parts thereof	65	20.0	78.9
Umbrellas, sun umbrellas, walking- sticks, seat- sticks, whips, riding- cro	66	15.8	92.3
Prepared feathers and down and articles made of feathers or of down;	67	34.4	95.3
Articles of stone, plaster, cement, asbestos, mica or similar materials	68	16.0	68.0
Ceramic products	69	31.0	86.8
Glass and glassware	70	17.4	78.6
Natural or cultured pearls, precious or semi- precious stones, precious n	71	20.1	77.1
Tools, implements, cutlery, spoons and forks, of base metal; parts there	82	16.9	84.4
Miscellaneous articles of base metal	83	20.8	63.1
Nuclear reactors, boilers, machinery and mechanical appliances; parts th	84	19.6	87.3
Electrical machinery and equipment and parts thereof; sound recorders	85	23.6	87.9
Railway or tramway locomotives, rolling- stock and parts thereof; railwa	86	17.7	85.5
Vehicles other than railway or tramway rolling- stock, and parts and acco	87	33.0	82.4
Ships, boats and floating structures	89	16.0	89.2
Clocks and watches and parts thereof	91	20.6	93.6
Arms and ammunition; parts and accessories thereof	93	22.9	81.3
Furniture; bedding, mattresses, mattress supports, cushions and similar	94	34.2	65.2
Toys, games and sports requisites; parts and accessories thereof	95	33.8	78.8
Miscellaneous manufactured articles	96	21.8	83.2
Note: HS chapters with an AV duty average above the median (15%) and share of imports from non-FTA partners above 50%.			

Source: Authors, based on Appendix 1, worksheet "NZ HS2 tab".

Case study 1: New Zealand

77. Finally, we review the *effective rate of assistance* for selected products in NZ over time.⁵⁰ Tariffs are only one component of assistance and import protection. Other government provisions that provide industries with assistance and protection from import competition include quantitative restrictions (quotas), import licensing regimes, subsidies, specific duties, and price supports.

78. While UTL certainly resulted in sharp tariff cuts, tariffs did not go to zero across the board. NZ maintained tariff peaks even after its UTL reform, mostly in apparel, textiles, and clothing.⁵¹ However, even in these sectors, the overall effective rate of assistance (or “ERA”). Table 4 lists the ERA for certain industries over time, citing to scores calculated by Syntec (1988) and Lloyd (1989). Take for instance, *leather gloves and clothing* (HS42), an industry for which the average *ad valorem* duty decreased from 29.4% pre-UTL to 11.8% post-UTL,⁵² the same time in which the estimated overall ERA declined significantly from a score of 363 in 1985/1986 to 145 in 1987/1988.⁵³ Also, for industry *other made-up textile goods* (row 5 in Table 4), the *ad valorem* duty actually increased by 12 percentage points, while the overall ERA declined. In sum, the conversion of specific and compound rates to more transparent simple *ad valorem* duties, the dismantling the quantitative restrictions, import licensing regime, subsidies, and other provisions by the NZ Government, all led to a decline in ERA, even in cases where the UTL reduced tariff rates only lightly or not at all.

⁵⁰ Typically, domestic import-competing industries receive import protection from more than tariffs alone (including import quotas, subsidies, rules of origin, etc.). The “effective rate of assistance” (“ERA”) is helpful to quantify the actual effective support that particular industries are receiving at any point in time. The ERA is an *ad valorem* equivalent metric that subsumes all forms of import protection that an industry receives, including subsidies, price supports, and other forms of assistance. For example, suppose an industry has a 10% tariff and various other import protections such that the ERA was 105%. Suppose further that following liberalization, all of those non-tariff barriers were eliminated, but the tariff rate increased to, say, 20%. Then the tariff rate increased from 10% to 20%, while the ERA decreased from 105 to 20 percent.

⁵¹ See para 74, above.

⁵² See **Appendix I**, worksheet “NZ HS2 tab”.

⁵³ Lloyd (1989) reports ERA estimates for textiles and clothing items, which shows that the effective rate of protection declined on all but one area. Note that these figures suggest the largest non-tariff reforms occurred between 1985/86 and 1987/88. Syntec (1988) reported that in the case of agriculture, reductions in assistance at all levels – input, output, and value added – led to an overall reduction of 63% in assistance between 1984 and 1988.

Case study 1: New Zealand

Table 4. Effective rates of assistance for assorted products in textiles and clothing sector over time and changes in *ad valorem* duties, selected industries, New Zealand

Industry	Effective rates of assistance			Percentage point change in	
	1981-82	1985-86	1987-88	AV duty over UTL period	Post UTL AV duty rate (%)
Woollen fibres	50	41	35	-14.3	6.0
Man-made fibres	29	28	32	-10.3	3.4
Dyeing, printing, and finishing yarn and textiles	87	87	88	-11.2	2.0
Canvas goods	139	219	95	-21.4	5.1
Other made-up textile goods	35	37	16	12.0	12.0
Knitting mills	249	220	197	-27.1	12.6
Carpets and rugs	53	321	44	-7.3	24.1
Other textiles	33	61	36	-8.6	0.0
Leather gloves and clothing	205	363	145	-17.5	11.8
Clothing other than leather and fur	154	145	128	-16.3	31.0

Source: Effective rates of assistance are from Syntec (1988) and Peter Lloyd (1989), "Textiles, Clothing and Fibres in Australia and New Zealand," Department of Economics, University of Melbourne, Seminar Paper, 89-11. The last two columns are the authors' calculations based on New Zealand's tariff schedules for the nearest HS chapter.

B. Background and context of New Zealand's UTL experience⁵⁴

Country profile: New Zealand

New Zealand ("NZ") is a highly developed country. In 2016, it ranked 31st in terms of GDP per capita.^{*} Between 2010 and 2016, the real GDP of NZ grew at an annual rate of 2.63%; growth in 2016 was 3.95%.^{**}

Back in the 1970s and 1980s though, NZ was in crisis. The country's GDP growth between 1970 and 1985 averaged around 2.5%, with wild fluctuations: annual GDP growth was 11.3% in 1974 and -6.4% in 1978.[§] There were several factors which negatively affected the NZ economy. In 1973, as the UK joined the European Community, NZ's preferential access to its biggest export market was negatively affected. At the time, all of NZ's oil supply was imported, and the oil crisis in 1973 and 1979 led to severe disruptions in the economy. Living standards in NZ fell behind those of Australia and Western Europe, and by 1982 NZ had the lowest per-capita income of all the developed nations surveyed by the World Bank.[∞] All this had a confounding impact on the direction of economic policy in the country, with successive Administrations focusing on macroeconomic reforms and restructuring and moving towards a more liberalized economy starting at around 1984.

Today, NZ is heavily integrated into international trade, and especially on exports of its agricultural products, which accounted for 69% of its exports in 2015. This has been a consistent feature of the country's trade profile: in 1974, pastoral products (cheese, butter, meat, wool and other agricultural commodities) accounted for 78% of total exports, while in 1981, they only made up 58% of total exports.[∨] In terms of export partners, in the 1980s Australia, Japan, the UK, and the United States accounted for majority of exports. Today, around 50% of its exports in 2015 went to Australia, China, and the United States.[†] In 1984, NZ's simple MFN *ad valorem* tariff was 17.14%, in addition to a protectionist structure comprising of import licensing, quotas, and specific duties.[#] Today, NZ's tariff structure is liberal, with simple applied tariffs of 2% (1.4% for agricultural and 2.2% for non-agricultural) in 2015.[‡]

^{*} World Economic Outlook Database, April 2016, International Monetary Fund.

⁵⁴ This sections draws heavily on Bollard (1994), Evans and Richardson (1998), and Vitalis (2007).

Case study 1: New Zealand

^{**} In contrast, GDP of OECD countries during the same time period was 2%, with 1.78% in 2016.

[§] For contrast, in the same period, OECD countries grew at 3.3% on average.

[^] See Evans (1994).

[^] Data from NZ official yearbook collection available at: http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/digital-yearbook-collection.aspx.

[§] NZ trade profile at the WTO; available at: http://stat.wto.org/CountryProfiles/NZ_e.htm.

[^] Data from **Appendix 1**, the author's own excel tool for tariff analysis (NZ).

[^] NZ tariff profile at the WTO; available at: http://stat.wto.org/TariffProfiles/NZ_e.htm.

79. Historically, NZ has been an important dairy and agricultural products exporter. The fertile land and climate enabled the country to be a major primary producer of dairy and a range of temperament agricultural products such as wool, sheep, beef, horticulture, and forestry. A comparative advantage in these areas, combined with preferential access to the large Commonwealth market were two driving factors for the strong demand for NZ's exports, and, in turn, high standard of living.⁵⁵

80. Well into the 1970s, New Zealand's agricultural sector had developed a heavy reliance on the United Kingdom ("UK") as an export market. Once the UK had joined the European Community ("EC") in 1973, NZ not only lost its preferential access to its prized export market but also faced EC-level tariffs. To add insult to injury, the EC heavily subsidized its own agriculture, which complicated NZ's efforts to access third markets.

81. Despite some transitional measures in place over 1973-1977, NZ had failed to diversify sufficiently to other export markets or products. Government support and price controls had further insulated farmers and producers from market forces, making them ill-prepared for global competition.

82. Around this time, the 1973 energy crisis hit NZ with full force, which was followed by rampant inflation. The NZ Government responded with attempts to insulate the economy from world oil prices, for example by instituting wage and price freezes, as well as capital and financial market tightening. In addition, a large-scale state-funded investment program in energy and related industries aimed at decreasing the country's dependence on petrol by converting domestic natural gas to produce synthetic petrol. Once oil prices reverted, however, the NZ\$7 billion project (NZ\$9 billion in today's dollars) was rendered uneconomic and essentially abandoned.⁵⁶ Meanwhile, the Government continued giving out the generous social provisions, further adding

⁵⁵ See Bollard (1994).

⁵⁶ See Hembry (2011).

Case study 1: New Zealand

to the already large fiscal deficit. In 1984, Central Bank devalued the NZ\$ in an attempt to improve trade competitiveness, but the NZ economy continued its sharp decline.

83. When the new Labour Government came to power in mid-1984 following a snap general election, it was quickly confronted by the country's harsh economic realities. The new Government was literally forced to reform or face insolvency.⁵⁷

84. The new Government immediately embarked on a major economic liberalization agenda, and trade liberalization was a key component of that plan. The reform agenda followed what is today known as "Washington consensus", and included deregulation, privatization, and open markets.⁵⁸ Being competitive in the global market place was thereby seen essential for an economy that exported the vast majority of its production. In its quest towards pro-market reforms and competitiveness, the new Labour Administration sought to lift price controls for both domestic goods and services, and facilitate imports and exports alike. Broad economic liberalization occurred across product markets. There were sharp reductions or eliminations of ownership restrictions and price controls. The Government also cut back its role in a wide range of domestic services, including utilities and health care. As part of the reforms, domestic non-tradeable sectors were privatized and modernized, including telecommunication services, gas and electricity. Competition law was introduced in 1986. Reorganization and efficiency reforms occurred in public sectors in which privatization was not possible.⁵⁹

85. All these reforms were implemented in what one of our interview partners has termed a "big bang" – introduced in 1984 and largely concluded by 1993 (which coincides with the beginning of the second wave of UTL). Reform action was swift, comprehensive and widely regarded as radical.⁶⁰ One political commentator described NZ's economic reform package as follows:

Between 1984 and 1993, New Zealand underwent radical economic reform, moving from what had probably been the most protected, regulated and state-

⁵⁷ This perspective comes to us from an interview we led with a NZ policymaker.

⁵⁸ The finance and capital markets were also liberalized, which eliminated ownership controls, price controls, market entry restrictions, and deregulation. Restrictions on foreign direct investment were relaxed. The Labour Government decided to allow the NZ\$ to float and to be determined by market forces. Another major change was tax reform, which included broadening the base, lowering the personal income tax rate, and promoting earning incentives.

⁵⁹ Government agencies in all sectors were subject to "new public management" aimed at increasing their efficiency. Services were either privatized or spun off into independent agencies. For agencies to which the reforms did not apply, most notably the export marketing organizations, efforts were made to increase their efficiency and accountability to stakeholders.

⁶⁰ Whenever governments undergo comprehensive economic reforms, it is customary to stagger, or "sequence" the reforms, whereby in a first wave of reforms real markets are reformed (labor market reform, trade liberalization, tax reform), while in a second wave fiscal stabilization (exchange rates, opening of capital account, financial

Case study 1: New Zealand

dominated system of any capitalist democracy to an extreme position at the open, competitive, free-market end of the spectrum.⁶¹

86. Internationally, the Labour Government was able to reap the benefits sowed by the previous Administration. In 1983, the year before Labor was swept into office, the NZ had established stronger ties with its major trading partner Australia in the form of the “Closer Economic Relationship” Accord (“CER”).⁶² The CER helped bring about the Protocol on the “Acceleration of Free Trade in Goods”, which resulted in the total elimination of tariffs and quantitative restrictions between the two countries by 1 July 1990, five years ahead of schedule. NZ (and Australia) were able to use the conclusion of the CER as a platform for combating agricultural protectionism, promoting free trade in goods and services, and enabling easier movement of labor and capital across borders, thus abetting Labour’s UTL agenda, which will be the topic of the next section.

C. Analysis of domestic discourse prior to the implementation of UTL⁶³

87. In this section, we briefly review the domestic discourse and the communication tactics the Government applied in its efforts to lay the groundwork for the UTL reform prior to its implementation. In particular, we review the contextual factors that facilitated the communication of reform needs, the motivation and objectives driving the UTL, as communicated by the Government (including redistributive efforts aimed at compensating losers of the UTL reform⁶⁴), and positions held by backers and opponents of the UTL reform, as well as their involvement in the process.

88. As mentioned, the Labour Party was swept into office by an overwhelming electoral win in 1984. While this provided the new Administration with a deal of political goodwill from the electorate, the Labour Government was skillful in preparing its ambitious reform program and

liberalization) is tackled. NZ, however, undertook all these major reforms in a short period and with no sequencing. This decision may have been driven by the fact that there was simply no time for sequencing. Without implementing major reforms the country would soon face insolvency. Also, the Labour Administration may have figured that its “honeymoon phase” with the electorate would not last forever, and that it was up for re-election in 1987. In addition, the Labour Party had been out of office for so long, it had no political favors to repay or special interests to carve out. Yet, the longer it waited to conduct reform, the less likely that would be the case. Another reason for foregoing sequencing of reforms may have been that the Government needed to urgently enact anti-inflationary monetary policy, which required a switch to a flexible exchange rate regime – another circumstance counseling for rapid, non-sequenced action.

⁶¹ This perspective comes to us from an interview we conducted with a NZ policymaker.

⁶² At the time, Australia was the largest import source and fourth largest export market for NZ, representing 11% of exports and 19% of imports at the time.

⁶³ This section draws heavily on the interviews we conducted with people closely involved in the domestic reform and on our reading of the relevant literature.

⁶⁴ See footnote 11, above.

Case study 1: New Zealand

managing to get domestic stakeholders on board. To our mind, the following contextual factors contributed to Labour laying a successful groundwork for enacting and implementing its tariff liberalization reform:

89. *First*, there was a real sense of urgency in the country at the time the Labour Administration announced its reform agenda. As mentioned, the country was teetering on the brink of financial collapse, which made political and economic reforms both inevitable and acceptable to the broader public. The public appeared to grasp the severity of the situation and was willing to undergo an adjustment period, with an eye towards emerging as a stronger economy and country.⁶⁵

90. *Second*, as mentioned, UTL was only a small part of a much larger economic reform package that included deregulation, privatization, labor market reforms, trade liberalization, monetary and tax reforms, elimination of price controls, support schemes and subsidies. Also notably, all these reforms were enacted in a very short timeframe, with multiple reforms occurring at the same time. This may have helped to deflect attention away from the UTL reforms, which, all things considered, were able to “fly under the radar”, seeing that their importance paled in comparison to other reform policies taken.

91. *Third*, the incoming Labour Administration enjoyed a great deal of legitimacy with the electorate and important stakeholder groups: not only had the Labour Party won in a landslide by recruiting a large majority that was not just composed of its traditional working class supporters, but also of higher-income voters that realized the need for important reforms (including tax and labor market reforms).⁶⁶ Also, having been out of power for over nine years, Labour had few existing ties to special interest groups and lobbyists, and so was seen as relatively untainted by interest group encumbrances. In a sense, Labour was seen as a “straight shooter” that owed nothing to anyone, and therefore was not “owned” by any special interest group, either.

92. Equally important for its legitimacy, the economic reforms instigated by the Labour Administration spared no one from painful measures. Labour’s reforms – including notably its

⁶⁵ See Easton (1994).

⁶⁶ This comes to us from an interview we conducted with a NZ policymaker.

Case study 1: New Zealand

UTL reforms – affected *every* economic sector, including traditional Labour strongholds.⁶⁷ One commentator basked in the irony that:

... liberalization was begun (and largely accomplished) by a labour party, which had a socialist heritage, trade-union organization base, and poor and working-class electoral constituency.⁶⁸

93. However, this “irony” also contributed to Labour’s attempt at being an honest broker that does not play favors, but is focused on the task at hand.

94. Finally, it may have proven helpful that Australia, NZ’s large next-door neighbor, was taking similar action to opening up its markets to establish freer trade. According to Sims (2013) and Garnaut (2002), Australia began pursuing market liberalization efforts (that notably included UTL measures) at nearly the same time as NZ.⁶⁹ The fact that a close neighbor was going through something similar must surely have helped, even if indirectly, to garner support for NZ’s own trade reform agenda.

95. While these contextual factors were favorable for pushing through Labour’s reform package, the new Administration proved exceptionally skillful in shaping the domestic discourse regarding the UTL reform and in devising its communication tactics in a highly effective manner. We discuss the substance and the manner of the Administration’s communication strategy in turn.

96. First, on substance, the new Administration “sugar-coated” neither the urgency with which reforms were needed, nor the adjustment pain that such reforms would cause. Every major stakeholder group realized that the fiscal situation was indeed grim, and in consequence no one was willing to endure insolvency. As a result, the Administration, while keenly aware that there would be losers of the adjustments caused by the economic reforms,⁷⁰ did not promise certain outcomes, nor provide for special adjustment assistance for those import-competing industries

⁶⁷ As reviewed in Subsection II.A, above, the Administration, in its efforts to liberalize trade, did not spare labor-intensive and politically influential sectors, such as textiles and apparel, footwear, carpets, and vehicles. While import tariffs on these sectors were partially left intact, the *effective rate of protection* for these sectors declined substantially, as numerous non-tariff measures, including import quotas and licenses, subsidies, and price controls, were dismantled by the Government (as summarized in Table 4, above).

⁶⁸ Nagel (1994), p. 6.

⁶⁹ Australia and New Zealand embarked on UTL more or less simultaneously. The decisive push to end protection in Australia began soon after the election in 1983. In 1988, the Australian Government announced that nearly all tariffs above 15% would be reduced in annual steps to 15% in 1992. A second round of UTL followed seamlessly after the first UTL. However, the second round of UTL was more limited in scope and focused on manufacturing goods only. For all manufactured goods, with the exception of textiles, clothing and footwear, the maximum tariff rate was to be reduced to 5% by 1996. For more details about Australia’s unilateral trade liberalization, see Garnaut (2002).

⁷⁰ David Lange, NZ’s Prime Minister during the critical years (1984-1989) has been quoted as saying that at the time he knew what NZ was going to be enduring hardship as a consequence of the economic reforms, and he expected about a fifth of farmers would not survive (economically) the reform process. See Nagel (1998), p. 37.

Case study 1: New Zealand

expected to be hurt by the UTL.⁷¹ Since the Administration's reform plan affected nearly every sector of the NZ economy, any adjustment assistance would have been for nearly all sectors of the economy. There simply was neither extra budget nor the political capital for increased fiscal spending for further social or industry assistance programs.⁷²

97. In sum, from the interviews we conducted, our reading of the literature, and our analysis of speeches and interviews given by NZ decision-makers, we conclude that the Government was aware of the potential adjustment pains that reforms would likely bring about. It just seems that the Administration weighed the risks and, by its calculations, the benefits outweighed the adjustment costs.

98. *Second*, substance aside, the Administration also proved skillful in the way it framed the domestic discourse on UTL. Once in office, Labour devised a communication strategy aimed at garnering broad support for its economic reform plan. In September of 1984, the Administration held a national economic summit conference, and the invitation list was long and inclusive.⁷³ Party leaders laid out the sobering fiscal situation and proposals laying out the plans ahead. The conference institutionalized the informal communication channels between cabinet ministers and key trade union officials, which naturally led to a consultative style of government.⁷⁴ Soon thereafter, the Administration set up the 1987 "Tariff Working Party" to draft the tariff reduction schedules and liaison between industry and government officials.

99. What distinguished the new Administration from the previous was its willingness of policymakers to listen to and work with policy experts, and to subsequently implement the suggested reforms.⁷⁵ Labour also relied heavily on a group of ivy league-educated, pro-reform economists that worked at NZ's Treasury Department. These economists authored a detailed briefing on the economic situation and outlook for the incoming Government. This paper

⁷¹ See The Economist (2005) and Cullen (2004).

⁷² It should be noted that NZ already had a strong social safety net in place, which provided New Zealanders with healthcare and worker re-training. This safety net, in a way, was able to "soften the blow" from UTL – at least for individuals affected by the reforms (namely workers in import-competing firms unable to compete against international imports).

⁷³ The Economic Summit Conference was held in Wellington. Prime Minister David Lange delivered the opening address. Conference participants included a wide cross-section of interests, including Ministers of the Crown, employer organizations, trade unions, professional associations, business sectors, and people who had been long-term unemployed. See Dalziel and Saunders (2014), p. 1.

⁷⁴ See Easton and Gerritsen (1996).

⁷⁵ This perspective comes to us from an interview we led with a NZ policymaker.

Case study 1: New Zealand

contained an array of economic policy options and the consequences for the fiscal situation.⁷⁶ Regarding tariff liberalization, the relevant chapter entitled “Macro Effects of Fiscal Policy” noted that “lower, more uniform tariff rates will improve resource allocation” and cautioned against seeing tariffs as a sustainable source of revenue.⁷⁷

100. Next, the Administration also involved domestic think tanks and private-sector interests, such as the NZ Business Roundtable, early on into its decision processes. The NZ Business Roundtable was headed by a former Treasury economist, and this helped to communicate the Government’s objectives to the public.⁷⁸

101. NZ’s economic reforms (including the UTL reform) did not only have backers, but, predictably, also faced considerable domestic opposition. Next to two minor political parties,⁷⁹ the main opposition against the UTL came from import-competing sectors and labor organizations. Manufacturers and labor groups, the latter being the natural clientele of the Labour party, opposed the tariff cuts and pleaded against tariff cuts in a submission to the Tariff Working Party.⁸⁰ The Administration, however, determined to carry out the reforms, was able to convince these groups to eventually “agree to a resolution to cut most tariffs in half over a four-year period from 1988”.⁸¹

102. The agricultural sector, not a natural supporter of Labour, was another group initially opposed to tariff reforms. However, when the agricultural lobby realized early on that cuts to subsidies and tariff protection were inevitable,⁸² it turned into an unexpected ally of the Labour Administration. As Graham Scott (Secretary of Treasury in 1986) recalls, when NZ farmers

⁷⁶ This briefing, entitled “*Economic Management*”, appears to have been the basis, and perhaps the blueprint, for the so-called “Economic Policy Package” that proposed a market-led restructuring of the economy. See Treasury (1984); McKonnon (2003); and Easton, (1989).

⁷⁷ Treasury (1984), section on “Macro Effects of Fiscal Policy”, p. 201. We note that this document does not contain empirical forecasts of the economic effects of UTL.

⁷⁸ A collection of speeches and articles given around the time of the reform debates is published by New Zealand Business Roundtable (1994).

⁷⁹ At the time of the 1983 elections, there were two relatively small political parties under the mixed-member proportional system that opposed the larger reform package (presumably including trade liberalization and UTL). See Nagel (1998), p. 7.

⁸⁰ See New Zealand Manufacturers (1987).

⁸¹ Bollard (1991), p. 176. In 2004, looking back, Roger Douglas, former NZ Finance Minister, underscored the importance of wide agreement across Cabinet, business, and significant industry groups. Also, the Prime Minister’s remarkable ability to communicate with Labour voters proved vital in the public discourse. See Douglas (2004).

⁸² As stated, agriculture was among the first sectors on the Government’s reform agenda. Political motivations may have been part of the rationale – farmers were the typical voters of the National Party, Labour’s opposition. More importantly, perhaps, was that agricultural subsidies were estimated at roughly 4% of GDP and accounted for 30% of the value of agricultural production at the time, so any serious attempt at fiscal reform would have had to target agriculture subsidies. See Edwards and DeHaven (2002).

Case study 1: New Zealand

realized the agriculture was among the first on the reform agenda, the farm lobby's reaction was: "If you're going to take our subsidies away, we're going to make bloody sure you take everybody else's away, too."⁸³ With this kind of jiu-jitsu move, the new Government was actually able to turn a critic into an unassuming champion of its reform agenda.

D. Assessment of UTL experience

103. The UTL reform in NZ was implemented by a series of Customs Amendment Acts in the period between 1984 and 1989. The Labour Government drafted the acts as government bills, and then introduced the bills to Parliament. As best as we can tell, there was minimal debate in Parliament over these bills, which seems to reflect wide-ranging support for the UTL. The bills passed through the necessary stages in Parliament in a timely manner, and, by Royal Assent, quickly became enshrined into law.⁸⁴

104. In this section, we provide an assessment of the economic effects of NZ's UTL. Although it is at times difficult to disentangle the effects generated by the UTL from those generated by the larger reform package that NZ enacted at or around the same time, we try to isolate the implications of the UTL experience to the best of our abilities using the appropriate empirical tools. We proceed as follows: Subsection 1 examines the domestic economic, social, and political effects that the UTL brought about in the years following the reform. Subsection 2 assesses the international political and diplomatic implications of NZ's UTL reform, especially in the trade-policy realm.

1. Domestic effects

105. A number of studies assess the social, political and economic effects of NZ's overall reform package that started in 1984.⁸⁵ However, we are unaware of any study that focuses solely on the quantitative effects of *trade liberalization* aspect of the country's larger reform package, let alone on the role that NZ's *UTL reform*, as a subset of the trade liberalization, has played.

106. In this subsection, we take an attempt at doing exactly that. In the following, we make efforts to isolate the economic, social, and political effects that NZ's UTL has brought about for the domestic economy. We start with the genuine quantitative work that we performed on the economic effects of the UTL (subsection a). Specifically, we apply different modeling techniques

⁸³ Nagel (1998), p. 37.

⁸⁴ See "Parliament Brief: The legislative process"; available at: <https://www.parliament.nz/en/visit-and-learn/how-parliament-works/fact-sheets/pbrief6/>.

⁸⁵ See Bollard (1991, 1994, 2005), Dalzeil (2002), Easton (1994), Nagel (1998), and Scobie and Janssen (1993).

Case study 1: New Zealand

to assess the effect that UTL has had on important macroeconomic indicators – exports, productivity, and employment. This is followed by an assessment of the social and domestic political implications that resulted in the aftermath of NZ’s UTL reform (subsections b and c, respectively).

a. Economic effects of UTL on the NZ economy⁸⁶

107. We apply three individual quantitative methods in our effort to quantify the impact of UTL on the NZ economy, specifically on exports, productivity, and employment. We apply (i) descriptive statistics; (ii) a Before/After approach in the form of an “event study”, and (iii) a difference-in-difference (“DID”) approach, in which we use the average economic performance of the G7 countries as a control market to the treatment market NZ.⁸⁷

The effect of UTL on NZ exports

108. We start our analysis of the effect that UTL had on NZ’s export performance with what is commonly referred to as an “ocular scrutiny” test, namely descriptive statistics of NZ’s export performance over time. Figure 5 depicts the time series of real exports (red line),⁸⁸ and its trend (blue line) over time.⁸⁹ The two vertical lines mark the beginning of the first wave (first quarter, or “Q1”, of 1988) and the second wave of UTL (Q1 of 1993).⁹⁰

⁸⁶ For more details on the empirical analysis pertaining to the effect of UTL on NZ, please see **Technical Appendix B (New Zealand)**.

⁸⁷ We apply the descriptive statistics approach for all three variables, the Before/After approach for exports and employment, and a DID analysis for productivity. The reasons for these modeling choices are described in detail in **Technical Appendix A**. That appendix also provides a more technical introduction into each of these modeling approaches.

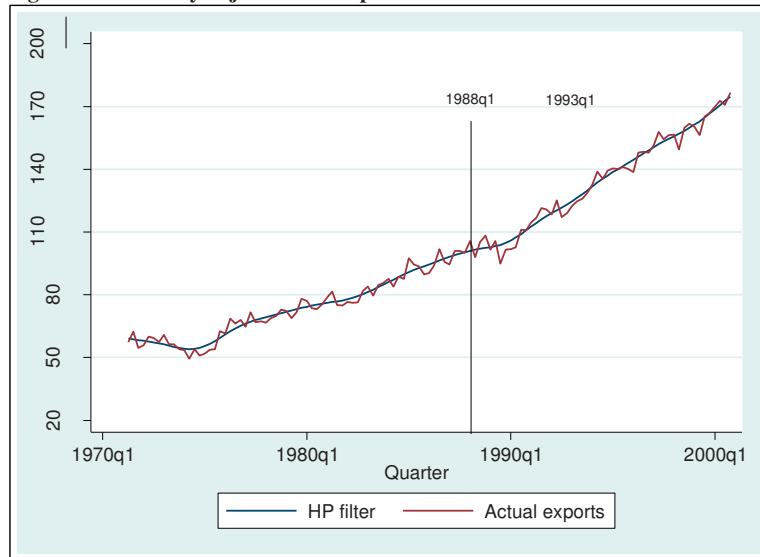
⁸⁸ The vertical axis is indexed at Q1 (the first quarter) of 1971 ($Q1/1971 = 100$). As explained in more detail in **Technical Appendix B (New Zealand)**, real export data for NZ was not available, so we constructed this metric using quarterly export data at market prices (nominal exports) and the export price index for NZ exports. We arrived at the real value of exports by dividing nominal exports by the export price index of any given quarter. We then seasonally adjusted the data using the *seasonal package* in R.

⁸⁹ For constructing the trend, we use a Hodrick-Prescott (“HP”) filter, which removes the cyclical- and seasonal components of the data.

⁹⁰ As discussed in paras. 60 and 61, above, the first wave of UTL occurred simultaneously to a number of other non-tariff trade policies (conversion of specific tariffs, dismantling of agricultural and export subsidies, phase-out of import licensing regime tariff-rate quotas), while the second wave was fairly uniquely focused on tariff liberalization.

Case study 1: New Zealand

Figure 5. Seasonally adjusted real exports of NZ over time – before and after UTL



Source: Authors, based on data by *Statistics New Zealand*.

109. As Figure 5 illustrates, the slope of the trend line flattens shortly after the beginning of the first wave of UTL and ticks up in the early 1990s, suggesting that real exports started growing at a significantly higher rate than before and kept its momentum during the second wave of UTL. It is not evident from the raw data, however, whether the second wave of UTL brought about any further acceleration of export growth over and above the one achieved in the early 1990s. We thus need to resort to a more rigorous approach to identify the relationship between UTL and its impact on export volumes.

110. We proceed to analyze the effects of NZ’s UTL on exports using a Before/After approach, more specifically an event study in the form of an ARDL model. As stated before (and as discussed in more detail in **Technical Appendix A**), the basic idea of any event study is to use time-series techniques to detect changes in the underlying data and to assess whether such changes can be attributed to the policy shock at issue (here, the UTL policy reform). The conclusions are premised on the construction of a forecast of what the world would have looked like *without* the policy change at issue (“counterfactual”).⁹¹ This counterfactual is then compared

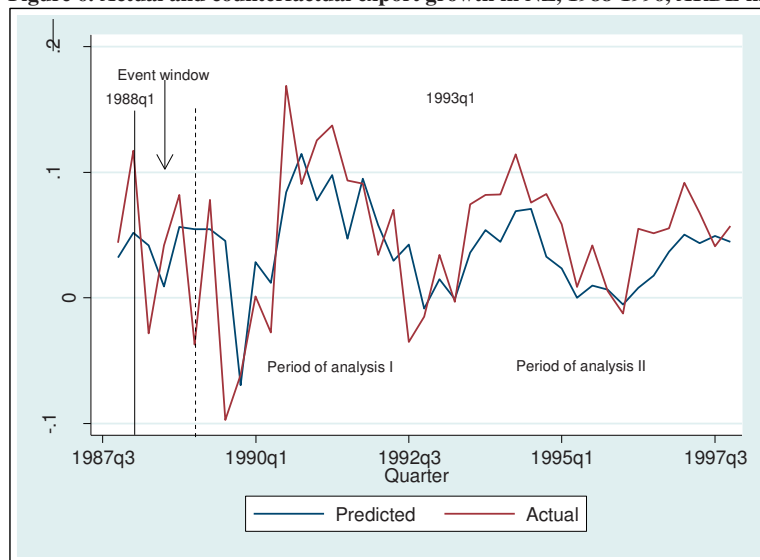
⁹¹ Typically, the assumption is that without the policy shock at issue the world (or, more specifically, the evolution of the specific variable of interest – here: export growth) would have evolved along the same trajectory as it had been evolving before the policy shock.

Case study 1: New Zealand

with the actual outcome, that is, the outcome as it occurred in the presence of the policy shock at issue. The difference between the actual and predicted values is a measure of the effect of the policy change.

111. Figure 6 graphically reports the outcome of the event analysis using the ARDL model, as specified and explained in **Technical Appendix B (New Zealand)**.⁹² The chart depicts the actual and predicted quarterly exports growth (in percent, vertical axis) in the 10 years following the first wave of UTL. The solid black vertical lines represent the start of two UTL waves (Q1/1988 and Q1/1993, respectively). The actual export growth (with UTL) is pictured as a red line, while the predicted (counterfactual) export growth (without UTL) is pictured as a blue line. The dashed vertical black line (Q1/1989) marks the end of the “event window” and the beginning of the “period of analysis” (forecasting period) of the model.⁹³

Figure 6. Actual and counterfactual export growth in NZ, 1988-1996, ARDL model



⁹² **Technical Appendix B (New Zealand)** also contains information about the data sources used and the results of robustness check performed.

⁹³ The period immediately following the first wave of the UTL (the period between the solid grey vertical and the dashed grey vertical) is the so-called “event window”, which is followed by the “period of analysis” (or forecasting period). The period of analysis starts four quarters after the implementation of the first wave of UTL. Export volumes tend to react to favorable economic environment with a certain time lag. It takes time for cheaper inputs to be absorbed by the export sector, for the inventory to be built up, and for exporters to capture foreign markets. Hence, we start analyzing the growth in exports from Q1/1989 onwards.

Case study 1: New Zealand

Source: Authors.

112. The graphical analysis in Figure 6 is not suggestive of a policy impact on exports during the first wave of UTL. For much of the four-year period following the event (the 1989-1992 portion of the forecast period, termed “Period of analysis I” in Figure 6), the blue line, *i.e.*, the predicted export growth (which, recall, presents a world *without* UTL), and the red line, *i.e.*, the actual export growth, move together. This implies that UTL did not have a significant impact on export volumes during the first wave.⁹⁴ However, this results must be seen in the context of other major macroeconomic adjustments that occurred at the same time and that may have negatively affected the capacity of firms to export and therefore countervailed any potential effect of the first UTL wave. Take for example the move from a fixed to a flexible exchange rate regime, which increases uncertainty for exporters as they adjust to the new regime and may thus hamper their growth prospects in the short run. Thus, even though there might have been some positive impact from UTL, this effect may have been nullified on account of other reforms in the economy, whose adjustments resulted in countervailing effects on exports in the short-run.

113. Turning to the period after the second wave of UTL was initiated (the 1993-1996 portion of the forecast period, termed “Period of analysis II” in Figure 6), we see a different picture. The actual export growth (red line) is consistently higher than that predicted by the model (blue line). As discussed in more detail in **Technical Appendix B**, this difference is statistically significant.

114. More specifically, the Cumulative Average Residual (“CAR”⁹⁵), which is the empirical difference between actual and predicted export growth in the analysis period, produces a policy effect of 2.4%.⁹⁶ This means that actual annual export growth with UTL was 2.4% higher than predicted by the model without UTL over the four-year period of 1993-1996.⁹⁷ This result is statistically significant on the 1% level. Since the average annual increase in total exports in NZ during the same period was 5.5%, UTL is thus responsible for 43% of the overall annual growth

⁹⁴ As reported in **Technical Appendix B (New Zealand)**, empirical evidence accompanying Figure 6 corroborates this finding. The difference between actual and predicted export growth between 1988 and 1993 is not statistically different from zero.

⁹⁵ See **Technical Appendix A** for a description of CAR.

⁹⁶ As a general convention we round estimates to one decimal digit if the estimate takes a value of 1 and higher. If the estimate is below one, we round to two decimals.

⁹⁷ More precisely, over the period of analysis II (1993-1996), the CAR was 2.4%, which means that the actual export growth (with UTL in place) was higher than predicted export growth (blue line) by 2.4% on average.

Case study 1: New Zealand

in exports during 1993-1996.^{98,99} This export growth is all the more impressive if one considers that over the same time period, the country's currency, the NZ\$, *appreciated* by 26%.¹⁰⁰

115. An important issue to broach at this point is whether the effect that we were able to estimate using our ARDL model can be fully attributed to NZ's UTL efforts, or to other reform elements that happened at or around the same time as the UTL. While it is econometrically challenging, if not impossible,¹⁰¹ to isolate the effects generated by different types of reforms that happened at or around the same time, we believe that a large portion, if not the majority, of the registered effect on export growth rates can be attributed to NZ's UTL reform. Consider the following reasons: *First*, ever since Lerner (1936)'s seminal work, economic theory has established that there is a direct effect between lower import prices and higher exports.¹⁰² *Second*, as mentioned,¹⁰³ NZ's second wave of UTL (for which we register effects) did not coincide with other big trade-related reform items, and as such was a period not contaminated by other trade reform measures.¹⁰⁴ Therefore, the link between UTL and exports is particularly clear for the second wave of UTL. *Third*, ocular scrutiny of Figure 6 confirms what economic theory and practice predicts, namely that tariff liberalization affects exports with a latency of roughly 12 months. NZ's actual export growth (compared to the non-UTL counterfactual) peaked roughly 12 months after the beginning of the second wave of UTL.

116. These factors give us comfort in our conclusion drawn from the initial ocular scrutiny test that there indeed occurred an exogenous shock to the system which increased the export growth

⁹⁸ This is calculated by taking the ratio of 2.4% and 5.5%, which is 43%.

⁹⁹ To examine the robustness of our findings, we performed an alternative ARDL model run based on the second wave of UTL only. As we explain in more detail in **Technical Appendix B (New Zealand)**, we thereby treat the first wave of UTL as part of the historical period, and shorten the forecasting period to include only 1993-1996. While doing so makes the model results more robust by using more data points, it does not significantly alter the size of the estimated coefficients.

¹⁰⁰ See **Technical Appendix B (New Zealand)** for details. As is well-known, currency appreciation makes domestic exports more expensive which leads to less, not more, export growth, all other things equal.

¹⁰¹ As we discuss in **Technical Appendix A** in more detail, whenever multiple policy interventions occur at or around the same time as the policy of interest, it is difficult to unambiguously assign effect sizes to specific policies taken at or around the same time. When this happens, the researcher has limited options. A feasible option is to rely on inferences drawn based on those specific time periods that can be uniquely assigned to the policy under study. Another option is to adduce economic theory to parse the (timing of) effects generated by different policy interventions.

¹⁰² See **Technical Appendix A** for details.

¹⁰³ See para. 61, above.

¹⁰⁴ Other ongoing reforms, including deregulation, privatization, labor market reforms, monetary and tax reforms, and elimination of price controls, (see paras. 83-84, above) were focused on domestic issues, and therefore would not be expected to have immediate impact on export growth rates. To the contrary: as mentioned in para. 113, NZ's monetary reforms resulted in an *appreciation* of the NZ\$, which counteracts, rather than supports any UTL effects.

Case study 1: New Zealand

rates of exports in the early 1990s and the momentum continued through the better part of the decade.

117. In sum, we find a statistically significant impact of UTL during the implementation of the second UTL wave, but not for the first wave.¹⁰⁵ Based on our event study, we can say that UTL has had a measurable effect of 2.4% on NZ's export growth, which constitutes 43% of the overall growth in exports.¹⁰⁶

The effect of UTL on productivity in NZ

118. We next analyze the effect of UTL on productivity – *first*, by using descriptive statistics, and, *second*, by applying a DID approach,¹⁰⁷ in which we compare New Zealand's performance against that of that of the G7 countries, which together act as a non-UTL control market.¹⁰⁸

119. Figure 7 depicts the evolution of labor productivity levels in NZ over time (horizontal axis).¹⁰⁹ The level of productivity in Q4/1987 has been indexed to 100 (*i.e.*, the end of the pre-UTL period). The red line reports productivity as real output per employed worker, which we define as productivity, while the blue line delineates its trend.¹¹⁰ The two black vertical lines represent the beginning of the first and second wave of UTL, respectively.

¹⁰⁵ Having said that, it is unclear to what extent the established positive policy effect can be solely ascribed to the policy reforms contained in the second UTL wave; the first UTL might have had a positive spillover impact on export performance during the post-1993 phase.

¹⁰⁶ See footnote 98, above.

¹⁰⁷ The reason why we opt for a DID approach, rather than an event study, for analyzing productivity is discussed in **Technical Appendix A**. In short, our decision is driven by the fact that productivity depends on a host of factors, including policy shocks, R&D, investment, etc. with complex (and oftentimes unstable) relationships and interactions. This makes "modelling" productivity an almost impossible task. However, productivity dynamics tend to be familiar *across* countries over time, thus making DID an ideal approach for analyzing productivity.

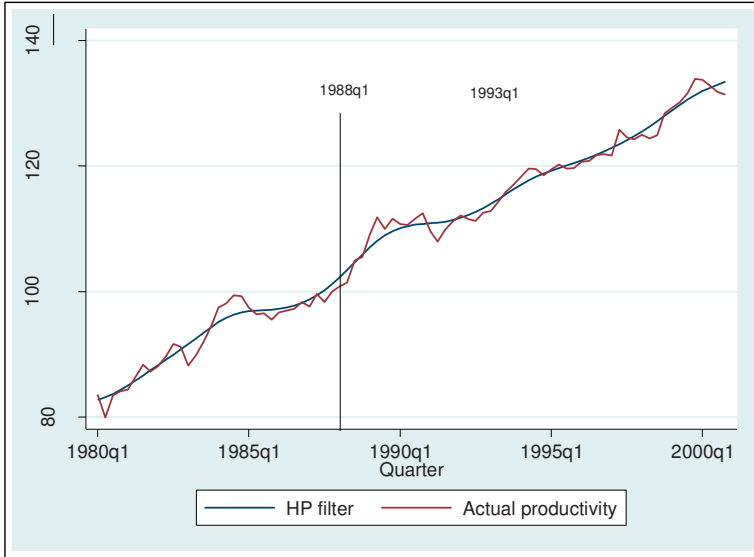
¹⁰⁸ The obvious choice for NZ's control market would have been Australia. However, as reported above (*see* para. 94), Australia had implemented its own set of reforms, which notably included UTL, around the same time as NZ. This renders Australia infeasible as a control group for the purposes of a DID analysis. We thus selected an average across the G7 countries, because these countries together represent the average productivity in industrialized economies. Taking the average across G7 countries also controls for underlying policy changes which may have occurred in any *specific* country. The G7 include US, UK, Germany, Japan, France, Canada, and Italy. The motivation for using the G7 average as NZ's control market for our comparative analysis is further described in **Technical Appendix B (New Zealand)**.

¹⁰⁹ For the purposes of this section, we define productivity as *labor* productivity, *i.e.*, the ratio of GDP to total employment. We use labor productivity over *hourly* productivity, because quarterly data is available for the former but not the latter. However, as discussed further below and in **Technical Appendix B (New Zealand)**, as a robustness check we look into hourly productivity as well. Doing so is without loss of generality.

¹¹⁰ As before, a HP filter is used to extract the trend component of the time series.

Case study 1: New Zealand

Figure 7. Productivity levels in New Zealand, (un)trended, 1980-2000



Source: Authors calculations based on relevant GDP and employment data sourced from OECD database.

120. As Figure 7 shows, immediately prior to the UTL, productivity growth was rather flat. Although the actual productivity (red line) shows spurts of growth after the first (1988) and a somewhat less pronounced spurt after the second UTL wave (1993), we cannot state conclusively that UTL had a lasting impact on productivity in New Zealand. Therefore, we supplement these descriptive statistics with a more scientifically rigorous DID analysis.

121. As previously stated, the idea of a DID approach is to use another country or region as a control market to the treatment market.¹¹¹ The greater the similarity between two markets, the better – *except* for the policy shock at issue; the policy shock should only occur in the treatment market during the period of analysis. If the policy shock is confined to the treatment market as and when it happens, and the variable of interest (here: labor productivity) of the control market has undergone no such policy shock, we can conclude that any measurable effects are due to the policy at issue. The size of the policy effect is measured by comparing the difference in outcomes between the treatment and control markets.

¹¹¹ The presumption hereby is that the treatment market and the control market that have previously behaved similarly would continue to do so over time, were it not for the policy shock at issue.

Case study 1: New Zealand

122. Figure 8 compares the evolution of productivity in the G7 countries (red line) with that of NZ (blue line) from 1982 onwards, whereby the data is trended using a HP filter, which removes the cyclical and seasonal components of the data. Productivity is again indexed at the fourth quarter of 1987 (Q4 1987 = 100), just before the first wave of UTL occurred in NZ. The two vertical lines mark the beginning of the first and second wave of NZ's UTL.

Figure 8. G7 and New Zealand productivity levels, 1980-1997, HP filter



Source: Authors, based on relevant GDP and employment data sourced from OECD.

123. As Figure 8 illustrates, throughout most of the 1980s, the evolution of productivity levels in NZ and the G7 countries was fairly similar.¹¹² Starting from the first UTL wave, however, we see an acceleration in the level productivity in NZ compared to that of G7. This difference in productivity levels progressively widens until some point in the early 1990s, yielding a constant productivity gap between NZ and G7 that remains for nearly 7 years.

124. We calculate the UTL policy effect by comparing the average difference in productivity levels *before* the first wave of UTL with the average difference in productivity levels *after* the first wave of UTL.¹¹³ While in the 8 years leading up to NZ's UTL the average difference in

¹¹² Notice that productivity levels intersect three times over the span of six years prior to the UTL.

¹¹³ For the purpose of assessing the effects of UTL on productivity, we combine our analysis for the two UTL waves. This stands in contrast to our analysis of the effects of UTL on exports and employment (*see above*), where we

Case study 1: New Zealand

productivity levels between NZ and the G7 average was 2.7 percentage points, in the 10 years following the first UTL wave, the average difference between the two markets more than doubled to 5.5 percentage points.¹¹⁴ This is suggestive that the level of productivity would have been 2.8 percentage points lower in the post-1988 period had it not been for NZ's UTL reform. This converts to an UTL-induced *annual* productivity growth effect of 0.27 percentage points.^{115,116} Since annual productivity growth in New Zealand during those 10 years was 1.8% per annum on average, UTL contributed to 15% of New Zealand's annual productivity gain in the given period.¹¹⁷

125. It seems pertinent to address here once again the question of how much of the detected effect on productivity is owed to NZ's UTL efforts, as opposed to other market-oriented policy reforms that the Labour Administration enacted around the same time.¹¹⁸ While it is difficult, if not impossible, to isolate the UTL effects from those of other reforms, we think that UTL had a considerable impact on NZ's productivity growth, particularly the second wave of UTL, for a number of reasons. *First*, theory: economic theory and recent academic research have shown that trade liberalization (including UTL) can have strong effects on productivity levels – effects that can be expected to commence in the medium term. Tariff liberalization may accelerate exit of inefficient firms and increased competitiveness of the remaining export-oriented firms (benefitting from cheaper inputs and a more talented pool of workers).¹¹⁹ This was the case with

analyze the two phases separately. We combine UTL waves here, because productivity shocks are self-reinforcing (a shock in one period has an impact on productivity in future periods) and more permanent in nature. We thus focus on overall productivity gains attributable to both waves of UTL.

¹¹⁴ The increases in productivity are expressed here in *percentage points* rather than *percent*, because productivity is measured in *levels*, rather than *growth rates* (as was the case for export growth, above).

¹¹⁵ This is calculated by using the formula $(1+r)^{10} = 1.028$, which we then solve for r .

¹¹⁶ To examine the robustness of our findings, we performed a robustness check (presented in more detail in **Technical Appendix B (New Zealand)**) in which we made two modifications to the model described above. *First*, we replaced the G7 with the US as the control market. *Second*, we replaced *labor* productivity with *hourly* productivity. The result from the robustness check remain broadly the same, and so corroborate our initial model results.

¹¹⁷ We calculate this by dividing $0.27\%/1.8\% = 15\%$.

¹¹⁸ We recall our discussion above (see Section B), in which we explained that apart from UTL, NZ had implemented a whole host of economic reforms to avoid insolvency and to promote economic growth, which may also have impacted the productivity positively. Specifically, the Government fostered deregulation, privatization, modernization, labor market reforms, monetary and tax reforms, and elimination of price controls, support schemes and subsidies deregulation, privatization, and modernization (see paras. 83-85, above). Some – but not all – such measures are in principle also able to increase productivity.

¹¹⁹ As discussed in more detail in **Technical Appendix A**, economic theory and recent academic research lay out the degree to which trade liberalization impacts productivity levels (IMF, 2016). Trade liberalization (including UTL) allows domestic firms easier access to key inputs from abroad (see Topalova and Khandelwal, 2011; Fernandes, 2007). Cheaper access to foreign technology is thereby especially useful for firms that not at the frontier of innovation (Aghion *et al.*, 2005). Competition felt by import-competing firms fosters productivity growth: as previously protected sectors are facing increasing import competition, the least productive firms are forced to exit the market. This frees up resources that subsequently get put to more productivity used. The remaining incumbent firms become more efficient, which allows them to exploit economies of scale and scope (Helpman and Krugman, 1985).

Case study 1: New Zealand

NZ, where productivity gains took effect between 12 and 18 months after the beginning of UTL (*i.e.*, shortly before Q1/1990) and persist for the entire duration of the two waves of UTL (*i.e.*, well into the second half of the 1990s; *see* Figure 8).

126. *Second*, the link between exports and productivity: as we discussed above, NZ's second wave of UTL exerted a significant effect on the country's export sector.¹²⁰ Since the export sector is an important driver of efficiency and innovation,¹²¹ it is thus exceedingly likely that UTL, through export growth, carried through into productivity growth over the medium term.

127. *Third*, timing: during the second wave of UTL (1993-1996), many of the major economic reforms had been concluded. Next to UTL, only labor reform and some privatization were still ongoing.¹²² However, labor reform may actually have a negative productivity impact.¹²³ Therefore, only UTL, and, to lesser degree, NZ's privatization efforts, were responsible for the visible uptick in productivity that occurred over the course of 1993/1994 (*see* Figure 8) and further increased the productivity gap between NZ and the G7 control market.

128. In sum, our analysis suggests that NZ's economy experienced significantly higher productivity gains, as compared to the G7 countries. While it is challenging to clinically isolate the effects generated by UTL from those caused by other elements of NZ's reform agenda – particularly when a DID approach is the only feasible empirical method¹²⁴ – we resort to theoretical and empirical evidence and find that NZ's productivity gains are at least partially owed to its UTL action.

The effect of UTL on employment in NZ

129. As a final step in our quantitative analysis, we examine the impact of UTL on employment levels in NZ. As before, we start with simple descriptive statistics. Figure 9 plots the level of employment and labor force (vertical axis; in '000 persons) in NZ from 1970 to 2000 (horizontal

¹²⁰ In fact, a closer look at Figure 7 reveals three spurts in productivity: a first in 1984, when major urgent macroeconomic reforms were implemented; a second, right after the introduction of the first UTL; and, third, a small but persistent increase after the introduction of the second UTL in 1993.

¹²¹ *See* for example IMF (2004) or Melitz (2003).

¹²² *See* para. 61, above.

¹²³ Economic theory dictates that marginal productivity of labor is equal to its cost. If labor reforms result in lower labor costs, the former may influence aggregate productivity negatively. Lower labor costs induces firms to hire more marginal workers that previously have been excluded from the labor market as their marginal productivity was below cost.

¹²⁴ *See* footnote 107, above.

Case study 1: New Zealand

axis).¹²⁵ The blue line represents the number of employed persons, while the red line represents the labor force (which is the number of people employed plus the ones looking for a job). The difference between the blue and the red line thus represents the number of unemployed persons at any given point in time. The two waves of UTL are represented by black vertical lines.

Figure 9. Level of employment and labor force in NZ, 1970 to 2000



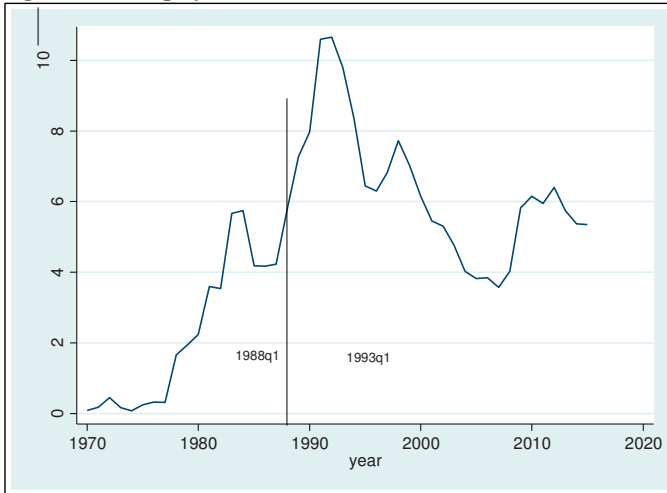
Source: OECD data on New Zealand.

130. Figure 10 represents the yearly unemployment rate (vertical axis) between 1970 to 2017.

¹²⁵ As we explain in more detail in **Technical Appendix A**, we prefer “active population” (the number of 15-64 year olds) over “labor force” to proxy the level of unemployment. However, for NZ, data on active population was unavailable.

Case study 1: New Zealand

Figure 10. Unemployment rates in NZ, 1970-2017



Source: OECD data on New Zealand.

131. As Figure 9 and Figure 10 together indicate, both the labor participation rates and employment levels decreased sharply after the implementation of the first wave of UTL in 1988. Also, the wedge between labor force and employment increased continuously and substantially during the first UTL wave (1988-1992), representing increasing unemployment. At the beginning of the second UTL wave in 1993, labor force and employment levels increased, while the wedge between these two lines decreased, marking a healthy reduction in unemployment. The overall employment dynamics during the UTL period (1988-1996) seem to indicate that the NZ economy underwent an adjustment period which saw falling employment levels (and consequently rising unemployment rates), followed by a period of high economic and export growth during which unemployment fell and employment grew faster than total labor force participation (Figure 9).

132. Ocular scrutiny, thus, may seem to suggest that the two UTL waves indeed had a perceptible effect on employment levels in NZ. However, any attempt to make sense of possible employment effects of UTL needs to be prefaced with a brief background on the dynamics and policy reforms that were occurring contemporaneously in the NZ labor market:¹²⁶ throughout the 1970s, NZ had a highly centralized labor market. The Government was directly involved in sectors ranging from hotel chains to financial institutions. Union membership was compulsory, and wages and working conditions were determined at the industry or national level with no scope

¹²⁶ See generally Evans and Grimes (1996) on that topic.

Case study 1: New Zealand

for opt-outs. Strikes were endemic during that period.¹²⁷ The objective of NZ's Department of Labour throughout the 1970s and early 1980s was to maintain a policy of full employment at the highest productive level – essentially, everyone who wanted a job got one.¹²⁸ This can be seen in Figure 9: in the 1970s and the early 1980s, the total labor force was equal to number of employed persons, suggesting that unemployment hovered at around zero percent.

133. When the Labour Government started enacting its battery of reform packages, the disguised and under-employment of previous decades was slowly brought out into the open and increased unemployment rates from the mid-1980s onwards.¹²⁹ Structural reforms, along with a wage shock in 1990, led to a spike in unemployment in the first quarter of 1991. As part of the Labour Administration's comprehensive reform package, the biggest labor market reform was initiated with the Employment Contracts Act of 1991 ("ECA").¹³⁰ As Figure 10 demonstrates, as soon as the ECA of 1991 was put in place, the unemployment rate began to decrease considerably.

134. To analyze the potential of UTL on employment, we apply an event study in the form of an ARDL model similar to the one used to detect changes in NZ's export performance. For reasons of data availability, we use labor force as the explanatory variable to determine growth in employment and create counterfactual outcomes (forecasts) for employment growth after Q1 of 1988.¹³¹ We then compare the counterfactual with the actual growth in employment to identify the impact of the intermittent policy changes.

135. Figure 11 graphically depicts the results of our ARDL model on employment. The vertical axis represents growth of employment in percent. The two grey lines represent the beginning of the two UTL waves, while the vertical green line represents the enacting of the ECA in 1991. The figure shows the difference between the predicted growth in employment *without*

¹²⁷ Speech by Roger Kerr, executive director of New Zealand Business Roundtable, March 21, 2005; available at: <http://www.scoop.co.nz/stories/BU0503/S00236/kerr-lessons-from-labour-market-reform-in-nz.htm>.

¹²⁸ However, the flipside of this expansive employment policy was that labor force participation rate was low at 39% on average in 1970s (calculations performed using the labor force participation data from *New Zealand Official Yearbook*, 1975 and 1979; available online at http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/digital-yearbook-collection.aspx).

¹²⁹ In this context, see Don Brash, Reserve Bank of New Zealand governor (1988-2002), address to Chatham House in London, 1998 available at <http://www.rbnz.govt.nz/research-and-publications/speeches/1998/speech1998-06-03>.

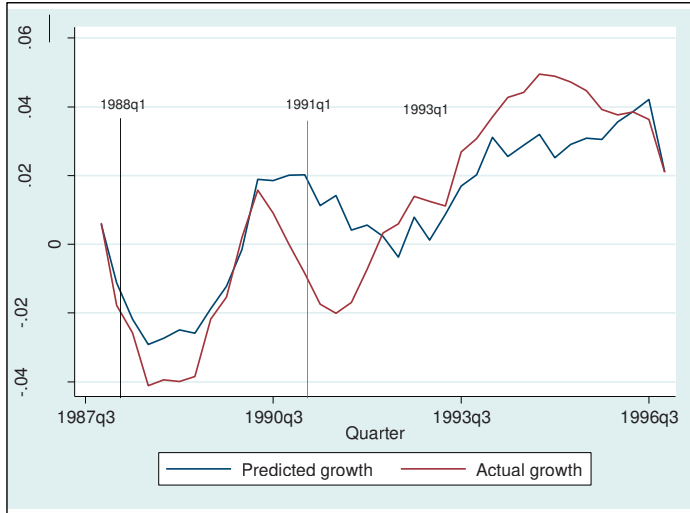
¹³⁰ Among others, this policy reform included deregulation of employment contracting and replacing compulsory unionization by freedom of association (Epstein, 2001).

¹³¹ For technical details of the ARDL event study applied to employment in NZ, see **Technical Appendix B (New Zealand)**.

Case study 1: New Zealand

policy reforms (blue line), as predicted by the ARDL model, and its actual growth pattern *with* policy reforms (red line).

Figure 11. Predicted vs. actual employment growth in NZ, ARDL model



Source: Authors, based on relevant GDP and employment data sourced from OECD.

136. We observe that during the first wave of UTL between 1988 and 1992, actual employment growth (with UTL) was substantially below its predicted levels (without UTL). However, around 1992, the situation reversed and actual employment was growing faster than the predicted growth of employment.¹³² Indeed, the Cumulative Average Residual (“CAR”), which calculates the average difference between the actual and predicted employment growth over time, yields significantly negative results (-1.2%) during the first wave of UTL (1988-1992), but significantly positive (0.83%) results in the second phase of UTL (1993-1996).¹³³

137. While it is difficult to clinically isolate the effect of the two waves of UTL from that of the 1991 ECA labor reform and other market-oriented reforms that occurred during the same period, we have reasons to believe that the first UTL wave had a *negative* effect on employment levels, in particular during the 1988 to 1989 leg of this wave. Since this two-year period occurred prior to

¹³² As Figure 10 reports, the initially high unemployment rate of 11% in 1991 dropped to 6% by the end of 1996.

¹³³ The CAR for the two phases combined (1988-1996) was -0.33%, marginally negative, but statistically insignificant. This underscores the role of trade liberalization on employment found in the economic literature (see, e.g., OECD, 2012) according to which there is continued reallocation of resources from less to more productive sectors. Please refer to **Technical Appendix B (New Zealand)** for details.

Case study 1: New Zealand

the 1991 ECA labor reform (and hence is not contaminated by the latter), we can attribute some of the increase in unemployment to UTL. The extent to which the second large dip in employment (1990 to 1992) can be attributed to UTL is more difficult to say since the 1991 ECA labor reform and this period of the first wave of UTL overlap. Economically, it is reasonable that during the first phase of UTL in NZ (1988 to 1992) unemployment increased as import-competing industries that previously enjoyed high levels of protection were forced to lay off workers and to streamline their production to adjust to increased foreign competition.¹³⁴

138. Looking at the period at or around the second wave of UTL (1992-1996), we see a dramatic *decrease* in unemployment. Again, the effect of the ECA makes it difficult, if not impossible, to isolate the impact of UTL on employment. However, we know from our discussion of export performance and productivity growth, above, that the turnaround in the labor market coincides with the noticeable acceleration of export growth and productivity increases during the second phase of UTL. Economically, it is reasonable to assume that once the economic adjustment took place, increased competitiveness, higher exports, and higher overall productivity enabled by UTL helped to create employment and therefore further reduce unemployment during the second wave of UTL.¹³⁵

Summary: the effect of UTL on exports, productivity, and employment in NZ

139. When it comes to the economic effects that NZ's two waves of UTL had on exports, productivity, and employment, our results suggest the following:

140. *First*, NZ's UTL had a statistically significant positive impact on exports after 1992. Both graphic and econometric evidence suggest a considerable effect on export performance during the 1993 to 1996 period, a period in which few economic reforms other than UTL occurred. We estimate an annual effect of UTL on export growth of 2.4% for the period between 1993 and 1996. This constitutes 43% of the overall annual growth in exports.¹³⁶ However, we fail to demonstrate any significant impact of the first wave of UTL (1988-1992) on export performance, potentially on account of a countervailing effect that other contemporaneously enacted policy

¹³⁴ At the same time, labor reforms made the market more flexible, also contributing to the short-term rise in unemployment.

¹³⁵ See generally OECD (2012).

¹³⁶ See footnote 98, above.

Case study 1: New Zealand

reforms had on exportation. We are also unable to disentangle the potential cumulative effect that the first UTL wave may have had on the export performance during the second UTL wave.

141. *Second*, when it comes to productivity, we observe a measurable impact of policy reforms on productivity growth in NZ, as compared to G7 countries, which acted as our control market for the DID analysis. We have reason to believe that UTL played a significant role in productivity gains, particularly after the second wave of UTL (1993-1996). Empirically, we calculate a UTL-induced productivity boost of roughly 2.8 percentage points over the period from 1988-1998, which converts to a non-trivial productivity growth effect of 0.27 percentage points year-on-year.¹³⁷

142. *Finally*, changes in employment seem to be driven by a variety of factors, particularly by labor market reforms of the early 1990s, but also partially by the implementation of UTL. We find that employment was statistically below forecasted levels during the first UTL wave, but increased appreciably during the second UTL wave. While our quantitative findings perforce remain speculative due to confounding policy reforms that occurred in between the two UTL waves, we have reason to believe that increased export performance after 1993 ultimately had positive spillover effects on the NZ labor market, leading to employment growing faster than labor force participation, thus resulting in a sharp decline in NZ's unemployment rate.

b. Social implications of NZ's UTL experience

143. The social implications of NZ's reform package (and, as a fundamental part of that, the UTL) can be summarized as four (partly overlapping) phases: adjustment pain; acceptance; adaptation; and advantage. We explain in turn.

144. *First*, NZ's reform package, much like any policy reform, caused adjustment pain. The adjustment pain felt in NZ was particularly pronounced, given the decade-long reform backlog bringing the country to the brink of bankruptcy prior to NZ's reform package,¹³⁸ the breadth and depth of the subsequent reform, and its rapid, "big-bang" (non-sequenced) introduction. After the reforms, farmers and industry not only had to survive without help from the Government, they

¹³⁷ See footnote 115, above.

¹³⁸ As Scobie and Janssen (1993): suggested, NZ's adjustment pain was as much a function of inappropriate policies prior to the reforms, as the reforms themselves. Tradable sectors had long been shielded from global competition by quotas and high tariffs. Many industries were even protected from domestic competition with entry barriers, price controls, and various assistance programs.

Case study 1: New Zealand

also faced increased competition both domestically and internationally. The changes were widely seen as painful, but ultimately inevitable.¹³⁹

145. While there are many ways to measure adjustment pain, we highlight two metrics. As previously shown in Figure 10, above, unemployment shot up from below 4% to 11% over the course of the early years of policy reform, before it decreased by 5 percentage points by the mid-1990s.

146. Similarly, in terms of distributive equality, NZ became less egalitarian during the time of NZ's economic reform. Consider the well-known Gini coefficient, the most commonly used measure of inequality, over time. Figure 12 reports income inequality, measured as the so-called "P80/P20 ratio", which depicts the ratio of funds available by high-income households (those in the 80th percentile) and low-income households (those in the 20th percentile). As Figure 12 shows, income inequality increased during the late 1980s (marked by an upwards movement of the lines).¹⁴⁰

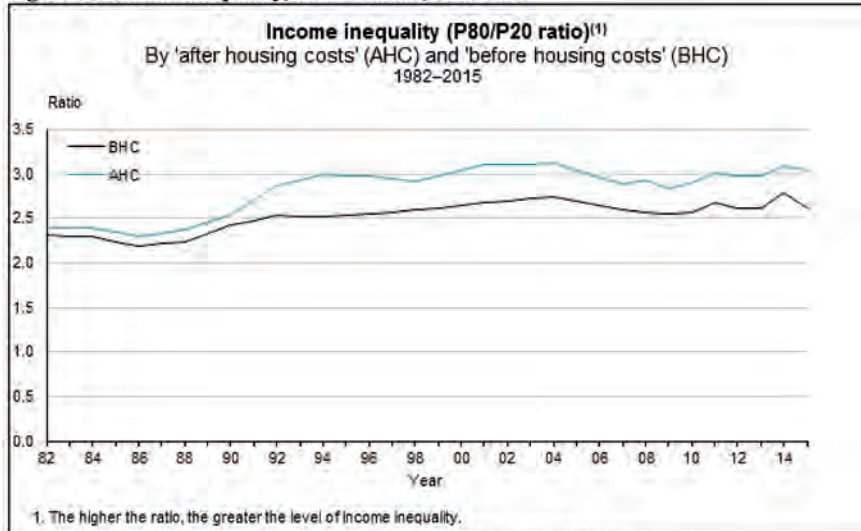
¹³⁹ Take, for example, the adjustment pains suffered by the agricultural sector, as reported by a consortium of agricultural research organizations:

In the first year, 1984-85, the effects of [subsidy] cuts were offset by the benefits from exchange rate devaluation combined with high international commodity prices ... In the meantime, high real interest rates caused the exchange rate to appreciate again and this, combined with two years of lower international commodity prices, made the adjustment for New Zealand's farmers to their loss of policy support much more painful than would otherwise have been the case. Land prices fell when support was withdrawn, leaving some farmers severely indebted, whilst farmers in marginal areas found it hard to compete in the undistorted market (Cabral *et al.*, 2006).

¹⁴⁰ That said, income inequality in New Zealand has consistently remained well below OECD averages. Compare NZ Social Indicators (http://www.stats.govt.nz/browse_for_stats/snapshots-of-nz/nz-social-indicators/Home/Standard%20of%20living/income-inequality.aspx) with and OECD Income Inequality database (<http://www.oecd.org/social/inequality.htm>).

Case study 1: New Zealand

Figure 12. Income inequality, New Zealand, 1982-2015



Source: Statistics New Zealand, published by the Ministry of Social Development (2016).

147. *Second*, while adjustment proved difficult, many New Zealanders showed acceptance, in that they embraced change as unavoidable for fighting off bankruptcy of the country and to facilitate much-needed structural changes to the economy. Governor Brash of the Reserve Bank of New Zealand, delivered a speech in 1998 to Chatham House,¹⁴¹ in which he discussed the social, societal, and economic impact that NZ's reforms have had for the country. Brash remarked on the changing dynamics of the relationship between employers and employees, noting that increased internal and external competition "made employers and employees recognize the extent of their common interest".

148. Brash also noted a transformation in perception by the public and a widening support for openness to global economy and continued reduction in tariff protection, stating:

As an illustration of [the change in perception, take] motor vehicle tariffs, which stood at 55 per cent in 1981 and which have been gradually reduced ever since, were removed completely in last month's (Feb. 1988) Budget with almost no political debate, despite the resultant closure of the four remaining car assembly plants and some component manufacturers.¹⁴²

¹⁴¹ See Brash (1998).

¹⁴² Brash (1998).

Case study 1: New Zealand

149. *Third*, in the years following the economic reforms, New Zealanders learned to adapt to the new, global challenges. In the pre-reform years, NZ high school graduates preferred not to pursue further education at colleges or universities, because they could get an unskilled job at textiles or automobile factories, sectors that were heavily protected. Yet, once labor laws and health, education and welfare rules were reformed, immigration controls relaxed, and markets opened to cheaper and higher-quality foreign imports, New Zealanders realized that they also needed to improve their human capital. This led to substantial skill development in tradeable sectors that became more and more competitive in international comparison.¹⁴³

150. Domestic industries also managed to adapt. Take the NZ agricultural sector as an example: Farmers resumed growth in the early 1990s by switching out of sheep meat, and wool towards, and focusing more on dairy and horticulture. Overall, farmers managed to raise total factor productivity, to maintain overall output levels with reduced inputs, and eventually restore profit levels after the initial shock.¹⁴⁴

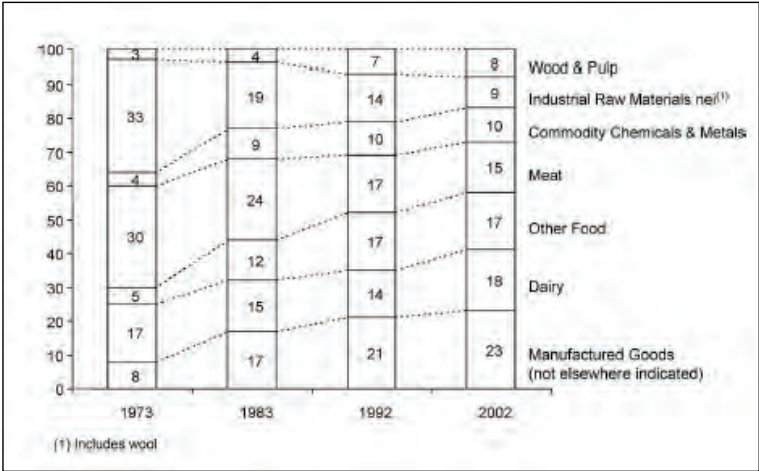
151. Overall, NZ adapted by diversifying its economy. Figure 13 shows how the NZ goods exports evolved over the years. The change in composition of exports between 1983 and 1992 is thereby particularly striking: NZ developed from a heavy reliance on meat and raw materials to a much more balanced export portfolio, including a healthy, and more equitable, mix of agricultural commodities (meat, dairy, other crops) and manufactured goods.

¹⁴³ This perspective comes to us from an interview we led with a NZ policymaker.

¹⁴⁴ See Vitalis (2007). Farmers' adaptation process was thereby aided by government reforms of sectors, such as ports and transport, whose inefficiencies previously had impaired the competitiveness of export agriculture.

Case study 1: New Zealand

Figure 13. Composition of NZ’s exports of merchandise over time (1973-2002)



Source: Vitalis (2007), based on Boston Consulting Group (2004).

152. Finally, in the decade following NZ’s economic reforms, the country began to develop a comparative advantage in a number of industries, including dairy and agricultural commodities.¹⁴⁵

153. A case in point is the NZ wine industry:¹⁴⁶ Historically, NZ wine had a 40 percent import tax to protect its domestic industry. NZ wine was – by one of our interviewees’ own description – “undrinkable”. As part of the new Administration’s larger reforms, NZ dramatically and unilaterally lowered its tariffs on wine, while at the same time providing a relatively modest NZ\$ 10 million price support to its wine industry in exchange for which the wine industry discarded its annual production. Lower tariffs resulted in increased external competition, which, in turn, led to more innovation in NZ winemaking. NZ winemakers embarked on exploring better and more sustainable geographies for growing grapes in the country (in close collaboration with the Ministry of Research, Science and Technology that undertook chemical analyses of the soil to ensure optimum growing conditions). In other words, UTL resulted in exposing the sector to increased competition. NZ winemakers were forced to innovate or perish. Indeed, New Zealand’s successful wine industry is testament to the potential of market forces: when producers are faced with the true costs of production, they tend to make smarter choices.

¹⁴⁵ Take the horticultural industry, for example. In 1980, NZ farmers were exporting horticultural products to 10 countries, and by 2002, their reach expanded to 102 countries. See Sayre (2003).
¹⁴⁶ This anecdote comes to us from an interview we led with a NZ policymaker.

Case study 1: New Zealand

154. Overall, consumer confidence and business confidence indices indicate that outlooks in NZ have been in line with other OECD countries from the mid-1990s onwards.¹⁴⁷

c. Domestic political implications

155. The UTL intervention eventually achieved the objectives set by policymakers. Governor Brash of the Reserve Bank of New Zealand, in his speech to Chatham House in 1998, discussed thoroughly how the reforms induced dramatic changes, and mostly for the better. As for tariff liberalization, Governor Brash noted how the substantial reductions in tariffs contributed to “getting the signals right”, in addition to the many other trade liberalization measures that were taken such as eliminating quantitative import restrictions and abolishing export subsidies. He also noted, “policymakers in almost all political parties support most of the reforms which have been undertaken”.¹⁴⁸

156. The Labor Party was re-elected in the 1987 general election, albeit with a slightly lower voter turnout than in the 1984 snap general election.¹⁴⁹ The country had undergone a great deal of reform, but some degree of what may be termed “reform fatigue” had set in by the late 1980s. By this time, a few years into the reform period, internal Labour Party divisions were emerging over the scope of the reforms and whether and to what extent to continue with them. Prime Minister David Lange, who led one major faction, became alarmed at the extent and speed of the reforms and wanted to pause. The other was the pro-reform “Douglas” faction, led by Finance Minister Roger Douglas, David Caygill, and Richard Prebble. These three became known as the “Treasury Troika” that dominated the Cabinet.

157. The division in the Labour Party eventually led to a change in leadership. David Lange was replaced by Mike Moore who was Prime Minister for three months until the next general election. The Labor Party lost the 1990 general election to the National Party.

158. However, the new National Party Administration continued with many of the economic reforms including privatization of state assets, trade liberalization (including UTL) and the dismantling of subsidies.

¹⁴⁷ Westpac-McDermott Miller Consumer Confidence Index, New Zealand; available at <http://www.tradingeconomics.com/new-zealand/consumer-confidence>.

¹⁴⁸ See Brash (1998).

¹⁴⁹ Nagel (1994), p. 33, offers a detailed account of the politics that led to Labor’s re-election. According to the author, underneath all the messy domestic politics, the “pivotal free-market constituency” played a key role in that election.

Case study 1: New Zealand

159. Notwithstanding the debate about the timing, pacing, and harshness of NZ's overall reform package, the general consensus that developed in the following years and which stands to this day is that the reforms created a climate for renewed and sustainable growth. Indeed, the growth that followed for the country achieved a period of economic growth unmatched in decades.

160. As Scobie and Janssen (1993) concluded:

[New Zealand's] reforms constituted one of the most comprehensive attempts to restructure an economy that has ever been undertaken in a modern democracy during peacetime. As a consequence, New Zealand has become an international case study for countries undertaking liberalization and structural adjustment.¹⁵⁰

2. International political implications and impact on FTAs

161. By NZ's own account, its UTL experience has had positive implications for the country's international standing in the trade policy realm.¹⁵¹ Through the above case study and in-depth interviews we conducted, a number of insights have transpired as to the international implications of NZ's own UTL experience.

162. *First*, regarding the question whether UTL has in any way curbed NZ's potential to conclude further FTAs, some of the (former) NZ officials we spoke to cautioned that UTL may weaken a small country's hand in bilateral trade negotiations, since it reduces a country's policy space.¹⁵² Consequently, countries like NZ may be forced to think creatively about offering bargaining chips beside tariffs – and potentially even besides trade measures – with which they can sweeten the deal vis-à-vis potential FTA partners. Such bargaining chips may include, for example, access to fishing grounds, training/capacity building in relationship-based farming, teacher exchanges and other issues that are of value to trading partners.¹⁵³

163. Having said this, the UTL experience cannot have been hampering NZ's ability to conclude FTAs that much: at the time of its UTL, New Zealand did not have a single FTA in

¹⁵⁰ See Scobie, G. and J. Janssen (1993), p.5.

¹⁵¹ See also commendations by sources cited in footnote 26, above.

¹⁵² For this reason, many unilaterally liberalizing countries, including NZ, have not officially bound their tariffs at the WTO. However, from a purely economic standpoint, the size of an economy may limit the advantage afforded by existing tariffs anyway. A tariff cut offered by a "small" country in an FTA negotiation may not be of significant value in the overall FTA negotiation. See, e.g., Bagwell and Staiger (2002).

¹⁵³ We note that these alternative FTA provisions have not been generally viewed favorably by the NZ public, and thus have not been widely, and certainly not publicly, discussed by NZ policymakers.

Case study 1: New Zealand

place. Since then, New Zealand has successfully concluded a number of FTAs, some of them containing the aforementioned creative bargaining chips.¹⁵⁴

164. *Second*, with respect to the impact of UTL on the political standing of the liberalizing country within the wider trade community, our interview partners opined that low tariffs are seen as laudable, but are ultimately only *one* factor that influences a Member's standing and reputation within trade forums, such as the WTO. Other factors that play a vital role in a country's reputation include perceived neutrality and non-interest in the subject matter and the caliber of its trade officials. For this reason, countries like NZ continued to be well-respected and their WTO Ambassadors have held various chairmanships in pivotal WTO committees, including the Committee on Agriculture.

165. *Third*, pertaining the New Zealand's general foreign (trade) policy, the officials we spoke with noted that smaller economies generally needed to do more than larger economies: the former need to be seen as taking a strong interest in open markets in order to be taken serious and to bring influence to bear within the multilateral trade community.

E. Lessons learned for the Swiss context

166. The context in which NZ's UTL took place was admittedly unique: UTL occurred as a small part of a major economic overhaul during the time of a country's existential crisis. Also, NZ's UTL experience took place nearly three decades ago, when the world was a different place and the world economy seemingly followed different patterns.

167. Nevertheless, we now aim at distilling some lessons that Switzerland may wish to consider when contemplating its own UTL reform.¹⁵⁵

- **Never let a good crises go to waste:** This aphorism attributed to Winston Churchill may serve as the first lesson learned from NZ's experience. With its back to the wall and the country at the brink of bankruptcy, the Labour Administration took a plunge and initiated a far-reaching, deep reform agenda. It thereby managed to "tack on" a number of policy reforms that may not have been strictly speaking necessary to save the country, but overall

¹⁵⁴ Since its UTL, New Zealand has negotiated FTAs with 16 WTO Members, eight of which are in force today. These are: Singapore – New Zealand Closer Economic Partnership (2001); Thailand – New Zealand Closer Economic Partnership (2005); Trans-Pacific Strategic Economic Partnership (P4) between Brunei Darussalam, Chile, Singapore and New Zealand (2006); China – New Zealand FTA (2008); Malaysia – New Zealand FTA (2010); Hong Kong, China – New Zealand Closer Economic Partnership (2011); and ASEAN – Australia – New Zealand FTA (2012). See New Zealand Foreign Affairs and Trade, "Free Trade Agreements in force", available online at (<https://www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/>).

¹⁵⁵ We emphasize that we are not in a position to make any explicit recommendations to the Swiss Government as to whether, and, if so, how to pursue its own UTL strategy. Rather, we merely provide some "lessons learned" that the SECO and the Swiss Government may find useful when contemplating its own UTL actions.

Case study 1: New Zealand

helped to make the country more competitive in the long run. Arguably, the NZ economy would have survived without the Government's decision to liberalize tariffs unilaterally (and with implementing "only" the financial market, currency, privatization, labor-market and tax reforms). However, as our economic analysis showed, the country was certainly better off with the UTL reform in place.

- **Spare no one (don't play favors):** A second lesson learned to us was that the Labour Government enacted UTL across the board, neither favoring the industries of its traditional constituency (manufacturing, textiles, automotive) nor any other special interest group. This way, Labour was seen as an honest broker trying to improve the economy for the sake of the entire country. This role as a straight shooter may also have enabled the Administration to get way with not promising any extra hand-outs to compensate the losers of its UTL reform.¹⁵⁶
- **Shape a broad coalition:** The Labour Administration probably fuelled by a true sense of urgency, reached out across the aisle in an effort to shape a broad pro-trade coalition. Ultimately, Labour was even able to win support for its reform agenda by its political opposition (the National Party), manufacturers, labor unions, and the public at large.
- **Look for "frenemies":**¹⁵⁷ The role of NZ farmers in the reform process was interesting. Farmers were quite opposed to NZ's trade liberalization from the start. However, as soon as they realized that the Government was serious about cutting off support to the sector, they turned into an unexpected ally, because farmers felt it was only fair that other import-competing sectors would have to "suffer" equally from UTL reforms. So, farmers started rooting in favor of a more expansive UTL. In that sense, enemies, while not exactly turning into friends, at least became "frenemies".
- **Communicate before you act:** The Government's communication tactics may have been a key to the success of the ambitious reform agenda. The Administration set up the "Tariff Working Party" and organized national economic summits in its efforts to communicate its reform objectives, and reached out to unions, trade associations, and think tanks early on in the process.
- **Don't overpromise:** Our analysis of economic effects of NZ's UTL experience suggests that the results of UTL – while generally positive – have not resulted in dramatic changes in any of the macroeconomic indicators we have examined. While UTL's impact on exports and productivity was measurable, when it came to employment NZ's UTL reform overall seemed to neither have reduced, nor increased, employment rates, and was generally overshadowed by other labor market reforms. In its communication outreach to domestic stakeholder, NZ seems to have heeded this advice by not making overblown promises regarding the expected outcomes of the UTL reforms, nor regarding special adjustment assistance for those import industries expected to be hurt by the UTL.

¹⁵⁶ But see footnote 72, above.

¹⁵⁷ See <http://www.dictionary.com/browse/frenemy>.

Case study 2: Canada

III. CASE STUDY 2: CANADA AND ITS EXPERIENCE WITH UNILATERAL TARIFF LIBERALIZATION

168. By its own account, Canada's unilateral tariff liberalization (UTL) action was "primarily aimed at enhancing the competitiveness and productivity of Canadian manufacturers", and seen as "concrete actions to open global markets and keep them open".¹⁵⁸ While the reform was largely instigated by the Global Financial Crisis of 2008/2009, UTL was part of a broader policy effort to reduce government red tape, boosting competitiveness, and improving the productivity of Canadian manufacturers.

169. Canada's UTL occurred in three waves: 2009; 2010-2014; and 2015.¹⁵⁹ Canada did not pursue an across-the-board liberalization, but instead undertook an *à la carte* approach, in which it focused on eliminating (mostly nuisance) tariffs of certain capital goods (industrial manufacturing inputs, machinery and equipment, etc.) and intermediate inputs (including raw materials) that were increasingly coming from non-FTA partners. The UTL reform notably excluded agricultural commodities and consumer goods. All in all, Canada liberalized more than 1,900 tariff lines. The share of duty-free lines increased from 54% to 72% over the course of the three waves of UTL.

170. The Government of Canada pursued a crafty communication and outreach strategy that successfully secured the private sector's buy-in into its liberalization package. Together with its incremental approach to tariff liberalization in multiple waves, the Government's communication strategy minimized domestic opposition and nurtured the confidence of Canadian businesses in the tariff reforms. Canadian businesses were actively supporting the Government's UTL efforts throughout the process.

171. There are very few empirical studies on the economic effects of Canada's UTL. Our own analyses in that respect reveal that Canada's UTL reform had a significant effect on the country's export performance, a measurable effect on labor productivity, and a small impact on unemployment.

172. In what follows we present an overview of the UTL reform that Canada experienced between 2009 and 2016. We proceed as follows: Section A provides a snapshot of scale, scope, and timing of the UTL experience in Canada. Section B offers background and context, putting

¹⁵⁸ WTO (2010) and WTO (2011b).

¹⁵⁹ A fourth wave is currently underway but does not form part of our analysis in this chapter.

Case study 2: Canada

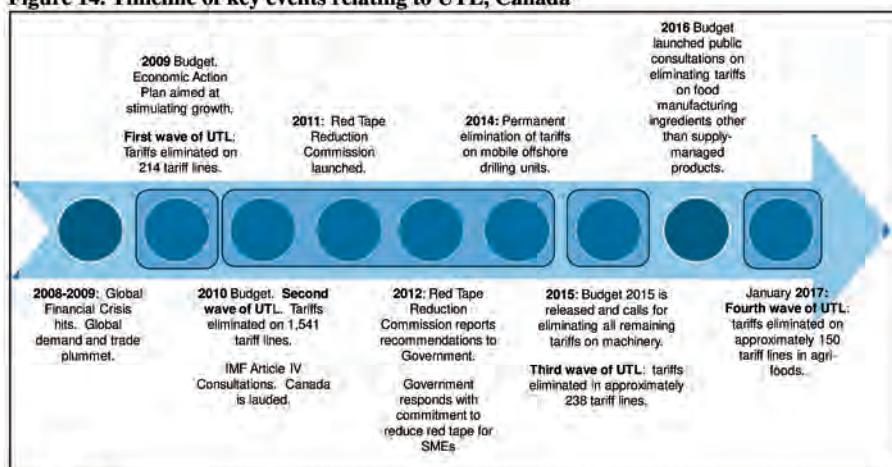
Canada's UTL experience in the context of the world economy, its trading relationships, and the country's other policy reforms that were ongoing at the same time. Section C conducts an analysis of the domestic process prior to the implementation of the UTL, including objectives communicated by the Government; the implementation process opted by the Government of Canada; and discourse with, opposition from, and support by domestic stakeholders. Section D provides an assessment of the effects on Canada after the UTL was enacted. We provide a short literature review and report the results of our original quantitative analysis of the economic effects of the UTL experience on exports, productivity, and employment in Canada. Furthermore, we analyze the domestic social and political effects following the UTL, and report on international political and diplomatic implications in the trade-policy realm, as conveyed to us by Canadian trade policymakers that were close to or engaged in the UTL experience. Finally, Section E draws some lessons learned from the Canadian case study for the Swiss context.

A. Scale and scope of unilateral tariff liberalization

173. In this section, we recall the timeline of UTL events, provide a general overview of the scale and scope of Canada's UTL experience, and zoom in on Canada's treatment of capital and intermediate goods imports.

174. Figure 14 provides an overview of key events related to UTL in Canada.

Figure 14. Timeline of key events relating to UTL, Canada



Source: Authors.

Case study 2: Canada

175. In three consecutive waves of UTL (2009-2015), the Government of Canada focused on capital goods (industrial manufacturing inputs, machinery and equipment, etc.) and intermediate inputs (including chemicals and raw materials). Its plans notably *excluded* agricultural goods and commodities.¹⁶⁰ By 2015, Canada had successfully completed tariff elimination on as many as 1,900 individual tariff lines. All combined, the UTL actions between 2009 and 2015 provided C\$525 million in annual tariff savings and made Canada the first tariff-free manufacturing zone in the G20.¹⁶¹ In 2017, in a fourth wave of UTL and at the request of domestic stakeholders, the Government added retail and food items on its list of liberalized products. We provide details on scale and scope below.

176. In 2009, the Government of Canada announced plans in its federal budget to permanently eliminate tariffs on a range of industrial machinery and equipment over five coming years.¹⁶² The same year, Canada started by eliminating tariffs on 214 lines of imported machinery and equipment, from a simple average most-favored nation (“MFN”) rate of 5.2 percent to a rate of zero. The Department of Finance stated that these tariff eliminations would provide average annual savings of C\$88 million to the private sector.¹⁶³ One expert we interviewed characterized the 2009 UTL as a “warming up” exercise to the more in-depth liberalizations that followed the next year.

177. In 2010, Canada announced further plans to liberalize an additional 1,541 tariff lines, again mainly imported manufacturing equipment, machinery, and intermediate inputs, while again excluding agricultural commodities and consumer goods.¹⁶⁴ The majority of these items, with a simple average MFN rate of 7.2 percent, became duty-free as of 5 March 2010, with the remainder scheduled to be gradually eliminated by January 2015.¹⁶⁵

178. In 2014, Canada permanently eliminated duties on mobile offshore drilling units used in offshore oil and gas exploration and development. The duty-free status of these units was expected to “lower business costs, improves the global competitiveness of Canadian energy projects, and increase the potential for valuable resource discoveries in Canada’s Atlantic and

¹⁶⁰ We note here that Canada is a competitive agricultural exporter. However, like other agricultural exporters (like the United States), Canada tends to be highly protective of its agricultural sector, for example through supply management systems, import quotas and import protection.

¹⁶¹ Government of Canada (2015), Chapter 3.1.

¹⁶² Government of Canada (2009).

¹⁶³ Government of Canada (2010a).

¹⁶⁴ Government of Canada (2010a), pp. 88-89.

¹⁶⁵ WTO (2010).

Case study 2: Canada

Arctic offshore areas” and “provide important maintenance and repair opportunities for Canada shipyards”.¹⁶⁶

179. A third wave of UTL occurred in 2015, when tariffs were eliminated on the remaining tariff lines in manufacturing and machinery. This 2015 action essentially completed the UTL that was initially proposed in the 2009 Budget. According to the Government of Canada, the three UTL waves that occurred between 2010 and 2015 eliminated tariffs on C\$5 billion in imports and provided an additional C\$300 million in annual duty savings for Canadian businesses.¹⁶⁷

180. A final wave of UTL occurred in the beginning 2017 when Canada announced its plans to eliminate tariffs on a number of goods used mainly in the production of food, valued at C\$700 million in dutiable imports.¹⁶⁸ We do not provide an empirical assessment of these tariff cuts, because important data and information pertaining to this very recent event are not yet available. Therefore, whenever we refer to “post-UTL” below, we mean the end of the third UTL wave.

181. Figure 15 summarizes the scale of Canada’s UTL. The figure shows the percent distribution of average *ad valorem* tariffs for non-agricultural products by HS2 chapter before the UTL in 2008 (left panel) and after the UTL in 2016 (right panel). The vertical axis denotes the proportion of tariff lines and the horizontal axis denotes the average *ad valorem* tariff rate.¹⁶⁹

¹⁶⁶ Government of Canada (2014a), Chapter 3.3 “Responsible Resource Development, Conserving Canada’s Natural Heritage, and Investing in Infrastructure and Transportation”; *see also* Government of Canada (2014b), Part 4 overview: customs tariff. The tariff items covered were 8905.20.10 and 8905.90.10, *see* Mobile Offshore Drilling Units Remission Order (2004).

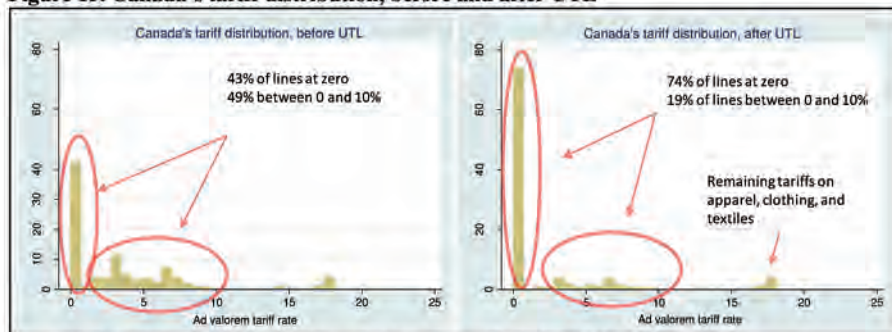
¹⁶⁷ Government of Canada (2010a), p. 88.

¹⁶⁸ WTO (2017).

¹⁶⁹ These tariff data are taken from the accompanying Excel file entitled “Final trade and tariff tabs for SECO” (Appendix 1) which contains an overview of pre- and post- liberalization tariff data for New Zealand, Canada, and Norway on the HS-2, HS-4, and HS-6 digit level. This file is accompanied by a user manual (*see* Appendix 2, “User Manual for Tariff liberalization file”).

Case study 2: Canada

Figure 15. Canada's tariff distribution, before and after UTL



Source: Authors based on **Appendix 1**, worksheet "Final trade and tariff tabs for SECO".

Note: The figure reports all HS chapters on the 2-digit level, *excluding* agriculture but *including* commodities; the x-axis shows *ad valorem* tariffs (in %); the y-axis depicts distribution density (bars add up to 100%).

182. The change in distribution in Figure 15 illustrates the tariff reductions that occurred: the bars shift to the left and the share of duty-free lines increased from 43% to 74%. Before UTL, 43% of HS2 chapters were duty free, and 49% of HS2 tariff lines were positive but below 10%. After UTL, 74% of HS2 lines were duty free, and 19% of HS2 tariff lines were positive but below 10%. The data and the figure illustrate that Canada largely eradicated what essentially constituted "nuisance tariffs".¹⁷⁰ The tariff peaks that remained above 10% after the UTL were for apparel, clothing, and textiles – product groups that were never the focus of Canada's UTL in the first place.

183. Our detailed compilation of tariffs in Canada (**Appendix 1**) confirms that Canada's tariffs were already relatively low *before* the UTL. Of the 4,391 non-agricultural tariff lines/subheadings (at the 6-digit HS level) pre-UTL 1,868 (42.5%) were at zero; 2,135 (48.6%) were above zero and less than 10%; and only 388 tariff lines (8.8%) were at 10% or higher.¹⁷¹ After the UTL, out of 4,463 non-agricultural tariff HS6 lines/subheadings, 3,298 (73.8%) were at zero; 837 (18.7%) were above zero and under 10%; 328 HS6 tariff lines (7.3%) remained at 10% or above.¹⁷² Overall, the simple average MFN applied tariff on non-agricultural products

¹⁷⁰ Nuisance tariffs are generally less than 5% *ad valorem*, do not generate much revenue or yield a high level of protection for domestic industries, and cause significant administrative burden. See footnote 10, above.

¹⁷¹ See "Canada HS6 tab" in **Appendix 1** to back out these statistics.

¹⁷² Textiles, apparel, clothing, and footwear made up the vast majority of tariff lines above 15%. These sectors had applied tariffs between 13% and 17%, with maximums at 18% to 20%. There were seven 6-digit tariff lines within cruise ships and boats (HS8901), tugs and pusher craft (8904), and vessels (HS8905 and HS8906), which had *ad valorem* duties of 21.7% and 25%. See worksheet "Canada HS6 tab" in **Appendix 1**.

Case study 2: Canada

decreased from 3.76% in 2008 to 2.59% in 2016 – this corresponds to a 1.17 percentage point decrease (or a 30% decline, since the initial base was fairly low).¹⁷³

184. To take a closer look at the actual tariff cuts resulting from the UTL reform, Table 5 lists the HS4 chapters that experienced the broadest and deepest tariff cuts over 2008 to 2016. The table reports those tariff lines that experienced the largest increase in duty-free access, and the largest overall decrease in *ad valorem* (“AV”) duty. The HS lines in Table 5 are sorted by the size of overall cut in *ad valorem* duty, with the largest decreases at the top.¹⁷⁴

Table 5. HS chapters representing the broadest and deepest cuts, Canada (2008-2016)

HS Description	HS code	Increase in the share of duty free lines (percentage points)	AV duty cut (percentage points)	Share of imports from non-FTA partners, 2008 (%)
Babies' garments and clothing accessories, knitted or crocheted.	6111	100	18.0	98.9
Babies' garments and clothing accessories.	6209	100	17.7	98.1
Woven fabrics of cotton, containing less than 85 % by weight of cotton, mixed mainly	5210	97	13.6	81.1
Quilted textile products in the piece, composed of one or more layers of textile materi	5811	75	10.5	30.7
Pile fabrics, including “long pile” fabrics and terry fabrics, knitted or crocheted.	6001	71.4	10.0	41.1
Woven fabrics of cotton, containing less than 85 % by weight of cotton, mixed mainly	5211	69	9.7	63.5
Woven fabrics of artificial staple fibres.	5516	67.5	9.5	53.9
Woven fabrics of synthetic staple fibres, containing less than 85 % by weight of such fi	5514	59.7	8.4	27.9
Tyre cord fabric of high tenacity yarn of nylon or other polyamides, polyesters or visco	5902	100	8.0	6.6
Knitted or crocheted fabrics of a width not exceeding 30 cm, containing by weight 5 %	6002	66.7	8.0	35.5
Woven fabrics of synthetic filament yarn, including woven fabrics obtained from mate	5407	56.7	7.8	45.6
Other knitted or crocheted fabrics.	6006	54.8	7.7	57.2
Felt, whether or not impregnated, coated, covered or laminated.	5602	54.2	7.4	10.5
Woven fabrics of synthetic staple fibres, containing less than 85 % by weight of such fi	5513	51.5	7.2	64.7
Textile fabrics coated with gum or amylaceous substances, of a kind used for the oute	5901	50	7.0	62.8
Woven fabrics of coarse animal hair or of horsehair.	5113	50	7.0	98.9
Other woven fabrics of cotton.	5212	66.7	7.0	83.3
Woven fabrics of metal thread and woven fabrics of metallised yarn of heading 56.05,	5809	50	7.0	85.3
Knitted or crocheted fabrics of a width exceeding 30 cm, containing by weight 5 % or n	6004	58.3	7.0	80.8
Terry towelling and similar woven terry fabrics, other than narrow fabrics of heading 5	5802	50	6.8	80.9
Woven fabrics of combed wool or of combed fine animal hair.	5112	62.3	6.7	70.7
Woven fabrics of artificial filament yarn, including woven fabrics obtained from mater	5408	48.1	6.7	86.8
Other woven fabrics of synthetic staple fibres.	5515	48.1	6.7	68.2
Coal gas, water gas, producer gas and similar gases, other than petroleum gases and o	2705	100	6.5	0.0
Colour lakes; preparations as specified in Note 3 to this Chapter based on colour lakes	3205	100	6.5	6.8

Note: Combined these HS chapters represented less than one percent of imports.

Source: Authors based on **Appendix I**, worksheet “Canada HS4 tab”.

¹⁷³ Deriving the average MFN applied tariff involves calculating the average at the most disaggregated tariff classification (as opposed to the 6-digit level). A simple average of all *ad valorem* averages at the HS 6-digit level would simply “weighs” all six-digit codes equally. The 6-digit codes with more than one tariff line need to be further disaggregated by tariff lines contained in that subheading. We thus use the formula $(\sum_i \text{Average } ad \text{ valorem } duty_i * \text{No. of tariff lines}_i) / (\sum_i \text{No. of tariff lines}_i)$.

¹⁷⁴ For instance, looking at *tyre cord fabric* (HS5902), 100% of tariff lines became duty free over the period 2009-2016 while the average *ad valorem* duty decreased by 8.0 percentage points over the same period. In addition, 6.6% of imports were from non-FTA partners in 2008, which shows the liberalization potential pre-UTL (more on that, below).

Case study 2: Canada

185. As Table 5 reports, the broadest cuts (increase in share of duty-free lines) and deepest cuts (decrease in *ad valorem* duty) can be found in certain textiles, apparel, and clothing. These tariff cuts clearly did not represent the elimination of “nuisance tariffs”, but reflected substantial cuts from a high base. In reducing tariffs on some textile, garment, and apparel, tariff lines Canada was in keeping a global trend of reducing tariffs on these highly protected goods. However, as will be discussed in more detail below, many tariffs on textile, apparel and footwear were excluded from UTL and taxes remained high.

186. Next, we consider the degree of *effective* tariff liberalization performed by UTL. We define effective UTL as a function of the initial tariff level and the share of imports from non-FTA or non-preferential partners (imports that are subject to the full MFN import duty).

187. Figure 16 plots the *potential* for *effective* tariff liberalization prior to Canada’s UTL reforms for *all non-agricultural products* on the HS2 level. The horizontal axis shows *ad valorem* tariffs (in %), while the vertical axis depicts the fraction of imports originating in non-FTA countries (in %). The greater the initial tariff and the greater the share of imports from non-FTA countries that faced the tariff, the greater the potential for effective tariff liberalization. The HS2 chapters with the greatest tariff liberalization potential are in the upper right quadrant and denoted by orange dots. The other HS chapters are denoted by blue dots.

Figure 16. Before UTL: Tariff liberalization potential, Canada, 2008, 2-digit HS level



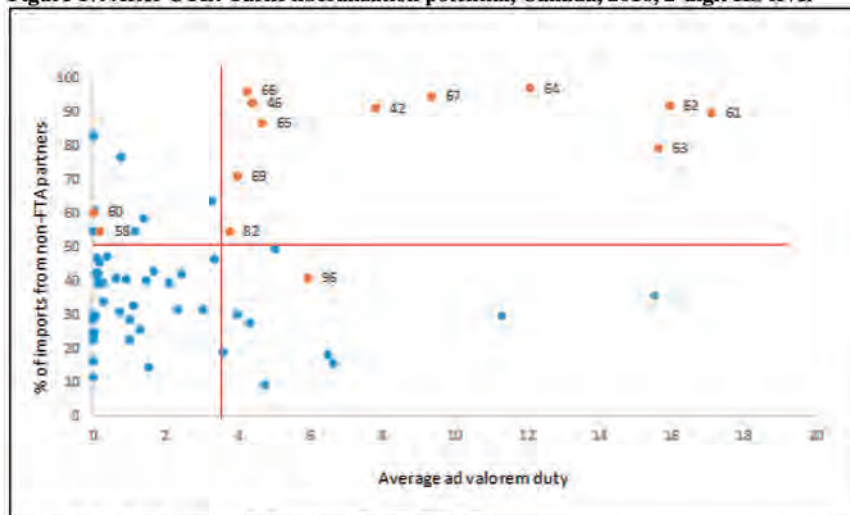
188. By our criteria, the HS chapters that had the greatest potential for effective tariff liberalization are those with an average tariff above the median (3.6%) and an import share from non-FTA partners above 50%.^{175,176} Figure 16 shows that 14 out of 63 HS2-chapters met these criteria, and most of these chapter were textiles, apparel, clothing and footwear.

¹⁷⁵ By 2008, Canada offered duty-free or preferential rates on imports from the United States and Mexico (from the 1987 Canada-US FTA, and 1994 NAFTA), FTAs with Israel and Chile (1997), and a FTA with Costa Rica (2002).

70

Case study 2: Canada

Figure 17. After UTL: Tariff liberalization potential, Canada, 2016, 2-digit HS level



Source: Authors based on **Appendix 1**, worksheet “Canada HS2 tab”.

Notes: See Figure 16 above.

190. Comparing Figure 16 with Figure 17 with an eye towards how many orange dots moved to the left reveals the degree to which Canada seized upon its liberalization potential with UTL. The most interesting finding when comparing Figure 16 with Figure 17 is a *lack* of activity in the upper right quadrant. This lack of upwards movement shows that much of the UTL potential remained untapped: graphically, these HS chapters *remained* in the upper right quadrant.

191. That said, there was a small number of HS2 chapters moved from the upper right towards (or closer to) the upper left quadrant, *e.g.*, HS58 (*woven fabrics*), HS60 (*fabrics*), or HS65 (*headgear*), or from the upper right to the lower right quadrant (HS96 – *misc. manufactured articles*).

192. But overall, that lack of upwards movement may not be surprising, considering the focus of Canada’s UTL was capital goods – industrial manufacturing inputs, machinery equipment and the like – and intermediate goods. Most of these products had initially low tariffs. The chapters with the higher tariffs were textiles, apparel, clothing and footwear; coupled with higher import exposure to non-FTA partners, this puts them in the upper right quadrant of Figure 16, and these chapters were not the focus of UTL and hence did not experience permanent tariff liberalization.

Case study 2: Canada

193. So, did Canada not make use of its tariff liberalization potential? As stated, with its UTL reform, Canada was neither angling for across-the-board action nor for sweeping tariff cuts. Rather, Canada was motivated by cutting tariffs on the lower end of the scale (tariffs below 3-4%) down to zero, and the list of targets, rather than being indiscriminate, consisted of a specific set of *capital goods* and intermediate inputs.

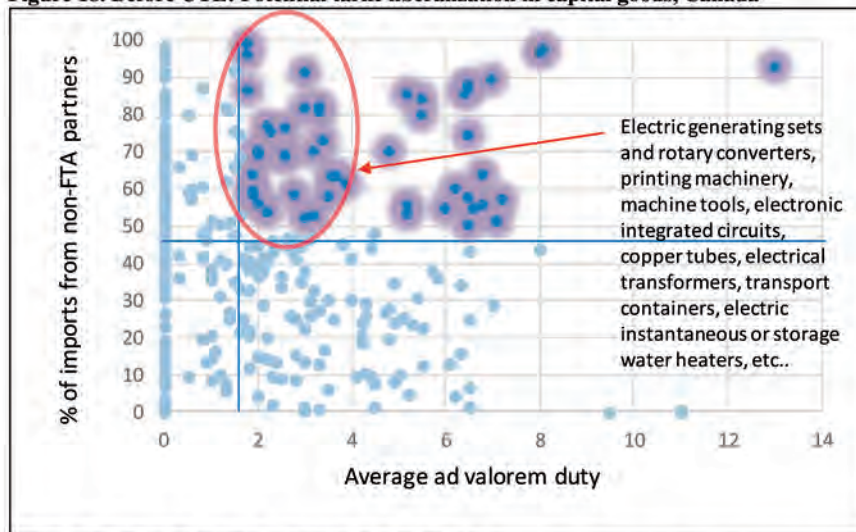
194. Thus, it makes sense to examine in more detail Canada's concrete action vis-à-vis the subset of *capital goods* and *intermediate goods*, which we will discuss in turn.

195. First, capital goods are mostly found in HS72 to HS88. There were 310 tariff lines in these HS chapters at the 4-digit level. Pre-UTL, these tariff lines had relatively low median *ad valorem* duty rates of 1.65% and average import exposure to non-FTA partners of 42%.

196. Figure 18 (structurally similar to Figure 16, above) zooms into the subset of capital goods to illustrate the potential for effective tariff liberalization in those sectors prior to Canada's UTL. As before, the horizontal line represents the 50% benchmark import share from non-FTA partners, and the vertical line represents the median *ad valorem* duty (1.65%) rate. Again, industries in the upper right quadrant depicts the tariff lines with the highest tariff liberalization potential (depicted here as fuzzy blue circles). There are 52 tariff lines within the selected group of capital goods that meet this criteria. Figure 19 (structurally similar to Figure 17) does the same for the post-UTL period.

Case study 2: Canada

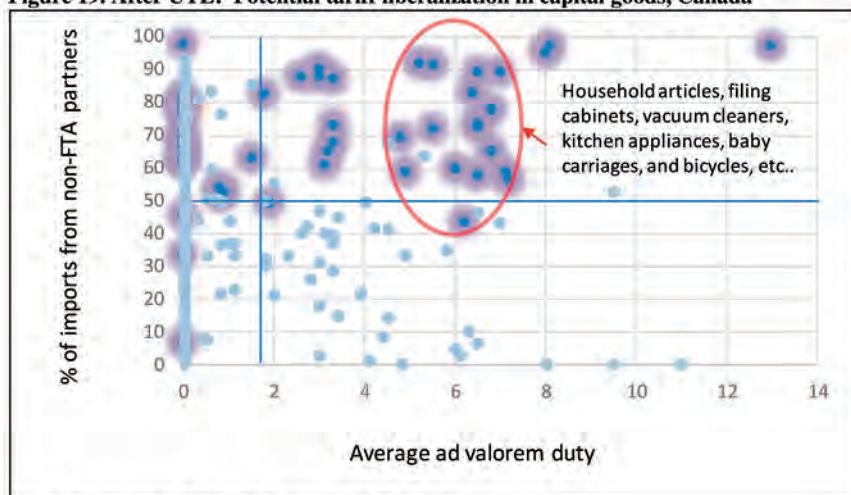
Figure 18. Before UTL: Potential tariff liberalization in capital goods, Canada



Source: Authors based on **Appendix 1**, worksheet "Canada HS4 tab".

Notes: The chart reports import tariffs of capital goods (HS chapters 72-88) on the 4-digit level; the x-axis shows *ad valorem* tariffs (in %); the y-axis depicts the fraction of imports originating in non-FTA countries (in %). HS chapters in the upper right quadrant have the biggest potential for effective UTL.

Figure 19. After UTL: Potential tariff liberalization in capital goods, Canada



Source: Authors based on **Appendix 1**, worksheet "Canada HS4 tab".

Notes: See Figure 18, above.

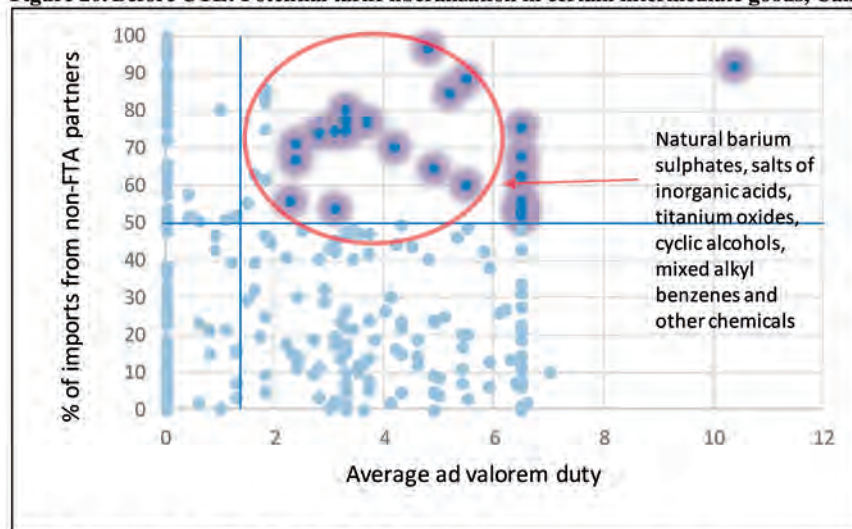
Case study 2: Canada

197. Comparing Figure 18 with Figure 19 reveals that a subset of those 52 tariff lines with the greatest liberalization potential went to zero, another subset remained unchanged, and the remaining tariff lines experienced a moderate tariff cut. Specifically, of the 52 tariff lines in the upper right quadrant, 18 tariff lines that went to zero, and eight tariff lines saw a significant tariff cuts. These industries were mainly capital goods used in industrial manufacturing: electric generating sets and rotary converters, printing machinery, machine tools, electronic integrated circuits, copper tubes, electrical transformers, transport containers, electric instantaneous or storage water heaters, etc. (*see* red circle in Figure 18). The 26 lines that remained unchanged post-UTL, *i.e.*, those industries for which Canada did not seize the UTL potential (*see* red circle in Figure 19) were mainly household appliances (household articles, filing cabinets, vacuum cleaners, kitchen appliances, baby carriages, and bicycles, etc). We note that these *non*-liberalized tariff lines are end-products (not used in Canadian manufacturing), and are industries with a domestic import-competing production.

198. *Second*, we look at certain intermediate goods used in industrial manufacturing, such as raw materials, chemicals, alloyed products, plastics, and rubber are typically found in HS chapters HS25 to HS40. Figure 20 and Figure 21 zoom into Canada's liberalization potential of these products pre- and post-UTL. As before the horizontal line represents the 50% benchmark import share from non-FTA partners, and the vertical line represents the median *ad valorem* duty (1.90%) rate at the 4-digit level for these products. The upper right quadrant depicts the tariff lines with the highest UTL potential. There are 22 tariff lines that met this criteria pre-UTL.

Case study 2: Canada

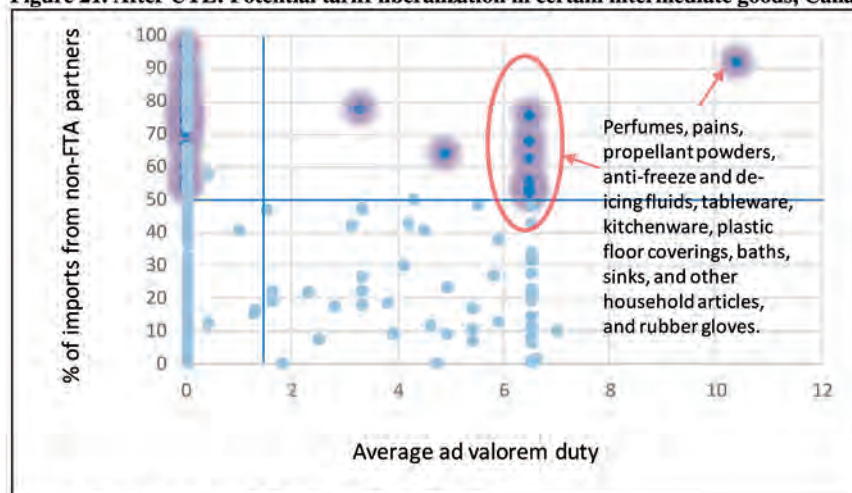
Figure 20. Before UTL: Potential tariff liberalization in certain intermediate goods, Canada



Source: Authors based on Appendix 1, worksheet "Canada HS4 tab".

Notes: The chart reports import tariffs of intermediate goods (chapters HS 25-HS40) on the 4-digit level; the x-axis shows *ad valorem* tariffs (in %); the y-axis depicts the fraction of imports originating in non-FTA countries (in %). HS chapters in the upper right quadrant have the biggest potential for effective UTL.

Figure 21. After UTL: Potential tariff liberalization in certain intermediate goods, Canada



Source: Authors based on Appendix 1, worksheet "Canada HS4 tab".

Notes: See Figure 20, above.

Case study 2: Canada

199. A comparison between Figure 20 and Figure 21 reveals that a portion of these tariff lines were liberalized and a portion was not. The tariff lines that were liberalized are circled in red in Figure 20 and included mainly chemicals used as intermediate inputs in industrial manufacturing, such as natural barium sulphates, salts of inorganic acids, titanium oxides, cyclic alcohols, mixed alkyl benzenes and other chemicals.

200. The subset of industries that were not liberalized are circled in red in Figure 21. These products are mainly end-consumer and household products, such as perfumes, paints, propellant powders, anti-freeze and de-icing fluids, tableware, kitchenware, plastic floor coverings, baths, sinks, and other household articles, and rubber gloves. Again, we note that the *non-liberalized* tariff lines are industries that are not used as inputs into industrial manufacturing and also are in competition with domestic industries.

201. Table 6, like Table 5, above, provides a deeper dive into Canada's attempts to liberalize capital goods and intermediate industries. We consider a broad range of HS chapters (selected chapters between HS27 and HS89). The table reports the increase in the share of duty-free lines, the *ad valorem* (AV) duty cuts during Canada's UTL, the exposure to non-FTA partners pre-UTL, and that chapter's share of overall imports pre-UTL. The table is sorted by the share of imports from non-FTA partners.¹⁷⁷

¹⁷⁷ For instance, consider *electrical machinery*(HS85): within that chapter, the share of duty-free lines increased by 27.5 percentage points over the UTL period; the average *ad valorem* duty cuts was just 1.3 percentage points; 50.2% of imports came from non-FTA partners pre-UTL; and this chapter represented 11% of Canada's imports pre-UTL. Another chapter that represented a large share of trade was *nuclear reactors, boilers, machinery, and mechanical appliances* (HS84) with the share of duty-free lines increasing by 20.1 percentage points; an average *ad valorem* duty cut of just 1.1 percentage points; and 39.6% of imports coming from non-FTA partners.

Case study 2: Canada

Table 6. Manufacturing equipment and machinery duty cuts over UTL period, 2-digit HS, Canada

HS Description	HS code	Increase in the share of duty free lines (percentage points)	AV duty cut (percentage points)	Share of imports from non-FTA partners, 2008 (%)	Share of imports, 2008 (%)
Tin and articles thereof	80	20.0	0.5	67.7	0.0
Mineral fuels, mineral oils, mineral waxes, bituminous substances	27	15.8	1.2	66.4	14.1
Inorganic chemicals; organic or inorganic compounds of precious metals, of rare- earth	28	33.2	1.4	64.6	1.2
Other base metals	81	40.1	1.1	60.6	0.2
Misc manufactured articles	96	9.0	0.3	60.3	0.2
Tools, implements, cutlery of base metal	82	7.5	0.4	52.4	0.6
Electrical machinery and equipment, sound recorders, television image and sound rec	85	27.5	1.3	50.2	11.0
Articles of iron or steel	73	24.5	1.5	43.2	2.8
Copper and articles thereof	74	38.0	1.0	41.3	0.6
Rubber and articles thereof	40	23.0	1.8	40.8	1.5
Nuclear reactors, boilers, machinery, mechanical appliances	84	20.1	1.1	39.6	16.6
Optical, photographic, cinematographic, measuring, precision instruments, medical or	90	12.3	0.6	39.0	3.0
Zinc and articles thereof	79	1.9	0.1	38.3	0.0
Misc articles of base metal	83	38.9	2.2	38.2	0.6
Articles of stone, plaster, cement, asbestos, mica	68	18.2	1.0	36.6	0.4
Wood and articles thereof	44	13.6	0.7	33.5	0.9
Ships, boats, floating structures	89	2.3	0.4	31.4	0.3
Iron and steel	72	4.5	0.2	29.8	2.4
Salt, sulphur, earths and stone, plastering materials, lime and cement	25	8.7	0.4	26.7	0.2
Plastics and articles thereof	39	47.3	2.8	19.5	3.7
Aluminum and articles thereof	76	47.1	2.4	19.2	1.1
Lead and articles thereof	78	62.5	1.6	2.4	0.0

Note: HS chapters in manufacturing, equipment, commodities, and intermediate inputs for manufacturing sectors. These HS chapters represented 61.5% of imports.

Source: Authors based on **Appendix 1**, worksheet “Canada HS2 tab”.

202. Overall, the increase in duty-free lines over the period of the UTL is relatively high throughout. Import exposure to non-FTA partners (the share of imports from non-FTA partners) prior to the UTL on average also was relatively high at 41%.¹⁷⁸ The *ad valorem* duty cut for these goods is relatively low across the board, which reflects initially low tariffs, and to some extent hides their significance.¹⁷⁹ Some of these HS chapters represented relatively large volumes of trade, as seen by the share of imports (in the last column).

203. Examining the UTL for these groups of products thus provides further analytical support that Canada’s UTL was focused on eliminating nuisance tariffs for goods that were important for the Canadian domestic manufacturing and export sectors. Furthermore, since a large share of imports were initially coming from non-FTA partners, Canada wanted to boost its domestic manufacturing industry by making imports of these essential goods easier and cheaper.

¹⁷⁸ However, we witness a wide range from 67.5% for HS80 (*tin and articles thereof*) to 2.4% for HS78 (*lead and articles thereof*).

¹⁷⁹ Small tariff cuts on products that are part of global value chains can have a large effect. As Miroudot *et al.* (2013, p. 17) point out input tariffs are akin to *negative* protection for downstream industries, because tariffs raise the production costs of imported input users. Hence, even a small cut in *ad valorem* duty can yield a meaningful cost advantage to the domestic downstream user.

Case study 2: Canada

204. This rationale can be seen even more clearly if we zoom into a specific subgroup of manufacturing and machinery products (HS83, HS84, and HS85¹⁸⁰). To that end, we drill down on the four-digit HS level. At the 4-digit level, there are 143 lines across these three chapters, with an average *ad valorem* tariff of 1.9% before UTL and 0.7% after UTL. The average *ad valorem* duty cut thus was just 1.2 percentage points. On average, 48% of these imports were sourced from non-FTA partners.¹⁸¹ The largest *ad valorem* duty cut was a mere 6 percentage points (hydraulic turbines, HS8410) and over half (54.6%) of the imports in this industry originated in non-FTA partners. (While there is a table to accompany our findings, it is too spacious to be included here, so we refer the reader to worksheet “Canada HS4 goods” in **Appendix 1.**)

205. Next, we consider the issue of trade diversion. Specifically, we assess whether and to what degree UTL has tilted the composition of imports away from FTA partners and towards non-FTA based importers. To that end, we isolate tariff lines at the HS4 level with an *ad valorem* duty cut of at least 3.6 percentage points (the median tariff pre-UTL¹⁸²) and an increase in non-FTA import share of at least 10 percentage points (excluding agriculture and textile and apparel). Of the 258 HS4-lines with a positive tariff cut and an increase in non-FTA import share, only 15 lines exhibited changes large enough to fit this criteria. Table 7 lists these 15 tariff lines (rows). The columns of that table list the pre-UTL and post-UTL simple average of *ad valorem* duties, the resulting decrease in *ad valorem* duty (by percentage points), as well as the pre-UTL and post-UTL share of imports from non-FTA partners, and the resulting increase in non-FTA import share (in percentage points).

¹⁸⁰ HS83, HS84, and HS85 cover *miscellaneous articles of base metal; nuclear reactors and machinery and mechanical appliances*; and *electrical machinery*, respectively.

¹⁸¹ For instance, for product group *steam turbines and other vapour turbines* (HS8406), the *ad valorem* duty rate decreased from 3.7% to zero over the UTL period; non-FTA partners (before UTL) represented 63.3% of imports. Similarly, consider *industrial or laboratory furnaces* (HS8417), where the *ad valorem* duty rate was 3.4% before UTL and zero thereafter, and non-FTA partners represented 73.1% of imports.

¹⁸² See footnote 176, above.

Case study 2: Canada

Table 7. Trade diversion: Tariff lines with relatively large tariff cuts and increases in the non-FTA import share, Canada

HS Description	HS code	Pre-UTL Simple average of AV duties	Pre-UTL % of imports from non-FTA partners	Post-UTL Simple average of AV duties	Post-UTL % of imports from non-FTA partners	Decrease in AV duty (percentage points)	Increase in non-FTA import share (percentage points) ↓
Base metals, silver or gold, clad with platinum, not further worked than semi-manufactured	7111	6.5	4.9	0.0	78.5	6.5	73.7
Stranded wire, cables, plated bands and the like, of aluminium, not electrically insulated	7614	4.5	1.2	0.0	38.0	4.5	36.9
Sugars, chemically pure, other than sucrose, lactose, maltose, glucose and fructose; solid	2940	5.5	60.1	0.0	86.9	5.5	26.8
Halogenated, sulphonated, nitrated or nitrosated derivatives of phenols or phenol-alcohols	2908	3.7	13.8	0.0	35.8	3.7	22.0
Light-vessels, fire-floats, dredgers, floating cranes and other vessels the navigability of which is not dependent on the power of their engines	8905	20.8	0.2	17.1	20.3	3.7	20.1
Hydraulic turbines, water wheels, and regulators thereof	8410	6.0	54.6	0.0	71.6	6.0	17.1
Plywood, veneered panels and similar laminated wood	4412	4.0	45.3	0.0	62.1	4.0	16.8
Other organo-inorganic compounds	2931	3.7	41.9	0.0	57.4	3.7	15.6
Sulphonated, nitrated or nitrosated derivatives of hydrocarbons, whether or not halogenated	2904	4.6	14.5	0.0	29.7	4.6	15.2
Plates, sheets, strip, rods and profile shapes, of vulcanised rubber other than hard rubber	4008	4.3	23.4	0.0	38.5	4.3	15.1
Iron oxides and hydroxides; earth colours containing 70 % or more by weight of combined iron	2821	4.5	43.6	0.0	58.6	4.5	15.0
Electric (including electrically heated gas), laser or other light or photon beam, ultrasonic	8515	4.8	27.9	0.0	41.1	4.8	13.2
Aluminium powders and flakes	7603	4.3	10.7	0.0	23.9	4.3	13.1
Polymers of styrene, in primary forms	3903	6.5	12.1	0.0	23.0	6.5	10.9
Carboxamide-function compounds; amide-function compounds of carbonic acid	2924	4.2	70.2	0.0	80.3	4.2	10.2

Source and notes: Excludes agriculture and textile and apparel. Calculations based on data from "Canada HS4 tab." These rows fit the following criterion: the decrease in AV duty was at least 3.7 percentage points, increase in non-FTA share of imports was at least 10 percentage points. Sorted by last column in descending order.

206. The product areas shown in Table 7 are a variety of metals, chemicals, and industrial inputs. For instance, consider *stranded wire and cables* (HS7614), products that are used in the copper and aluminum wire and cable manufacturing process. Canada's average tariff decreased from 4.5% to zero, while the non-FTA share of imports increased from 1.2% to 36.9%. Before UTL, 99.93% of imports came from the US. After UTL, 63% came from the US, and the next largest leading import sources were Bahrain, Vietnam, China, and Turkey.¹⁸³

207. Similarly, consider *electric welding machines* (HS 8515), a group of products typically used in manufacturing and the production and repair of automobiles and appliances. Traditionally, these machines were used in industrial processes and recently have become a tool for use in small businesses as well. Before UTL, the largest import source was the US, and nearly half of Canada's imports were sourced from the US and Mexico. After UTL, Chinese Taipei was the largest import source, and, combined with China, was providing more than half of Canada's imports (with the US and Mexico providing 36%). These findings are consistent with the notion that Canada had been diversifying its trade to Asia and other non-FTA partners, and UTL helped to reduce costs on intermediate inputs for both large and small businesses.

¹⁸³ See World Trade Organization, *Tariff and Trade Analysis*; available at: <https://tao.wto.org>. Note that Canada did not have FTAs with these countries after UTL, but concluded negotiations for a Foreign Investment Protection and Protection Agreement with Bahrain in 2010.

Case study 2: Canada

208. While the information contained in Table 7 is insufficient evidence to conclude the unilateral tariff cut *caused* the trade diversion, it is certain that such trade diversion occurred in the period of observation.¹⁸⁴

209. To further illustrate Canada's apparent rationale for its UTL – namely to reduce (nuisance) tariffs on capital goods and intermediate inputs critical to Canadian manufacturing industries, and to facilitate non-FTA country imports of capital goods – we provide a short industry case studies from the automotive sector.

A global hub for automobiles*

Canada is a global hub in the global supply chain for automobiles and vehicles. Canadian producers commonly source intermediate inputs from other countries. For instance, in 2008, top import sources for **plastics and rubber** (HS39 and HS40) were the US (accounting for 6.32% imports), closely followed by China, Japan, Germany, and Korea (the next four largest countries, accounting for 15.2% combined).

Pre-UTL (2008), Canada's import tariffs ranged from zero to 6.5% on plastics, and up to 15.5% on rubber. Approximately 20% and 40% of plastics and rubber imports were sourced from non-FTA partners, respectively. 37% of plastic and 55% and rubber tariff lines were duty-free. In 2016, after Canada's UTL, non-FTA import shares increased to 23% and 43% for plastics and rubber products, respectively, while 84% and 78% of lines, respectively, were duty-free.

For hybrid and electric vehicles, rare earth and metals are key components. Over the years, Canada came to increasingly relying on non-FTA partners to source these materials. Between 2000 and 2008, Asia and Brazil's share of **rare earth metals and related product imports** (HS28) increased from 5% to 23%. Before UTL, 67% of the tariff lines in HS28 were duty-free, and after UTL, nearly 100% (99.7%, to be precise) were duty free.

Yttrium is a metal used in display panels and lithium batteries, while **cerium** is used in the conversion of petrol into gasoline, reducing automotive emissions, and in energy efficient lighting (HS2805 and HS2846, respectively). Major import sources for these metals include Australia, China, Japan, Vietnam, Brazil, and France. Pre-UTL, both metals faced tariffs of up to 5.5%. Non-FTA partners represented 41% and 72% of imports (before and after UTL), respectively. By 2016, both tariff lines were duty-free.

* Sources: **Appendix 1**, worksheets "Canada HS2 tab" and "Canada HS4 tab".

B. Background and context of Canada's UTL experience¹⁸⁵

Country profile: Canada

From 1999 to 2008, Canada recorded strong economic growth and on average expanded its GDP by 2.9% annually. Due to its close economic ties to the United States, in years of the Global Financial Crisis (2008/2009), Canada's economy contracted by 2.7% compared to the previous

¹⁸⁴ As Figure 22, below, will show, trade with non-FTA partners (particularly Asia) was increasing well before Canada decided to engage in UTL. In that sense, UTL may have accentuated or accelerated an already existing trend.

¹⁸⁵ This section draws heavily on Government of Canada (2009), (2010), (2011), and (2012).

Case study 2: Canada

year. Canada managed to recover quickly from the impact of the crisis thanks to sound pre-crisis fiscal policy, a solid financial system, a relatively robust external sector and the economic strength of its resource-rich Western Provinces. After 2010, economic growth picked up and between 2010 and 2013, Canada's economy expanded 1.4% per year on average.^{*}

An ardent free trader, Canada registered positive net exports of between 2% and 9% of GDP between 1981 and 2003. The country's terms of trade and trade balance are largely driven by global commodity prices.

Canada's economy is dominated by the services industry, which accounts for approximately 70% of total economic activity, while manufacturing accounts for approximately 11% of GDP.

Canada had an average unemployment rate of around 10% for most of 1990s, but averaged 7% in the period between 2000 and 2007. After the Global Financial Crisis, the unemployment rate has remained largely stable around 7.2%.^{**}

^{*} *Focus Economics* (various years), section on "Canadian GDP Growth Performance"; available at <https://www.focus-economics.com/country-indicator/canada/gdp>.

^{**} *Statistics Canada* (2017), Labour Force Survey.

210. While Canada's UTL was largely instigated by the Global Financial Crisis, the effort should be viewed in a broader economic context, including (i) the steady rise of Asia in the world economy; (ii) the emergence of global value chains in which Canadian businesses increasingly participated; (iii) Canadian businesses increasing reliance on intermediate inputs originating in Asia; and to a slightly lesser extent, (iv) Canada's uncomfortable trade dependence on the United States. We will explain in turn.

211. The 2008 Global Financial Crisis was the main trigger for the economic reforms in Canada, including its decision to engage in UTL. Canada's economy as a whole had been performing well during the period leading up to the crisis (*see* country profile above). Strong commodity prices in the 2000s helped fuel the Canadian economy. Prices for key Canadian exports such as crude oil, wheat, metals, and minerals climbed to record highs.¹⁸⁶ In addition, measures taken in earlier years to diversify its economy away from manufacturing and resources, and the strong macroeconomic fundamentals helped ease the effects the country weather the economic crisis.¹⁸⁷

¹⁸⁶ Over the 2002 to 2008 period, rising commodity prices contributed to a 25 percent improvement in Canada's terms of trade, which alone was responsible for two-third of the gain in real per capita disposable income. The Government of Canada was keenly aware of the associated risks. Natural resources accounted for one-third of all business investment and 45% of Canada's exports. In June of 2008, just months before the culmination of the Global Financial Crisis, Mark Carney, Governor of the Bank of Canada, delivered a speech regarding the "commodity boom" and the "commodity super cycle". By using these terms, it was clear the Bank did not expect the commodity prices to remain high indefinitely. *See* Carney (2008).

¹⁸⁷ Strong macroeconomic fundamentals included: (i) a strong fiscal position; (ii) well-anchored inflation expectations; and (iii) Canadian banks and financial institutions were conservative and held more quality capital than required by national and Basel II standards (*e.g.*, subprime mortgages accounted for only 5 percent of total mortgages

Case study 2: Canada

212. The 2008/2009 Global Financial Crisis and accompanying drop in global demand was followed by a sharp downturn in global trade (termed the “Great Trade Collapse”, *see* Baldwin and Taglioni, 2009) – a 17% decline in real terms between October 2008 and March 2009.¹⁸⁸ Commodity prices also dropped sharply in 2008 and early 2009.

213. While Canada had a solid fiscal standing, low debt, a competitive tax regime and a robust regulatory system going into 2008/2009, as the Global Financial Crisis evolved, Canada’s Federal Government realized that it “could not afford to rest of its laurels” and that the country must constantly strive to improve the conditions for doing business.¹⁸⁹ For the Government, this meant that “[g]iven the current global uncertainty, it is more important than ever that Canadian businesses, indeed all Canadians, are able to operate in a climate of predictability, transparency and accountability”.¹⁹⁰

214. The 2009 Budget and accompanying Economic Action Plan (“EAP”) had the overarching aim to promote competitiveness, reduce costs for businesses, and reduce taxes. Plans to permanently eliminate tariffs on a broad range of machinery and equipment fit in nicely with policy priorities, and the Government highlighted the annual duty savings for Canadian businesses.¹⁹¹

215. As a consequence, the Canadian Government decided to take action and launched what it described as “among the most ambitious” regulatory reform packages of its kind at the time.¹⁹² Beyond UTL, the Canadian Government’s structural pro-growth reform package included tax reductions (continued gradual elimination of federal and provincial capital taxes), the relaxing of restrictions on foreign ownership (on Canadian broadcasting satellites), the harmonization of retail sales and value-added tax, the introduction of a new tax-free savings account, structural reforms to reduce the administrative burden on businesses, and the reduction of import tariffs on imported capital goods.¹⁹³

216. The sense of urgency continued over the next several years. The Government was intent on maintaining its positions of having the “lowest debt among the leading G7 countries, a

in Canada); *see* IMF (2010). For a policy discussion of the actions and tools Canada used to weather the financial crisis, *see* a conference report by the Embassy of Canada (2011).

¹⁸⁸ European Commission (2012), Section 1.

¹⁸⁹ Government of Canada (2012).

¹⁹⁰ Government of Canada (2012), p. 1.

¹⁹¹ Government of Canada (2009), (2010).

¹⁹² Government of Canada (2012), p. 1.

¹⁹³ OECD (2010a), p. 38.

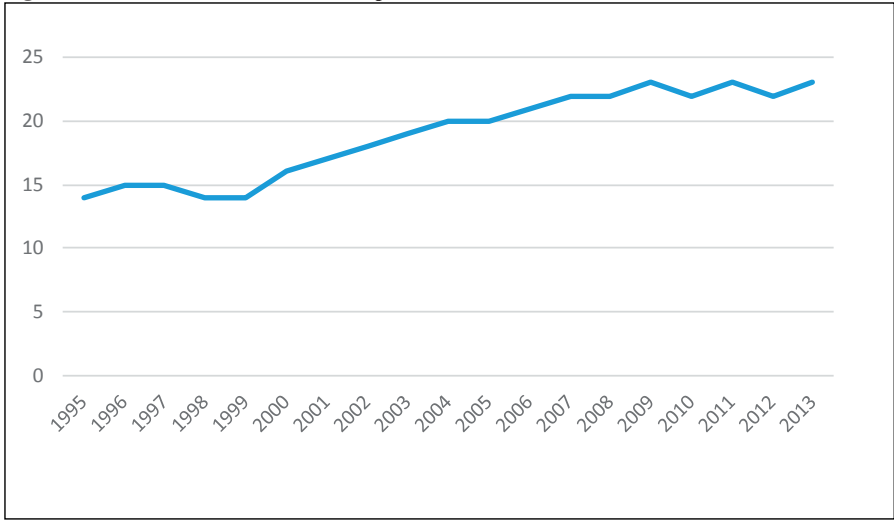
Case study 2: Canada

competitive tax regime and a robust regulatory system”.¹⁹⁴ In the 2012 Budget and corresponding EAP, the Government noted that it was necessary to “maintain its competitive edge, increase productivity and spur innovation”.¹⁹⁵

217. Apart from the serious situation that the Global Financial Crisis posed, Canada’s decision to engage in UTL should also be seen in terms of the seismic shifts that occurred in world trade over the first decade of the new millennium, and their effect on Canada.

218. *First*, like many OECD countries, Canada’s trade has diversified over the years because of the emergence of Asia in the global economy. As Figure 22 demonstrates, non-FTA partners, particularly Asian countries, represented a growing share of Canada’s imports: Asia represented 14% of Canada’s imports in 2000, 19% in 2005, and 21% in 2008. By 2015, that share reached 23%.¹⁹⁶

Figure 22. Asia’s share of Canada’s imports, 1995-2015 (%)



Source: Simoes and Hidalgo (2011).

¹⁹⁴ Government of Canada (2012), p. 1.

¹⁹⁵ Government of Canada (2012), p. 1.

¹⁹⁶ While that trend is clearly indicative, the *actual* level of Canadian trade with Asia and other non-US partners may be higher. When a product crosses the border, customs officials count the entire value of the goods rather than just the portion of value added since the last border crossing. Much Canada-US trade is highly integrated and part of global supply chains; hence, trade statistics are likely overstating Canada-US trade in a value-added sense. See Conference Board of Canada (2007), p. 6.

Case study 2: Canada

219. The *second* factor was the role of imported inputs; a closely related *third* factor was Canada's increasing participation in global value chains. The dynamics of these two points may be helpful for understanding Canada's decision to engage in UTL. A study by the Conference Board of Canada found that Canada followed the global trend of increased trade in intermediates, and that imported inputs played an increasingly important role in feeding Canadian supply chains.¹⁹⁷ Canada's import content of exports was consistently higher than the OECD average over the 1995-2006 period.¹⁹⁸ In the mid-2000s, that share was higher than the national average in manufactures, particularly, including office/accounting/computer machinery, motor vehicles, communication equipment, and rubber/plastic goods.¹⁹⁹

220. Canadian businesses increasingly relied on intermediate inputs originating in Asia. Yet, Canada did not have binding trade agreements with many of its Asian trading partners. Imports from Asia, many of which manufacturing inputs, were hence subject to Canada's MFN tariff. Eliminating tariffs on imported machinery and other intermediate inputs therefore can be seen as a means to increase Canadian businesses' participation in global supply chains, to lower the costs of Canadian manufactures, and hence to increase the overall level of productivity and competitiveness.²⁰⁰ The tariff elimination was also expected to benefit SMEs that rely on global supply chains and were looking to diversify their export market.²⁰¹

221. A 2013 OECD study explains trade policy implications of global value chains and uses Canada as a case study.²⁰² The authors show how cutting nuisance tariffs on imported intermediates – particularly in light of global supply chains – could lower the costs and improve the productivity and competitiveness of Canadian manufacturers in three ways: (i) in the form of direct cost savings for Canadian firms that purchase manufacturing inputs and machinery and equipment from foreign sources not yet benefitting from preferential exemptions; (ii) cost savings

¹⁹⁷ Conference Board of Canada (2007).

¹⁹⁸ OECD Data (2017).

¹⁹⁹ OECD, STAN Input-Output: Import context of exports, by sector, various years; available at https://stats.oecd.org/Index.aspx?DataSetCode=STAN_IO_TOT_DOM_IMP.

²⁰⁰ Miroudot *et al.* (2013).

²⁰¹ Manufacturing Automation (2015).

²⁰² Miroudot *et al.* (2013).

Case study 2: Canada

from the implied reduction in administrative compliance burdens related to customs procedures;²⁰³ and (iii) enhanced access to high-quality foreign inputs and equipment.²⁰⁴

222. Finally, the *fourth* factor was the sense of overexposure to the US economy. The United States has long been Canada's largest trading partner. In 2009, the US accounted for 52% of Canada's imports and 71% of exports.²⁰⁵ This mutual reliance is a function of the geographical proximity and the highly integrated cross-border supply chains in a number of important sectors, including manufacturing, automotive, energy, and aerospace. These cross-linkages notwithstanding, a sense of uneasy dependency on the US economy is palpable from speeches and reports by Canadian central bankers,²⁰⁶ think tanks,²⁰⁷ and journalists.²⁰⁸ (This sentiment was also echoed in our expert interviews.) The *Buy American* provisions in the 2009 US fiscal stimulus package may have accentuated the uneasiness.²⁰⁹ To the extent UTL could facilitate trade diversification and lessen reliance on the US, then UTL was also a welcome strategy towards that goal.²¹⁰

C. Analysis of domestic discourse prior to the implementation of UTL

223. In this section, we focus on the domestic discourse and communication tactics of the Government of Canada in its efforts to lay the groundwork for the UTL reform prior to its implementation. Next to publicly available information, we also rely on interviews we have conducted with people closely involved in the domestic reform.

²⁰³ By eliminating the tariffs, the study continues, Canadian importers would no longer be required to document compliance with preferential rules of origin requirements and duty drawback conditions. Small and medium enterprises are exposed disproportionately to compliance costs and administrative burdens and therefore would be expected to benefit in particular from such reforms. See Miroudot *et al.* (2013), p. 16.

²⁰⁴ Miroudot *et al.* (2013), pp. 15-24.

²⁰⁵ Simoes and Hildago (2011).

²⁰⁶ See, e.g., Carney (2012).

²⁰⁷ See, e.g., Goldfarb (2006).

²⁰⁸ "Pay Attention to Asia, Eh!" *Huffington Post*, May 26, 2011; available at http://www.huffingtonpost.ca/yuen-pau-woo/canada-asia-foreign-policy_b_867409.html; and MSN Money (2017), "It's high time Canada looked beyond the U.S. for trade opportunities," April 28, 2017; available at <https://www.msn.com/en-ca/money/topstories/it%E2%80%99s-high-time-canada-looked-beyond-the-us-for-trade-opportunities/ar-BBAsoR0>.

²⁰⁹ The *Buy American* procurement provision was included in the 2009 *American Recovery and Reinvestment Act*. Under the provision, all public projects funded by the stimulus plan must use only iron and steel produced in the United States. More generally, much of US stimulus spending was channeled through local and state-level authorities, which were exempt from the non-discriminatory procurement rules of the North American Free Trade Agreement ("NAFTA") and the WTO. See EUI (2010).

²¹⁰ See Hufbauer and Schott (2009) and Wilson Center (2010).

Case study 2: Canada

Motivations and objectives

224. The risk and uncertainty surrounding the global economy and the Government's response with pro-growth reforms and plans to lock in permanent tariff elimination are communicated clearly in Government budgets and corresponding Economic Actions Plans ("EAP") from 2009 to at least 2012. Language in the EAPs relayed a sense of urgency for Canada to focus on jobs and growth, and reduce costs for Canadian businesses including regulatory burdens and taxes. UTL, *i.e.*, reducing taxes on imported intermediate inputs, was a key part of those plans.

225. Canada's Minister of International Trade, Edward Fast, laid out the rationale pursued by the Government's tariff liberalization policy in 2009:

Our Government understands that businesses of all sizes do best when there is less red tape and barriers to trade are reduced or removed altogether. That's why, as part of the most ambitious pro-trade plan in Canadian history, we're helping business expand and succeed abroad by removing tariffs, locking in fair and predictable conditions, and establishing mechanisms to reduce unnecessary red tape. These measures will help ensure that world-class Canadian businesses continue to find success in global markets, which we know creates jobs and opportunities here at home.²¹¹

226. And in the 2010 Budget, the Government stated the need to:

Eliminate tariffs to lower [] cost of production and allow [domestic industries] to invest in needed machinery and equipment. Such investment is critical to Canada's long-term prosperity. Free trade in manufacturing inputs and machinery and equipment are an important source of competitive strength for Canadian businesses. By reducing the cost of importing key factors of production, tariff relief encourages innovation and allows businesses to enhance their stock of capital equipment. This is of particular importance to the needs of small and medium-sized manufacturers that link to global supply chains and need to diversify their export markets.²¹²

²¹¹ Treasury Board of Canada Secretariat (2014); emphasis added.

²¹² Government of Canada (2010a), p. 88; emphasis added.

Case study 2: Canada

227. A Parliamentary report further develops the economic case for tariff elimination and notes:

Lower tariffs on manufacturing inputs and machinery and equipment reduce manufacturers' production costs and allow them to invest in needed machinery and equipment. Such investment is critical to Canada's long-term prosperity. By reducing the cost of importing key factors of production, such as manufacturing equipment, tariff relief encourages innovation and allows businesses to enhance their stock of capital equipment, raising the potential growth rate of the Canadian economy.²¹³

228. Delivering on its commitment announced in the Federal Budget 2010 to reduce the administrative burden and to improve the conditions for doing business, Canada created the "Red Tape Reduction Commission" that was launched in 2011.²¹⁴ The Commission involved Parliamentarians and private sector representatives, and their mandate was to review federal regulations in areas where reform was most needed to reduce compliance burden, especially on small businesses.²¹⁵

Communication strategy by the Government of Canada

229. Key success factors for the Government's domestic discourse on UTL were:

(i) transparency, (ii) stakeholder outreach, and (iii) in-depth consultations with businesses.

230. *First*, on transparency, Canada published its intent to eliminate certain MFN tariffs right from the beginning, be it in the official *Canada Gazette*²¹⁶ or in the Federal Budget.²¹⁷ Also, the Red Tape Reduction Commission openly communicated its intention to eliminate all remaining tariffs on manufacturing inputs, machinery and equipment.²¹⁸

231. *Second*, regarding stakeholder outreach, the Government of Canada consistently communicated with key stakeholders before taking action.²¹⁹ The Red Tape Reduction

²¹³ House of Commons (2010).

²¹⁴ Government of Canada (2010a).

²¹⁵ Government of Canada (2011) and OECD (2010b), p. 60.

²¹⁶ See, e.g., *Canada Gazette* (2011), where Canada's Department of Finance, invites interested parties to submit their views "on the proposed elimination of Most-Favoured-Nation tariff rates on certain goods used by Canadian manufacturers". The tariff items and goods considered for elimination are listed in the notice.

²¹⁷ See Government of Canada (2010a).

²¹⁸ See IMF (2010).

²¹⁹ For example, already in 2009, the Government stated that it was "listening to Canadian manufacturers on how it can assist them in reducing costs and expanding production. International investors will also be paying attention to Canada's new approach to doing business"; the Government conducted a comprehensive consultation process with Canadian industries prior to Budget 2010 (see Government of Canada, 2010, Section "Making Canada a tariff free zone for industrial manufacturers").

Case study 2: Canada

Commission hosted 15 roundtable sessions in 13 cities in winter of 2011.²²⁰ These sessions attracted over 200 participants. These roundtable discussions facilitated comprehensive and in-depth consultations with businesses.²²¹ There was also an online consultation and a dedicated website, and hundreds of ideas were shared and recorded in the Commission's "What Was Heard" report.²²² These consultations facilitated wide support for reforms across the business community and the public, and formed the recommendations that the Commission brought forward. Government officials later ascribed part of the success of those reforms to these in-depth consultations.²²³

232. *Third*, consultations with Canadian businesses were also a key part of the UTL process. Consultations were led by the Canadian Ministry of Finance in a comprehensive, inclusive and transparent manner. They served multiple purposes: for one, to identify the supply chains that could benefit from UTL and thus were relevant tariff lines for liberalization. In addition, the in-depth consultations also helped to identify existing Canadian suppliers to ensure that domestic import-competing businesses and sectors were not undercut by the liberalization efforts. This resulted in a well-calibrated, targeted, set of liberalized tariff lines that maximized support and minimized domestic opposition to the UTL efforts.

233. Overall, the Government's communication strategy and process secured the private sector's buy-in into a minimally invasive, selective, liberalization package (a package that helped a maximum of stakeholders while hurting a minimum of stakeholders). Together with the Government's incremental approach to tariff liberalization in multiple waves of UTL, Canada's approach nurtured the confidence of Canadian businesses in the Government's tariff reforms. By the end of the roundtable sessions, Canadian businesses were actively supporting the Government's UTL efforts.²²⁴

Opposition to UTL and redistribution efforts (or lack thereof)

234. While our research found some evidence for anxiety surrounding Canada's larger economic reform package in the 2009 Budget with respect to relaxing the social safety net and the

²²⁰ See Government of Canada (2011).

²²¹ See Government of Canada (2011).

²²² See Government of Canada (2011).

²²³ This information was obtained in one of our expert interviews.

²²⁴ Business Council of Canada (2017).

Case study 2: Canada

extent to which the reforms would lead to job loss,²²⁵ we were unable to find concrete evidence of opposition to UTL *per se*.²²⁶

235. This is hardly surprising, given that many tariffs were low before UTL, and more often than not went from a very low rate to zero. UTL therewith achieved the elimination of nuisance tariffs as opposed to decreasing protection from import competition. UTL also eased the burden on SMEs, and cut costs for Canadian manufacturers that import intermediate inputs and participate in global supply chains. In other words, UTL did not cut tariffs that had been genuinely protecting domestic industries and hence the absence of opposition. Furthermore, key stakeholders were involved along the decision-making process, and the Government refrained from imposing UTL on import-competing industries (most notably on the agricultural sector, but also on some manufacturing industries), thereby minimizing the pain in connection with its UTL measures.²²⁷

236. Rather than stoking opposition, Canada's UTL actions actually fostered domestic support for broadening UTL beyond machinery and industrial inputs. The Retail Council of Canada actively demanded the expansion of UTL to food and retail products. The industry group was incensed by the retail price gap between Canada and the United States, which allegedly led to substantial cross-border shopping in Canadian cities close to the U.S. border. The Retail Council of Canada suggested that tariffs were the problem.²²⁸ The retail industry's pleas were heard by the Government: in January 2017, the Government of Canada announced the elimination of C\$48 million annually in customs duties on a number of goods used mainly in the production of food.

²²⁵ For instance, Canada had been reforming its unemployment insurance program and by 2009 the program no longer offered as many regular unemployment insurance benefits compared to previous decades. See Osbert (2009).

²²⁶ As we discuss below in more detail, the only negative voices we were able to find were Ciuriak and Xiao (2014), who seem to be demanding an *immediate and more expansive* UTL package, thus a more ambitious trajectory than the incremental steps the Government had been taking. That said, this study does not represent opposition to the concept of UTL (quite the contrary).

²²⁷ Notably, Canada's consensus-driven approach also absolved the Government from having to devise specific compensation schemes for losers of its UTL measures (*i.e.*, declining import-competing industries; see footnote 11, above) – simply because there were hardly any losers in the first place. At any rate, Canada had in place a robust social safety net that provided Canadians with healthcare and re-training opportunities. This safety net was able to mitigate any negative consequences suffered by individuals affected by UTL reform (namely workers in import-competing firms unable to compete against international imports).

²²⁸ Responding to suggestions by the Retail Council of Canada to reduce tariffs for consumer goods, including food ingredients, the Canadian Government commissioned an empirical study that monitored retail prices of babies' clothing and sporting goods post tariff elimination. See Nielsen Company (2015). The authors examined whether tariff cuts led to savings for consumers, and their findings suggest that tariffs were a significant factor in determining retail prices.

Case study 2: Canada

This set off the next wave of UTL, and in April 2017, Canada notified the WTO that it expanded its UTL efforts to include food manufacturing ingredients.²²⁹

D. Assessment of UTL experience

237. In this section, we provide an assessment of the effects that Canada's UTL has had on the country in the years following the policy reform. We proceed as follows: Subsection 1 examines the domestic economic, social, and political effects that the UTL brought about in the years following the reform. Subsection 2 assesses the international political and diplomatic implications of Canada's UTL reform, especially in the trade-policy realm.

1. Domestic effects

238. In this subsection, we make efforts to extract the economic, social, and political effects that Canada's UTL has brought about for the domestic economy. We start with a short literature review on work previously performed, and then delve into our own independent quantitative work that we performed on the economic effects of the UTL (subsection a). Specifically, we apply different modeling techniques to assess the effect that UTL has had on exports, productivity, and employment in Canada. This is followed by an assessment of the social and domestic political implications that resulted in the aftermath of Canada's UTL reform (subsection b).

a. Economic effects of UTL on the Canadian economy

239. We are not aware of any studies that provide an *ex post* empirical assessment of Canada's UTL. There are a few relevant studies of *expected* effects using *forecasting* techniques. We briefly discuss those below.

240. In its Budget 2010 and the corresponding Economic Action Plan, the Government of Canada reported that the tariff elimination was expected to result in the creation of up to 12'000 jobs over time.²³⁰ Details on method and empirical approach, however, are not provided in that document.

241. Next, a May 2014 study by the Canadian Council of Chief Executives (since then renamed the "Business Council of Canada") examined the potential (*ex ante*) economic effects of even further trade liberalization.²³¹ This study is a predictive analysis, and applies a computable

²²⁹ WTO (2017).

²³⁰ See Government of Canada (2010b).

²³¹ Ciuriak and Xiao (2014). The study was co-authored by Dan Ciuriak, formerly Deputy Chief Economist at Canada's Department of Foreign Affairs and International Trade, with responsibility for economic analysis support of trade negotiations and trade litigation.

Case study 2: Canada

general equilibrium (“CGE”) methodology. It aims at providing support for the third UTL wave (2015), and assumes a counterfactual world in which Canada imposes zero import tariffs on all tariff lines, *i.e.*, complete import duty elimination on all tariff lines.

242. The study finds that the benefits of further liberalization far outweigh its costs. Specifically, it finds that “eliminating all tariffs would cost the federal government roughly C\$4 billion a year in [lost] revenue,” but juxtaposes those costs with “output gains on the order of one per cent of Gross Domestic Product [in 2013 terms] – approximately [C]\$20 billion a year – in additional economic activity due to the cost savings to firms engaged in trade”.²³² The authors even go a step further and claim that the benefits of complete UTL “exceed those from *mutual* tariff elimination under any of the major preferential trade agreements that Canada has been pursuing”.²³³ The authors underscore the simplicity of unilateral tariff liberalization, as opposed to preferential agreements, by stating:

In comparing estimated gains from unilateral liberalization and preferential liberalization through trade agreements, it is worth noting that not only do the gains from the unilateral route come without the distortions associated with FTAs, they are certain to be realized since the question of utilization of preferences would not enter into the equation.²³⁴

243. The study’s authors also criticize Canada for its “selective approach to trade liberalization” up to that point in time. They note that this *à la carte* approach had been “holding Canada back and reducing our economy’s long-term growth potential”.²³⁵ The authors reemphasize that complete and unconditional UTL would surpass all the projected gains from regional and bilateral free trade agreements to which Canada is a party. They conclude:

Unilateral tariff elimination would propel us forward towards a more productive and technologically advanced industrial base, raising Canada’s attractiveness as an investment destination and the overall standard of living.²³⁶

²³² Ciuriak and Xiao (2014), p. 5. The gains reflected the resulting additional economic activity due to the cost savings to Canadian businesses engaged in trade. Specifically, the estimated benefits stem mainly from cost savings enjoyed by firms that rely on foreign imports of intermediate goods. The authors’ simulations, using a GTAP model, show that the effects of tariff elimination in highly protected industries cascade through the whole economy and trigger structural changes that benefit the entire economy in the medium run. As a result of these adjustments, the authors predict that in the counterfactual with zero import tariffs, Canada’s imports would increase by between 3.05% and 3.96%, and exports between 2.31% and 2.87%, respectively.

²³³ Ciuriak and Xiao (2014), p. 5.

²³⁴ Ciuriak and Xiao (2014), p. 5.

²³⁵ Ciuriak and Xiao (2014), p. 6.

²³⁶ Ciuriak and Xiao (2014), p. 6.

Case study 2: Canada

244. A recent study by Baldwin and Yan (2015) on behalf of the Canadian think tank *Institute for Research on Public Policy* (“IRPP”) empirically examined the historical connection between productivity and trade intensity (export and import activity). Focusing on the Canadian manufacturing sector, the study suggested a strong link between trade intensity and aggregate productivity in Canada. Specifically, the authors found that cheaper imports of intermediate inputs contributed *over 50%* of Canada’s recent effective productivity growth.²³⁷ While the authors did not focus on UTL *per se*, the study will be important in our discussions below.

245. Apart from the papers summarized above, there are no empirical studies that have attempted to measure the actual economic effects that the UTL aspect of Canada’s larger reform package has had on economic activity. This is where our original quantitative work comes into play. As for New Zealand, we apply three independent quantitative methods in our efforts to quantify the impact of UTL on key economic variables. We apply (i) descriptive statistics; (ii) a Before/After approach in the form of an “event study”, using an autoregressive distributed lag (“ARDL”) model, and (iii) a difference-in-difference (“DID”) approach, in which we compare the economic indicator in question in Canada with that of the United States, which acts as a control market. We apply these empirical methods – where appropriate – to three economic variables of interest: export growth, productivity, and employment.²³⁸

246. For the purposes of our empirical work, we treat the three waves of UTL (in 2009; 2010–2014; and 2015) as one single analysis period.²³⁹ Since the tariff cuts followed each other seamlessly and were largely focused on the same product groups (capital goods, machinery and equipment, intermediate inputs), it would be extremely difficult to disentangle the effects of the three UTL waves without having to resort to a CGE model, which is based on a highly disaggregated input-output tables. For this reason, it made more empirical sense to treat the period from 2009 to 2015 as one policy shock.

247. Although it is at times difficult to disentangle the effects generated by Canada’s UTL from those generated by the larger reform package that the country enacted in the wake of the Global Financial Crisis, we try to isolate the implications of the UTL experience to the best of our

²³⁷ Baldwin and Yan (2015), p. 6, Table 3.

²³⁸ We apply the descriptive statistics approach for all three variables, the Before/After approach for exports and employment, and a DID analysis for productivity. The reasons for these modeling choices are described in detail in **Technical Appendix A**. That appendix also provides a more technical introduction into each of these modeling approaches.

²³⁹ As explained above (para. 180), we do not include the fourth UTL wave of 2017 in our empirical analysis.

Case study 2: Canada

abilities using the appropriate empirical tools, and theoretical and empirical evidence to properly isolate the economic effects that are owed to Canada’s UTL action.

The effect of UTL on Canada’s exports

248. We start our analysis of the impact that Canada’s UTL had on the country’s export performance with an “ocular scrutiny” test, namely descriptive statistics of Canada’s export performance over time. Figure 23 depicts the time-series of real exports (blue line) and its trend (red line) over time.²⁴⁰ The black vertical line represents the start of the first UTL wave in Canada in 2009. Real exports in the second quarter (“Q2”) of 2000 are indexed to 100.

Figure 23. Real exports, before and after the UTL, Canada, 2000-2015



Source: Statistics Canada.

249. Figure 23 shows that real exports of Canada grew slowly in the first part of the decade starting 2000. The impact of the 2008 Financial Crisis is very evident, with exports falling 23% below their peak crisis level in 2009. However, exports bounced back once the crisis was over: in fact, after the implementation of UTL, the slope of exports growth after UTL was much steeper than at any point since 2000, pointing towards a significant turnaround. The extent to which this turnaround was owed to the UTL reform or simply reflected general catch-up dynamics post-

²⁴⁰ Export data are in constant prices and are seasonally adjusted. For constructing the trend, we use a Hodrick-Prescott (“HP”) filter, which removes the cyclical and seasonal components of the data.

Case study 2: Canada

Global Financial Crisis is thereby unclear. We thus need to resort to a more rigorous approach to identify the relationship between UTL and its impact on Canadian exports.

250. To further analyze the impact of Canada's UTL on exports, we use a Before/After approach, more specifically an event study in the form of an ARDL model. As mentioned previously in the context of the case study on New Zealand, the basic idea of any event study is to use time-series techniques to detect changes in the nature of the data and to assess whether, and to what extent, such changes can be attributed to the policy change (here, the UTL policy reform). The conclusions are premised on the comparison between the actual value of a variable (*with* UTL in place) and the counterfactual value predicted by the model (*in the absence* of UTL).²⁴¹

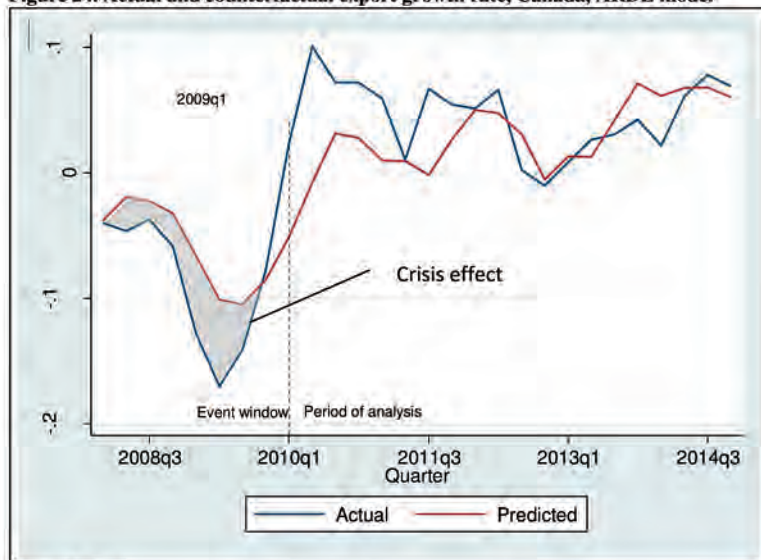
251. Figure 24 illustrates the results of the event study, as specified and further discussed in **Technical Appendix C (Canada)**. It depicts the actual and predicted quarterly year-on-year exports growth (in percent, vertical axis) between 2008 and 2015 (horizontal axis). The actual export growth is pictured as a blue line, while the predicted (counterfactual) export growth is pictured as a red line. The left vertical solid black line depicts the start of Canada's UTL in Q1 of 2009. The dotted black vertical marks the end of the event window and the beginning of the period of analysis.²⁴²

²⁴¹ For further details on the model, see **Technical Appendix A**.

²⁴² The period between the solid and the dashed grey vertical lines is the so-called "event window", which includes the first four quarters following the introduction of the UTL. After the event window, the actual "period of analysis" (forecasting period) commences. See footnote 93, above.

Case study 2: Canada

Figure 24. Actual and counterfactual export growth rate, Canada, ARDL model



Source: Authors.

252. The graphical analysis in Figure 24 shows that for much of the period of analysis (2010–2014), the red line, *i.e.*, the predicted export growth (which, recall, represents the world *without* UTL) is below the blue line that depicts the actual export growth dynamics. This suggests that UTL has had a sizeable effect on Canadian export volumes. The Cumulative Average Residual (“CAR”²⁴³), which is the empirical difference between actual and predicted export growth in the analysis period, confirms the first impression from the graphical analysis of Figure 24. We estimate an annual average policy effect of 2.0%, meaning that actual exports, on average, were 2.0% higher than predicted by the model every year over the five year analysis period 2010–2014. This result is statistically significant.²⁴⁴

253. While the estimated effect of UTL on Canadian export growth is impressive, critical readers may be concerned about the possible contaminating effect exerted by the Global Financial Crisis (and the concomitant “Great Trade Collapse” it caused), which happened just prior to Canada’s UTL. Specifically, the aftermath of the Great Trade Collapse may have triggered a certain recovery, or “catch-up” effect, in which abnormally high export growth rates occurred because trading partners recovered from the effects of the crisis and engaged into trade with

²⁴³ See Technical Appendix A for a description of CAR.

²⁴⁴ See Technical Appendix C (Canada) for details.

Case study 2: Canada

renewed verve.²⁴⁵ Since this potential catch-up would have occurred at the same time as the first UTL wave, critics may thus opine that we are overestimating the actual UTL effect, and that the export effects we are estimating are potentially co-determined by the general catch-up effect.

254. To address this (granted, reasonable) criticism, and to adjust our findings such that they do not falsely attribute findings to UTL that really reflect the belated impact of the crisis, we need to parse out the catch-up effect from that of the UTL reform. We do so in two scenarios: a conservative scenario with a full catch-up, and a realistic scenario with a partial catch-up.

255. *First*, we conservatively define the potential catch-up effect from the Great Trade Collapse to be equal in size to the unexplained dip in actual exports *during* the crisis. In other words, we pretend that the Great Trade Collapse had no lasting effects on actual export growth rates, and that export *gains* post-crisis fully made up for export *losses* while the crisis was raging. Mathematically, we achieve this by netting out the unexplained difference between actual and counterfactual export growth rates before and after the crisis. Graphically, in Figure 24, we consider the alleged catch-up effect by subtracting the plane between actual exports (blue line) and predicted exports (red line) *during* the Great Trade Collapse (Q2/2008-Q2/2009; as represented by the shaded plane in Figure 24 termed “Crisis effect”) from the plane spanned by actual and predicted exports *after* the crisis.

256. Applying this conservative assumption of full catch-up, we now subtract from our estimated policy effect of 2% the unexplained drop in exports that occurred during the crisis (grey shaded plane in Figure 24). Assuming full catch-up, the impact of UTL declines from 2% to 0.36% in the forecasting period 2010-2014. Since the overall annual increase in export in Canada during the same period was 4.5% on average, UTL was thus responsible for 8.0% of the yearly growth in export.²⁴⁶

257. The assumption of a *complete* catch-up post-crisis is conservative and potentially biases the results against the finding of a stronger impact of UTL. More importantly, it factually ignores that the Great Trade Collapse was followed by a *secular stagnation*, which meant that trade

²⁴⁵ Canada introduced its UTL right after the end of the Global Financial Crisis. Spilling over from the United States, the crisis developed rapidly, starting in Q2/2008. Cross-country business cycles were synchronized such that the Global Financial Crisis affected countries across the globe almost simultaneously (*see* Imbs, 2010). Concomitant with the Great Recession came the “Great Trade Collapse”, the sharpest fall in trade since World War II. By Q3/2009, the global economy started recovering and trade volumes bounced back. Thus, we have to be aware of the possibility that part of our findings may have been driven by the catch-up of world trade in the aftermath of the crisis (which resulted in higher growth rates). *See* Baldwin and Taglioni (2009), p. 52.

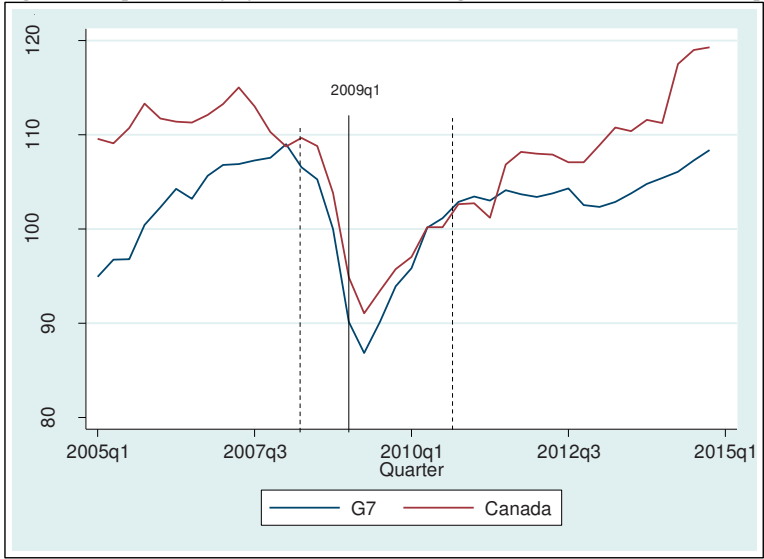
²⁴⁶ This is calculated by taking the ratio of 0.36% and 4.5%, which is 8%.

Case study 2: Canada

volumes did not reach their pre-crisis levels for several years.²⁴⁷ We therefore offer a *second*, arguably more realistic, scenario for controlling for the effects of the Global Financial Crisis and the Great Trade Collapse it triggered.

258. To that end, we calculate alternative catch-up dynamics for exports post-Great Trade Collapse. We do so by comparing the pre- and post-crisis experience by a basket of advanced economies, namely the G7 countries US, UK, Germany, Japan, France, Canada, and Italy. Figure 25 plots the export activity of the G7 countries and Canada (in levels, not in growth rates). The solid black line marks the start of the UTL (Q1/2009). The two solid black vertical lines mark the beginning of the Global Financial Crisis (Q2/2008), as well as what can reasonably be termed the end of the post-crisis catch-up period (Q2/2011).²⁴⁸ The chart is indexed at 100 in 2010.

Figure 25. Export activity by Canada and G7 during and after the Great Trade Collapse, 2005-2015



Source: Statistics Canada, CPB World Trade Monitor.

259. As Figure 25 shows, the G7 economies did not recover fully from the crisis. Export activity after the Great Trade Collapse levelled out at a significantly lower rate than before. Using the data underlying Figure 25 we find that across G7 countries exports only were able to

²⁴⁷ See, e.g., Freund (2016)

²⁴⁸ Ocular inspection of Figure 25 indicates that the catch-up period for G7 countries' exports came to an end in Q2/2011, after which followed an extended period of stagnation in export levels.

Case study 2: Canada

recover by 76% from the export losses caused by the Great Trade Collapse. In other words, post-crisis exports were down by 24%, as compared to the pre-crisis export levels, which confirms the hypothesis of secular stagnation in the aftermath of the Global Financial Crisis and the concomitant Great Trade Collapse. This means that there never was a *full* “catch-up” (as assumed in the conservative scenario), but instead only a *partial* catch-up of roughly three-quarters of trade losses during the crisis.

260. We thus apply the scenario of a partial catch-up factor to the analysis above: assuming that 76% of Canada’s export growth performance in the post-crisis period can be explained by the partial catch-up effect, the rest of the total effects remains unexplained, and can thus be attributed to Canada’s UTL reform.²⁴⁹ Under this scenario, UTL increased the export growth rates of Canada by 0.75%,²⁵⁰ which corresponds to 16.7% in overall annual export growth over the 2010-2014 period.^{251,252}

261. In sum, we find a measurable impact of UTL on Canada’s export performance in the 2010-2014 period of analysis. To prevent the original findings from being “contaminated” by a catch-up effect from the Great Trade Collapse, we fully net out any rebound effect that can reasonably be attributed to higher export growth rates post-crisis. As an – arguably more realistic – alternative, we compare export growth rebound across the G7 area and find evidence for a secular stagnation post-crisis that only resulted in a partial catch-up of roughly three quarters of the pre-crisis exports. Assuming that the actual catch-up effect for Canada is somewhere in between the conservative and the realistic catch-up effect, find that in the 2010-2014 period UTL increased export growth in Canada by between 0.36% and 0.75%, which corresponds to between 8.0% and 16.7% of overall export growth during the same period.

262. An important issue to discuss at this point is whether the effect we were able to estimate using our ARDL model can be fully ascribed to Canada’s UTL efforts, or to other reform elements that happened at or around the same time as the UTL. While econometrically it is

²⁴⁹ Mathematically, instead of subtracting 100% of the crisis effect from the estimated effect to account for a total catch-up, we only subtract 76%.

²⁵⁰ The calculation for this realistic UTL effect is straightforward: (realistic UTL effect) = (conservative UTL effect) + [(1 – realistic catch-up effect)*(original UTL effect – conservative UTL effect), or (0.36%) + [(1-76%)*(2.0% – 0.36%)] = 0.75%.

²⁵¹ Since the total annual increase in export in Canada during the same period was 4.5% on average, UTL was thus responsible for 16.7% of the growth in exports (calculated as the ratio of 0.75% and 4.5%).

²⁵² Since Canada did not liberalize across the board, but mainly with respect to capital and manufacturing goods, we performed a robustness check in which we re-ran our ARDL model on *manufacturing* goods only. Our results indicate that while the effect sizes for manufacturing exports are larger, the estimated coefficients are in the same ballpark, thus instilling confidence in our results. See **Technical Appendix C (Canada)** for details.

Case study 2: Canada

impossible to clinically isolate the effects from different types of reforms, we believe, for at least three reasons, that a large portion, if not the majority, of the registered effect on export growth rates can be attributed to Canada's UTL reform: *First*, dating back to Lerner (1936), economic theory has established clear that there is a direct effect between lower import prices and higher exports.²⁵³ *Second*, ocular scrutiny of Figure 23 indicates a direct link between UTL and export growth, in particular during a two-year period following the event window – a period when economic theory predicts the largest effect size.²⁵⁴ *Third*, as Figure 25 demonstrated, Canada's export growth vastly exceeded that of G7 countries during the 2011-2014 period. At a time when the post-crisis rebound effect among G7 began petering out (in early to mid-2011), Canada witnessed periods of intense export growth for at least another four quarters. This coincides precisely with our period of analysis during which we expect the first and second waves of UTL to unfold their biggest effects (one to two year after the introduction of UTL). These factors give us comfort in our conclusion that UTL was chiefly responsible for the unique export growth spurts that we observe in Canada between 2011 and 2014.

*The effect of UTL on productivity in Canada*²⁵⁵

263. The economic literature recognizes trade liberalization as one of the potential avenues for countries to boost their productivity levels (IMF 2016). Since one of the objectives of Canada's UTL was to boost productivity by having cheaper access to inputs of similar or better quality, we have reasons to believe that UTL was followed by significant productivity growth.

264. Below, we analyze the effect of UTL on productivity in two ways: *first* by using descriptive statistics, and *second* by applying a DID approach in which we compare Canada's performance against that of the United States, which acts as a non-UTL control market.^{256,257}

²⁵³ See **Technical Appendix A** for details.

²⁵⁴ See footnote 242, above.

²⁵⁵ For the purposes of this section, we define productivity as output per worker, or *labor* productivity, *i.e.*, the ratio of GDP to total employment. As mentioned in the NZ case study, above, we prefer labor productivity over *hourly* productivity, because quarterly data is available for the former but not the latter. However, as a robustness check, we look into hourly productivity as well. This is done in **Technical Appendix C (Canada)** and does not change our overall results.

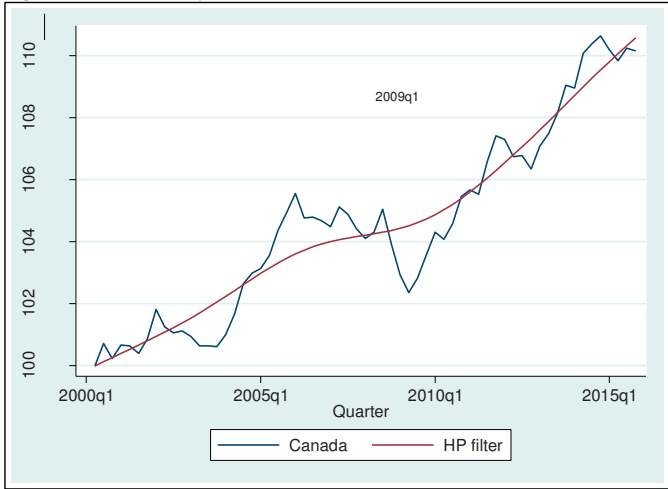
²⁵⁶ The reason why we choose a DID approach rather than an event study for analyzing productivity has been elaborated in the **Technical Appendix A**. See also footnote 107, above.

²⁵⁷ The motivation for using the United States as Canada's control market for our comparative analysis is the former's geographical, cultural, socio-economic, and historical similarity to Canada. Apart from these obvious similarities, the strong economic and trade linkages between the two countries make the United States the ideal control group for Canada. Most importantly, however, the United States has not experienced the "treatment" (a UTL shock), which is a prerequisite for a valid control market. More on this can be found in **Technical Appendix C (Canada)**.

Case study 2: Canada

265. To start, Figure 26 depicts how productivity levels in Canada (vertical axis) evolved over time (horizontal axis). The results are indexed at Q1 of 2000. The blue line depicts productivity as real output per employed worker (labor productivity), while the red line marks out the trend.²⁵⁸

Figure 26. Productivity levels in Canada, 2000-2015



Source: Statistics Canada.

266. As Figure 26 shows, productivity growth was slow in the first seven years of the new millennium. Productivity levels slowed during the Global Financial Crisis, and picked up stronger after the crisis, an increase that coincides with the period when UTL was implemented. Even though one may argue that productivity was simply reverting back to the trend of business cycle prior to the crisis, the post-crisis uptick in productivity (measured by the slope of the red line) is much more pronounced than what the pre-crisis trend (2000-2007) would have suggested. Hence, from a purely ocular perspective, it seems as if Canada's productivity experienced a boost at or around the introduction of the UTL.

267. To see whether this preliminary hypothesis holds true, we apply a DID approach to compare the evolution of productivity experienced in Canada with those in the United States, whose economy was also picking up after the crisis.²⁵⁹ We examine the trends in productivity in

²⁵⁸ As before, a HP filter is used to extract the trend component of the time series.

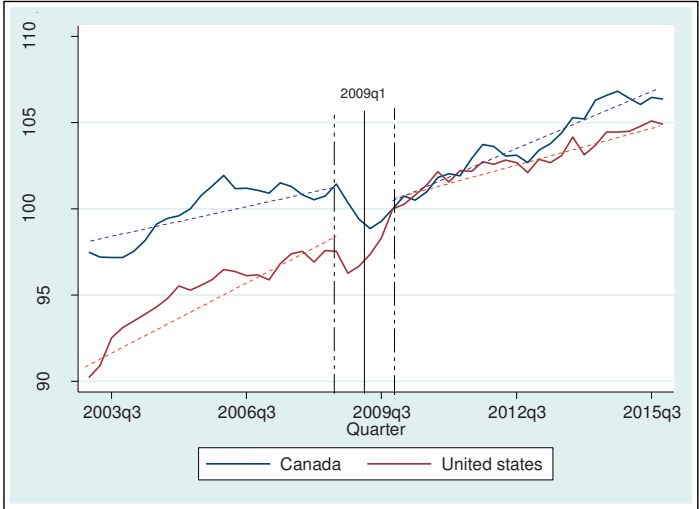
²⁵⁹ See footnote 257, above.

Case study 2: Canada

the US and Canada prior to Canada’s UTL, and compare them with the trend of productivity in the period after UTL was implemented in Canada.

268. Figure 27 plots the trend in labor productivity levels (vertical axis) in Canada (blue line) and the United States (red line) between Q1/2003 and Q4/2015 (horizontal axis). The productivity level is indexed to Q1/2010, the beginning of the period of analysis that follows the event window (Q1/2010 = 100). Due to the indexation, the figure does not represent absolute levels.²⁶⁰ The dotted blue lines represent trends in Canadian productivity growth, while the red dotted lines depict trends in US productivity growth. The solid black vertical line depicts the introduction of UTL in Canada in 2009.

Figure 27. Canada and United States productivity levels and trends



Source: Authors, based on relevant GDP and employment data.

269. As we did in our export analysis, we take the necessary steps to ensure that our productivity analysis is not contaminated by any impact that the Great Financial Crisis may have exerted on productivity levels. To avoid false attribution of effects to the UTL, we eliminate the period from Q3/2008 to Q4/2009 (the year of the Global Financial Crisis) from consideration. This is reasonable since this period was truly abnormal: as Figure 27 shows, productivity in the US and Canada fell precipitously, and then experienced a sharp up-tick immediately thereafter. The two dotted grey vertical lines in Figure 27 represent the period eliminated from the analysis

²⁶⁰ Using Q4/2009 as the index enables us to minimize the impact of any catch-up effect that may occur post-crisis.

Case study 2: Canada

to control for the impact of the crisis on productivity levels. Removing this period from our analysis is thus the most straightforward way of dealing with the crisis. Hence, we only compare the trends in productivity before and after the crisis.

270. Looking at the pre-crisis trends in productivity, Figure 27 reports that US productivity growth was more robust than Canada's before the implementation of UTL (as can be seen by the slope of the two dashed trend lines pre-2008).²⁶¹ However, after the implementation of UTL (and ignoring the crisis period), we witness a marked reversal of trends: Canada's productivity started growing faster, as compared to both the US and its own historical trend.

271. Moving from graphical to empirical inference, we perform a post-policy DID analysis between Canada and the US. In the six years between Q1/2010 and Q4/2015, Canadian productivity growth outperformed US growth: the former increased by around 6.4%, while the latter only grew by around 4.9% over the same six-year window.²⁶² Converting this difference in productivity growth post-Financial Crisis between Canada and the United States into an effect size, we find that UTL contributed to at least 23% of Canadian productivity gains in the 2010-2015 period.^{263,264} This converts into an average annual contribution of UTL to Canada's productivity growth of 0.2 percentage points. We note that this result is conservative, both computationally²⁶⁵ and as compared to other contributions in the literature.²⁶⁶

272. At this point we need to address the question how much of the detected effect on productivity is owed to Canada's UTL efforts, as opposed to other policy reforms that have been

²⁶¹ Canada's productivity gap compared to the United States is often attributed to lower R&D expenditures and patenting, relatively underdeveloped high-tech sector, less developed human capital, limited opportunities of economies of scale and a fragmented internal market. See Sharpe (2003), p. 5.

²⁶² This amounts to an annualized productivity growth of 0.8% for the US and 1.0% for Canada.

²⁶³ We get to this number by comparing the slope of the trend line of Canadian productivity with that of US productivity for the *post-crisis* period (on this issue, see footnote 265, below).

²⁶⁴ To examine the robustness of our findings, we performed two model alternatives (both of which are presented in more detail in **Technical Appendix C (Canada)**). *First*, we replaced the United States with the average across G7 countries as the comparator market. This produces an effect size that is identical to what we get with US as the control market. *Second*, we replaced *labor* productivity with *hourly* productivity. The results here are even more striking: our analysis using hourly productivity suggests that UTL boosted Canada's productivity by at least 41%.

²⁶⁵ We note that, strictly speaking, our approach does not constitute an empirical DID analysis. Our comparison does not permit us to take into account the difference in slopes between the two countries *before* the crisis, because treatment market (Canada) and control market (US) do not display similar growth rates prior to the policy implementation, which is a prerequisite for a proper DID analysis. Seeing that Canada's pre-crisis growth rates were substantially lower than the United States', integrating the pre-crisis period would certainly have boosted the post-crisis effects that can be attributed to UTL. But since we are forced to ignore the pre-crisis period altogether, we can only state verbally (but not calculate mathematically) that our post-crisis estimate of UTL effects is in fact *conservative*, and that *at least* 23% of Canada's productivity growth can be attributed to its UTL.

²⁶⁶ The recent study by Baldwin and Yan suggests a strong link between trade intensity and aggregate productivity in Canada. Specifically, the authors found that cheaper imports of intermediate inputs contributed *over half* of Canada's recent productivity growth. See Baldwin and Yan (2015), p. 6, Table 3.

Case study 2: Canada

enacted at or around the same time.²⁶⁷ While it is challenging, if not impossible, to isolate the UTL effects from those of other reforms, we have reason to believe that UTL had a significant impact on Canada's productivity growth, for the following reasons: *First*, economic theory and recent academic research have shown that trade liberalization (including UTL) can have strong effects on productivity levels and that such effects can be expected to commence in the medium term, as was the case for Canada, where productivity thrived after 2010.²⁶⁸ *Second*, the United States, that we use as Canada's control market has undergone massive domestic reforms in the wake of the Global Financial Crisis.²⁶⁹ These reforms were comparable to (if not even significantly more involved than) Canada's Economic Action Plans. This makes Canada's over-performance against the United States all the more surprising.²⁷⁰ Notably, the US stimulus packages did *not* include UTL. *Third*, as we discussed above, Canada's UTL has proven to have exerted a significant effect on the Canadian export sector (even if we control for a potential catch-up effect from the Great Trade Collapse). Since the export sector is an important driver of efficiency and innovation,²⁷¹ it is thus likely that UTL, through export growth, produced spillovers on productivity growth over the medium term.

273. In sum, we have before us compelling evidence that productivity in Canada after the Global Financial Crisis grew at higher rates than a simple reversion to the previous business cycle would suggest, and that Canada's productivity growth outperformed that of both the United States and the average among G7 countries. This suggests that UTL, by allowing cheaper access to a

²⁶⁷ We recall our discussion above (see Section B), in which we explained that apart from UTL, Canada had also implemented other economic reforms after the Financial Crisis, which may also have impacted the productivity positively. Specifically, in 2009, the Government announced an Economic Action Plan ("EAP") aimed at bolstering growth after the recession (see para. 214, above). Among others, the EAP included infrastructure investment and reduction of taxes – both measures that are in principle also able to increase productivity.

²⁶⁸ As discussed in more detail in **Technical Appendix A** and footnote 119, above, economic theory and recent academic research lay out mechanisms and degree to which trade liberalization impacts productivity levels.

²⁶⁹ This package is commonly known as the Table 3.

²⁷⁰ We recall our discussion above (see Section B), in which we explained that apart from UTL, Canada had also implemented other economic reforms after the Financial Crisis, which may also have impacted the productivity positively. Specifically, in 2009, the Government announced an Economic Action Plan ("EAP") aimed at bolstering growth after the recession (see para. 214, above). Among others, the EAP included infrastructure investment and reduction of taxes – both measures that are in principle also able to increase productivity.

²⁷¹ As discussed in more detail in **Technical Appendix A** and footnote 119, above, economic theory and recent academic research lay out mechanisms and degree to which trade liberalization impacts productivity levels.

²⁶⁹ This package is commonly known as the "American stimulus" package. It included the *Economic Stimulus Act of 2008* (Pub.L. 110–185) with total costs of US\$ 152 billion and the *American Recovery and Reinvestment Act of 2009* (Pub.L. 111–5) with estimated costs of US\$ 831 billion. See *New York Times*, "Background: The U.S. Economic Stimulus Plan"; available at http://www.nytimes.com/cfr/world/slot3_20090126.html?pagewanted=all.

²⁷⁰ Canada's over-performance is also remarkable in light of the fact that the US economy has historically been seen as the beacon of R&D and innovation, which, along with flexible labor markets, tend to be the key drivers for higher productivity.

²⁷¹ See, e.g., IMF (2004) and Melitz (2003).

Case study 2: Canada

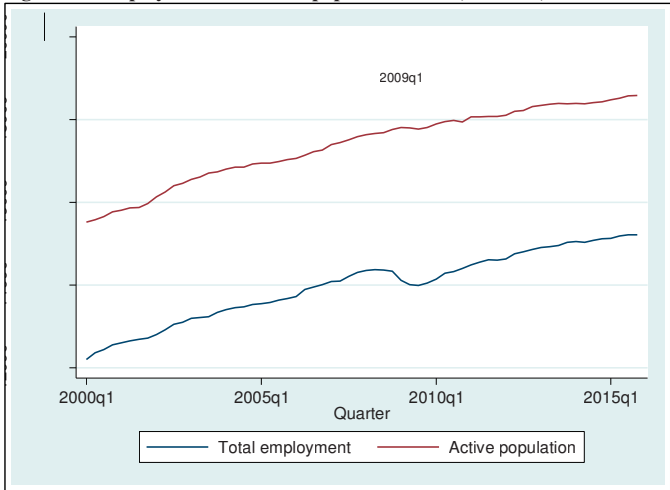
wider variety of inputs, has contributed significantly to productivity growth in Canada after the Global Financial Crisis.

The effect of UTL on employment in Canada

274. Finally, we assess the potential impact of Canada’s UTL reforms on employment levels. As before, we start with simple descriptive statistics, and then progress to more technically advanced methods.

275. Figure 28 plots the level of employment and active population (vertical axis; in ‘000 persons) in Canada from 2000 to 2016 (horizontal axis). The blue line represents the number of employed persons, while the red line represents the active population. The difference between the two lines roughly represents the number of unemployed persons at any given point in time. The beginning of the first wave of UTL in Canada is represented by the black vertical line.

Figure 28. Employment and active population levels, Canada, 2000-2015



Source: OECD database.

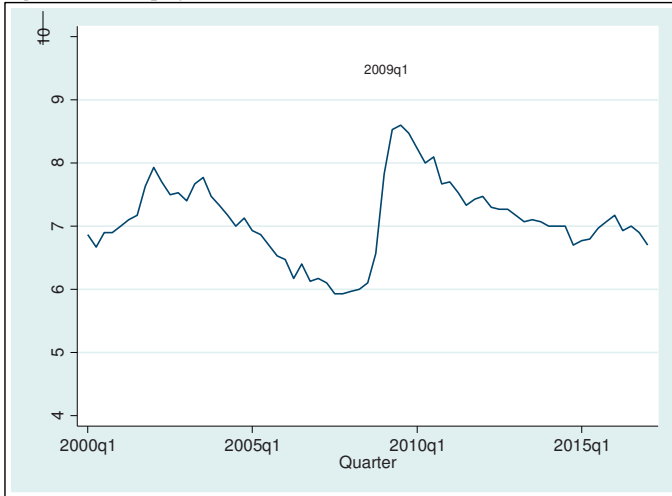
276. As Figure 28 shows, the red and the blue lines evolve in parallel for most of the time period, the only notable exception being the period during the Global Financial Crisis in 2008/2009.

277. The dip in employment during and shortly after the Global Financial Crisis is mirrored in the unemployment rate, which is reported in Figure 29. This figure shows the quarterly

Case study 2: Canada

unemployment rate in Canada (vertical axis) from 2000 to 2016 (horizontal axis). As before, the beginning of the first wave of UTL in Canada is represented by black vertical line.

Figure 29. Unemployment rate in Canada, 1990-2016



Source: OECD database.

278. As Figure 29 demonstrates, Canada’s unemployment rate increased sharply during the crisis, and started its downward trend as the economy gained momentum in the post-crisis period. The decline in employment levels and the consequent rise in unemployment rates around the time of the implementation of UTL seems to be directly correlated with the Global Financial Crisis and the recession it triggered.

279. To analyze the potential of UTL on employment using more sophisticated methods, we apply another ARDL model.²⁷² We use active population as the explanatory variable to determine employment,²⁷³ and create counterfactual outcomes for employment during the time of the UTL reform. We then compare the counterfactual with the actual growth in employment to identify the impact of the underlying policy changes (which include the post-crisis recovery, UTL, and other labor reforms such as the 2009 EAP).

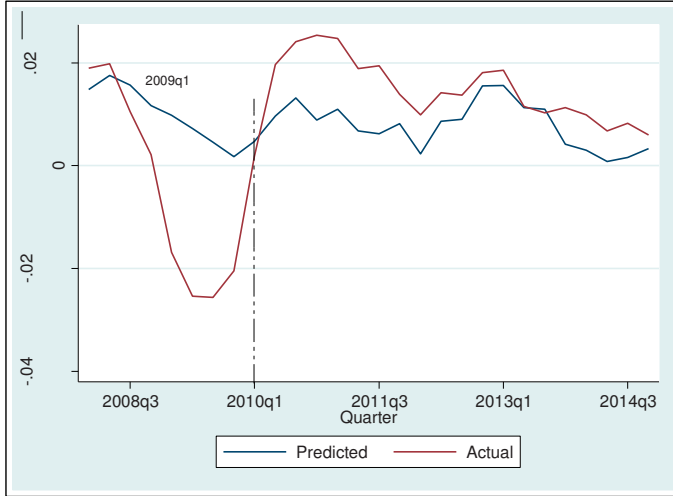
²⁷² The approach is similar to the one used to detect changes in NZ’s employment levels. See paras. 134-138, above.

²⁷³ As we explain in more detail in the **Technical Appendix C (Canada)**, we prefer “active population” over “labor force” to proxy the level of employment. However, as a robustness check we test whether using labor force data would change our results. As we report in **Technical Appendix C (Canada)**, it does not.

Case study 2: Canada

280. Figure 30 graphically depicts the results of our ARDL model on employment. The vertical axis represents growth of employment in percent; the horizontal axis marks the 2008-2014 period. The grey vertical line represents the beginning of UTL in Canada. The figure shows the difference between the counterfactual growth in employment *without* policy reforms (blue line), as predicted by the ARDL model, and its actual growth pattern *with* policy reforms (red line).

Figure 30. Predicted vs. actual growth of employment, Canada, ARDL model



Source: Authors, based on relevant GDP and employment data sourced from OECD.

281. Based on the graphical illustration in Figure 30 we observe two distinct periods. The first period covers the time before Q1/2010, where actual employment growth (with UTL) was significantly below the predicted levels (without UTL). This point in time is marked by the vertical dashed line. Post-2010 the situation reversed and actual employment was growing ever faster than the predicted growth of employment, where actual growth was consistently above the predicted level.²⁷⁴ The CAR (Cumulative Average Residual), which calculates the average difference between the actual and predicted employment growth over time, reports an annual employment effect of 0.66% over the 2010 to 2014 period of analysis, a result that is statistically significant.

²⁷⁴ To avoid contamination of our results by the period of the Global Financial Crisis, we exceptionally begin our employment forecast period at Q1/2010, and then control for a possible catch-up effect (*see* below).

Case study 2: Canada

282. However, since we are facing the same criticism about possible contamination by a recovery effect from the Global Financial Crisis,²⁷⁵ we modify our analysis to control for a catch-up effect post-Global Financial Crisis.²⁷⁶ We do so by applying a conservative and realistic catch-up scenario, *i.e.*, by completely taking out the crisis effect from post-crisis employment gains, and by comparing the pre- and post-crisis employment experienced by other advanced economies, namely the G7 countries (recall Figure 25), respectively. After subtracting the *total* catch-up effect in employment from our estimated UTL impact of 0.66% (conservative scenario), the impact comes down to 0.08%. Similarly, if we assume a *partial* catch-up of 76% like we do for exports (realistic scenario), the impact is around 0.22%. Since it is econometrically impossible to parse out the catch-up effect from UTL effect, we provide a range for the impact of UTL on employment. This range is 0.08%-0.22%.

283. We recall that the Government of Canada, in its Budget (2010) document, estimated (without providing any further analytical details) that its 2010-2015 tariff elimination was expected to result in the creation of up to 12'000 jobs over time.²⁷⁷ Applying the effect sizes from our ARDL model of between 0.08% and 0.22% to the Canadian labor force in 2010 (employment of roughly 14 million²⁷⁸), we estimate additional employment of between 11'200 and 30'800, which is very much within the same ballpark as the official Canadian forecast. This gives us quite some comfort in our own results.

284. The consistency of our own modeling results with official Canadian forecasts notwithstanding, the estimated effects are quite small. In addition, it is econometrically challenging to attribute precisely the impact that UTL has had on (un)employment, even when using event study approaches. Changes in the labor market may have also been driven by market reforms taken by the Government of Canada (such as the EAP of 2009) at or around the same time as the UTL to counteract the Global Financial Crisis.²⁷⁹ As discussed further in **Technical Appendix A**, economic theory and empirical research see small and indirect, if any, effects of trade policies on unemployment. Labor market economists typically hold the view that labor market outcomes are largely determined by domestic policies, rather than trade policy.²⁸⁰

²⁷⁵ See para. 253, above.

²⁷⁶ See paras. 255-260, above.

²⁷⁷ See para. 240, above.

²⁷⁸ See Figure 28, above, and sources mentioned.

²⁷⁹ See para. 214, above.

²⁸⁰ See, *e.g.*, UNCTAD (2013).

Case study 2: Canada

285. Yet, we believe that the strong export growth performance and robust productivity increases observed in the aftermath of UTL may have ended up contributing positively to employment growth in Canada. UTL probably amplified and accelerated the overall effects that the crisis and the subsequent labor market reforms by the Government of Canada may have had on employment: shortly after its enactment, UTL may have exacerbated the dip in employment levels during the crisis and its aftermath.²⁸¹ When inspecting the period at or around the second wave of UTL (2010-2014), we see a sizeable *decrease* in unemployment in Canada. Again, the recovery effect from the Global Financial Crisis and the 2009 EAP reform make it difficult to isolate the impact of UTL on employment. However, we know from our discussion of export performance and productivity, above, that the turnaround in the labor market coincides with the noticeable acceleration of export growth and productivity during the course of the UTL. So, economically, it is quite reasonable to expect that once the economic adjustment took place, increased competitiveness, higher exports, and higher overall productivity enabled by UTL helped create employment and to further reduce unemployment.²⁸²

Summary: the effect of UTL on exports, productivity, and employment in Canada

286. When it comes to the economic effects that Canada's UTL had on exports, productivity, and employment, our results suggest the following: *First*, we find a statistically significant impact of UTL on Canada's export performance in the 2010-2014 forecasting period. To prevent that the original findings are "contaminated" by a catch-up effect from the Great Trade Collapse, we net out the rebound effect that can reasonably be attributed to higher export growth rates post-crisis. Comparing post-crisis rebound rates across the G7 area, we find evidence for a secular stagnation that only allowed for a partial catch-up of roughly three quarters of the pre-crisis exports. Applying both the conservative and the realistic catch-up rate, we find that on average UTL caused export growth of between 0.36 and 0.75% over the 2010-2014 period, which corresponds to a contribution of between 8% and 16.7% of total annual export growth over the same period.

287. *Second*, the case of possible effects of UTL on productivity is interesting. Looking at the descriptive statistics, we do see substantial productivity gains in Canada after the Global Financial Crisis. These gains were over and above what the reversion to the previous business cycle would

²⁸¹ Economically, it is reasonable that during the first phase of UTL in Canada (2009/2010) unemployment increased as import-competing industries that previously enjoyed high levels of protection were forced to lay off workers and to streamline their production to adjust to increased foreign competition. See **Technical Appendix A** for details.

²⁸² See **Technical Appendix A** for details. See also generally OECD (2012).

Case study 2: Canada

suggest and larger than in the two control markets, the United States and the G7 countries.²⁸³ Based on our DID analysis we estimate that at least 23% of productivity gains for Canada between 2010 and 2015 can be explained by UTL. Research by other authors substantiates our findings. This suggests that UTL, by allowing cheaper access to a wider variety of inputs, has contributed significantly to productivity growth in Canada after the Global Financial Crisis.

288. *Third*, regarding the potential effect on employment in Canada, the Government of Canada – without providing any in-depth analysis – suggested that tariff elimination of important capital goods would boost the Canadian labor market by an additional 12'000 jobs.²⁸⁴ This number is remarkably consistent with our own estimates of between 11'200 and 30'800 jobs created by UTL. However, changes in employment levels over the period of analysis seem to have been driven less by UTL and more by labor market reforms enacted by the Government of Canada at the same time. Yet, we believe that impressive export performance and productivity growth after 2010 had *some* positive spillover effects on the Canadian labor market, leading to employment growing faster than it otherwise would have, thus contributing to a speedy recovery of Canada's unemployment rate.

b. Social and political implications of Canada's UTL experience

289. As the WTO (2011b) reports, Canada went into the Global Financial Crisis stronger than other advanced countries, weathered the global recession better than most other industrialized countries and has experienced a solid recovery ever since. Canada's strong performance over its economic recovery reflects continued financial, economic and fiscal strengths together with substantial support provided by solid monetary policy, efficient policy reform agendas and similar actions undertaken by Provincial and Territorial Governments.

290. Business support for UTL remains strong to this day. As mentioned, the Business Council of Canada was pressing for a further round of trade liberalization (that eventually occurred in January of 2017), and noted the positive effects the removal of tariffs has on jobs, productivity, and growth.²⁸⁵

291. Although Canada professes to continue pursuing openness and pro-growth policies to facilitate trade, productivity, and growth,²⁸⁶ the country is already looking at what is beyond

²⁸³ See robustness check in **Technical Appendix C**

²⁸⁴ Government of Canada (2010b).

²⁸⁵ See Business Council of Canada (2017).

²⁸⁶ See Bank of Canada (2016).

Case study 2: Canada

import liberalization. In a 2016 speech, Bank of Canada Governor Poloz noted that while Canada is still dependent on trade, global value chains are the new reality, in which Canadian-owned foreign affiliates are as or even more important than physical trade.²⁸⁷

2. International political implications and impact on FTAs

292. The Canadian Government saw its UTL efforts as “concrete actions to open global markets and keep them open”²⁸⁸ in the face of the Global Financial Crisis. Indeed, UTL was a policy action that the Government of Canada could undertake on its own and independently, regardless of the action or inaction by other countries.

293. Canada’s decision to unilaterally liberalize appears to have helped Canada’s standing in the international community. For instance, in its staff supplement to the IMF Article IV Consultation in 2010, the IMF “welcomed the [Canadian] authorities’ intention to eliminate all remaining tariffs on manufacturing inputs and machinery and equipment, which was noteworthy in light of heightened risks of protectionism internationally”.²⁸⁹

294. Similarly, in its Trade Policy Review of Canada, the WTO Secretariat applauded Canada’s efforts to lower barriers and eliminate tariffs, noting that Canada was the first tariff-free zone for industrial manufacturers in the G20.²⁹⁰ In 2010, the OECD praised Canada’s UTL in light of the feared resurgence of protectionist instincts during the Global Financial Crisis.²⁹¹

295. Through our study of the literature and interviews we conducted, a number of international policy implications of Canada’s own UTL experience have transpired.

²⁸⁷ Governor Poloz stated:

International trade, as measured by our standard global trade statistics, is not the only way for companies to exploit integration opportunities. Some companies find it more sensible to operate foreign affiliates in other countries while managing them from home. For some firms, this model effectively acts as a substitute for international trade. And this business model has been growing [...]. We know that sales by Canadian-owned foreign affiliates now exceed total exports from Canada, approaching 30 per cent of GDP. In other words, these foreign affiliates are almost like another Canadian economy out there, supporting jobs in Canada [...] This is a very real sign that companies are growing, becoming more productive and creating jobs at home, whatever the official trade data show. (Bank of Canada, 2016).

²⁸⁸ WTO (2010).

²⁸⁹ In the staff supplement, tariff elimination was highlighted as part of Canada’s structural reform agenda, in terms of growth-friendly measures and entrepreneurial advantages. The IMF staff emphasized tariff elimination in the context of reducing marginal effective tax rates on capital formation, encouraging private investment, and reducing unnecessary regulation and red tape. See IMF (2010), pp. 16-17, 21, and 25.

²⁹⁰ WTO (2011b).

²⁹¹ See OECD (2010), p. 38; OECD (2013); Datt *et al.* (2011) take stock of trade protectionism across countries over 2008 to 2011.

Case study 2: Canada

296. *First*, Canada reduced its applied tariffs without binding its tariff cuts, thereby retaining policy flexibility for the future. Whilst Canada notified the majority of the MFN applied tariffs it unilaterally eliminated to the WTO Committee on Market Access,²⁹² it refrained from binding its commitments at the WTO. In this sense, Canada's decision to liberalize unilaterally, rather than multilaterally, brought with it important degrees of freedom: while UTL is discretionary, free trade is constricting. Not binding its UTL has thus served Canada to maintain, rather than lose, its policy space in the multilateral (and bilateral/regional) trade realm.

297. *Second*, while Canada's UTL reform was primarily selfish – aimed at enhancing the competitiveness of the Canadian economy by helping manufacturers – Canada stressed that its policies also “represent a concrete example of Canada's global leadership on open trade” during times of economic instability.²⁹³ More importantly, Canada proclaimed that UTL “constitute{s} concrete actions [in times of economic crises, such as the 2009 Global Financial Crisis] to open global markets and keep them open”.²⁹⁴ The Canadian Government therewith credibly claimed to be setting a positive example for open markets and against protectionism. Defying protectionism and mercantilism certainly earned Canada a good deal of respect within the wider trade community at the time of Canada's UTL action.

298. *Third*, regarding the question whether UTL has in any way curbed Canada's potential to conclude further FTAs, according to our interview partners, Canada's action has generally not made it more difficult for Canada to enter into FTAs. Indeed, some interview partners mentioned that they would be “surprised if UTL made it harder for Canada to conclude FTAs” in the future.²⁹⁵ According to these experts, such an unwarranted fear is mainly due to the misconception that trade is synonymous with trade *in goods*. Yet, there is so much more to FTAs than trade in goods, especially in the modern agreements, which give much more credence to trade in services, trade-related intellectual property rights, e-commerce, and other so-called “trade-and” topics. Since the multilateral currency of trade in goods is fading, any loss in

²⁹² WTO (2010).

²⁹³ WTO (2017).

²⁹⁴ WTO (2017). Contrast this with the *Buy American* response by the United States (see footnote 209, above).

²⁹⁵ Since 1999, Canada has successfully concluded a number of FTAs, including the Trans-Pacific-Partnership Agreement with Australia, Brunei Darussalam, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, United States of America and Vietnam (signed in February 2016); the Canada – European Union: Comprehensive Economic and Trade Agreement (“CETA”) (which will enter into force later on in 2017); and the Canada-Ukraine Free Trade Agreement (“CUFTA”) (signed in July 2016). Moreover, Canada is currently negotiating FTAs with numerous countries and/or regional blocks, including with the Caribbean Community (“CARICOM”); the Dominican Republic; El Salvador, Guatemala and Nicaragua; India; Japan; Morocco; and Singapore. In addition, Canada has started exploratory discussions with a number of additional FTA partners, including China; MERCOSUR (Argentina, Brazil, Paraguay, Uruguay); the Philippines; Thailand; and Turkey. See Government of Canada (2017).

Case study 2: Canada

bargaining power from UTL (if any, *see* first point, above), according to these experts, is thus negligible, and pales in comparison to non-good bargaining.

299. *Finally*, according to our interviewees, the ability of a country to conclude FTAs has less to do with concessions in goods trade, than with whether a country has the *political will* to conclude an FTA. In this political process, UTL can actually unfold a positive dynamic, because it stokes domestic stakeholders' interest, "ma[king] commerce more bold, looking for more partners – multilaterally as well as bilaterally", as one of our interviewees put it. In that sense, UTL "reinforces itself", as another Canadian interviewee put it, because it enables more stakeholder engagement. This process continues until today, with Canada now pursuing a FTA with China, whereby Canada is actively consulting interested stakeholders in the process.²⁹⁶

E. Lessons learned for the Swiss context

300. The context in which Canada pursued its UTL strategy was dramatically different from that of New Zealand. While Canada was doing relatively well at the time it implemented its UTL, NZ was at the brink of an economic collapse. This allowed NZ to take bold and drastic measures, while Canada could afford to be more cautious in its approach. Through the above case studies and interviews we conducted, a number of common "themes" emerged that may provide useful lessons learned for Switzerland.

- **Be proactive:** Throughout the Global Financial Crisis, Canada had a solid fiscal standing, low debt, a competitive tax regime, and a robust regulatory system. While the Government of Canada could have decided to "ride out" the crisis, it decided that it "could not afford to rest of its laurels",²⁹⁷ and that it needed to stay ahead of the game. In the Government's words: "Given the current global uncertainty, it is more important than ever that Canadian businesses, indeed all Canadians, are able to operate in a climate of predictability, transparency and accountability".²⁹⁸ This proactive stance has served Canada well throughout the crisis and during its aftermath.
- **Choose the path of least resistance:** The Government of Canada lived up to the reputation that Canadians are just very nice people. In our UTL case at hand, Canada did not go for extensive across-the-board slashing of tariffs. Instead, the Government went for the selective *à la carte* route, whereby it identified the supply chains that could benefit from UTL and thus carefully calibrated its list of tariff lines to be liberalized. This enabled it to forge a strong domestic coalition in favor of UTL, without alienating any domestic group.

By conducting comprehensive consultation with stakeholders before embarking on its UTL journey, the Canadian Government built a strong domestic alliance: it made sure

²⁹⁶ See "Consulting Canadians on a possible Canada-China free trade agreement"; available at <http://www.international.gc.ca/trade-commerce/consultations/china-chine/index.aspx?lang=eng>.

²⁹⁷ Government of Canada (2012).

²⁹⁸ Government of Canada (2012).

Case study 2: Canada

that domestic import-competing industries were spared (to ensure the Government's efforts do not negatively impact its own industries), while users of intermediate inputs were benefitting to the max. As a result, the reaction from industry was overwhelmingly positive. By devising a strategy that would mostly produce winners from liberalization, the Government of Canada also availed itself from having to work out assistance plans to compensate the losers of liberalization – ailing import-competing industries and their workers.²⁹⁹

- **Don't haste:** Canada's tariff elimination happened organically, through a gradual process of tariff elimination spanning several years. This gradual process increased the confidence of domestic stakeholders in the Government and secured buy-in from private sector and the general public alike. As confidence increased, certain domestic industries were soon requesting the Government to engage in *more* UTL (as was the case with the retail sector that led to the latest wave of UTL in Canada, starting in January 2017).
- **Communicate, listen, and be flexible:** Canada's experience illustrated the benefit of communicating well and early and so created a climate of predictability, transparency and accountability. Canada was always up-front and transparent about its objectives, and communicated its intentions well ahead of time. The Government of Canada involved key stakeholders throughout its UTL process – and continues to engage them. Most importantly, the Government seems to have walked into the stakeholder meetings without a preconceived plan as to which sectors to liberalize. It was willing to listen to stakeholder concerns and demands.
- **Don't worry about minimizing "policy spaces":** Canadian officials that we spoke to did not feel that UTL limited the country's bargaining space for future FTAs. To the contrary, Canada felt that by engaging in UTL – rather than binding tariff liberalization – it actually retained policy spaces. Also, according to Canada, UTL helped foster pro-FTA dynamics within the country, by winning over domestic stakeholders and making them "hungry" for more trade liberalization.
- **Don't be shy to toot your own horn.** Canada enacted its UTL mainly for selfish reasons, namely to improve the competitiveness of its domestic industries by making intermediate inputs from non-FTA countries more affordable. However, Canada was not shy to sell itself as a global champion for open trade that actively fights protectionism and mercantilism by keeping global markets open. This earned Canada good grades from the international trade community, and from international organizations, such as the WTO and the IMF.

²⁹⁹ See para. 235, above.

Case study 3: Norway

IV. CASE STUDY 3: NORWAY AND ITS EXPERIENCE WITH UNILATERAL TARIFF LIBERALIZATION

301. This case study is considerably shorter than the other two case studies. The reason for this is a paucity of publicly available information, and Norwegian trade policymakers' unavailability to be interviewed for the purpose of this study.

302. The case for Norway's UTL differs from that of New Zealand and Canada in a number of ways. *First*, there does not seem to have been an exogenous event that triggered Norway's UTL; rather, the Government of Norway seemed to have seen UTL as a logical extension of the WTO Uruguay Round and its generally liberal trade stance. *Second*, UTL in Norway was not an ongoing process, but a singular event. With the exception of one or two small tariff adjustments, UTL was conducted in one go over the course of less than 12 months. *Finally*, best we can tell, the entire UTL reform largely "flew under the radar", that is, occurred with minimal public discussion, let alone any publicly aired controversy.

303. The absence of public debate may be owed to the narrow scope of Norway's UTL. Tariff elimination was focused on manufacturing goods and generally did not affect the more contentious areas of agriculture, fisheries, and certain textile products. Also, Norway's UTL was mainly geared towards eliminating nuisance tariffs – tariffs so low that it costs the Government more to collect them than the revenue they generate, and does not have any protective effect for to import-competing domestic industries. In that sense, Norway's UTL was less about reducing protection, and more about eliminating compliance costs and making international trade with other countries more efficient.

304. In what follows we present a synopsis of the UTL reform that Norway experienced between 2006 and 2007. We proceed as follows: As usual, Section A provides a timeline of Norway's UTL experience, as well as an overview of scale and scope of the UTL. Section B offers background and context to the UTL reform, putting Norway's UTL experience in the context of the world economy and its trading relationships. Section C contains a short overview of the domestic discourse and process prior to the implementation of the UTL. Section D provides an assessment of the economic effects of UTL. We report the results of our original quantitative analysis of the economic effects of the UTL experience on exports, productivity, and employment in Norway. Furthermore, we draw some international political and diplomatic implications in the trade-policy realm, as conveyed to us by our interviewee, who is a Norwegian

Case study 3: Norway

trade policymaker close to the issue of Norway’s UTL experience. Finally, Section E summarizes some lessons learned from the Norwegian case study for the Swiss context.

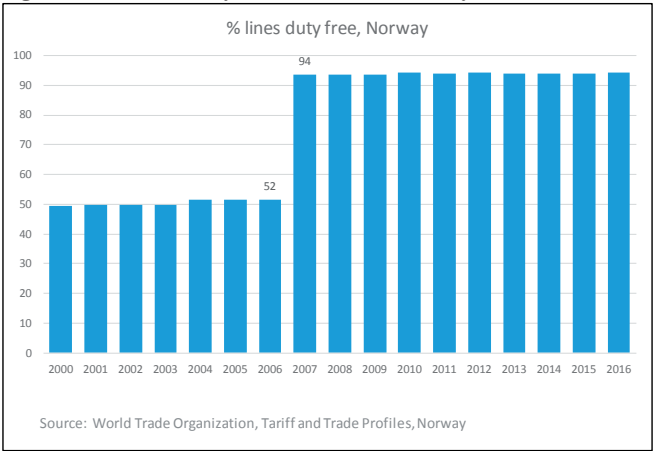
A. Timing, scale and scope of unilateral tariff liberalization

305. In this section, we provide a general overview of timing and scale and scope of Norway’s UTL experience.

306. Little has been written of Norway’s UTL experience, and there appears to be no official communication from Norway to the WTO about its UTL reform agenda. Publicly available tariff data at the 6-digit level of the Harmonized System (“HS”), however, indicate that Norway’s UTL occurred between 2006 and 2007 as a singular event. Norway’s UTL focused on manufacturing goods and notably excluded liberalization of agricultural goods (which we consequently exclude for the rest of this section).

307. Figure 31 lists the share of duty-free tariff lines for industrial goods on the HS6-level over time. We see that duty-free tariffs were largely constant at about 52% between 2000 and 2006 and then increased to 94% in 2007. No changes in duty-free access occurred thereafter. Given the nature of reporting, this indicates that sometime in 2006 a substantial tariff reform has occurred.

Figure 31. Share of duty-free tariff lines, Norway, 2000-2016 (%)



308. Figure 32 reports the share of nuisance tariffs (*i.e.*, tariff lines between 0.1% and 5% duty) for the period between 2000 and 2016. Again, we record a major development between 2006 and

Case study 3: Norway

2007, whereby after 2007 zero percent of tariff lines on the 6-digit level were nuisance tariffs – down from 24% before that period.

Figure 32. Share of lines 0.1-5% duty, Norway, 2000-2016 (%)



309. As confirmed by our interviewee who is close to Norway's trade policymaking, Norway's UTL was not an ongoing process but rather a single reform act. The data clearly indicate that UTL took place sometime in between 2006 and 2007. Thus, for the purposes of this chapter, we consider 2006 as the beginning of Norway's UTL.

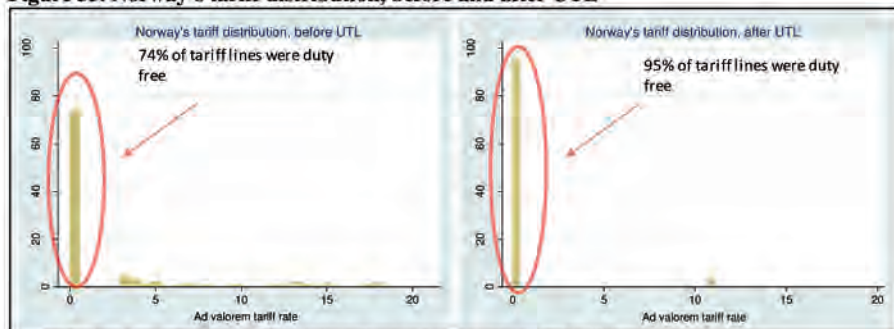
310. In terms of scale and scope of Norway's UTL, Figure 33 shows the tariff distribution before and after the UTL at the 2-digit level (excluding agricultural products). The figure shows the percent distribution of average *ad valorem* tariffs for non-agricultural products by HS2 chapter before the UTL (left panel) and after the UTL (right panel).³⁰⁰ The vertical axis denotes the proportion of tariff lines and the horizontal axis denotes the average *ad valorem* tariff rate.³⁰¹

³⁰⁰ For the purpose of the analysis presented in Figure 33, we define the year before UTL to be 2000, and the year after UTL to be 2012. While we have reason to believe that Norway's UTL occurred around 2006 and was conducted rather swiftly, for the purposes of this analysis, we define this generous time period in order to ensure that no UTL action – large or small – is missed.

³⁰¹ These tariff data are taken from **Appendix 1** which contains an overview of pre- and post- liberalization tariff data for New Zealand, Canada, and Norway on the HS-2, HS-4, and HS-6 digit level. See also **Appendix 2**, which contains a user manual.

Case study 3: Norway

Figure 33. Norway's tariff distribution, before and after UTL



Source: Authors based on **Appendix 1**, worksheet "Final trade and tariff tabs for SECO".

Note: The figure reports all HS chapters on the 2-digit level, *excluding* agriculture but *including* commodities; the x-axis shows *ad valorem* tariffs (in %); the y-axis depicts distribution density (bars add up to 100%).

311. Looking at the data we see that: (i) 74% of HS2 chapters were duty free before UTL;³⁰² (ii) most of the chapters that were not duty free became duty free after UTL; and (iii) 94% of chapters were duty free after UTL. Pre-UTL, the simple average tariff on non-agricultural products was low at 2.29%. Post-UTL, the simple average had come down to 0.54%; the remaining tariffs had a simple average tariff of 6.95% and peaks of 13.7%.³⁰³

312. As can be seen in more detail in **Appendix 1** (worksheet "Norway HS2 tab"), prior to UTL, those HS chapters with a simple average of 5% or greater included certain apparel products, fabrics, textiles, leather articles, and footwear. Most of these chapters became duty-free after UTL, as we discuss below. In general, tariffs declined or were eliminated across the board: the share of lines with a duty between 5% and 10% declined from 14% pre-UTL to 1% post-UTL, and the share of lines with a duty between 10% and 15% declined from 10% pre-UTL to 4% post-UTL.³⁰⁴ After its UTL, Norway only had 144 dutiable tariff lines on industrial goods altogether, measured on an HS6-digit level.³⁰⁵

³⁰² Recall that for an HS2-digit level to be duty free every single tariff line within that 2-digit chapter must be duty-free.

³⁰³ See **Appendix 1** (worksheet "Norway HS2 tab").

³⁰⁴ The remaining high-tariff articles are selected textile and apparel tariff lines (*apparel and clothing, knitted*, HS61; *other worn textile articles*, HS63; and *apparel and clothing (not-knitted)*, HS62). Since Norway never envisaged the liberalization of agricultural goods, agriculture is outside the scope of this case study. We note at this point that there were 47 agricultural tariff lines transformed from a specific or compound duty to a simple *ad valorem* rate. Hence, even in agriculture, there was a move towards greater transparency and liberalization.

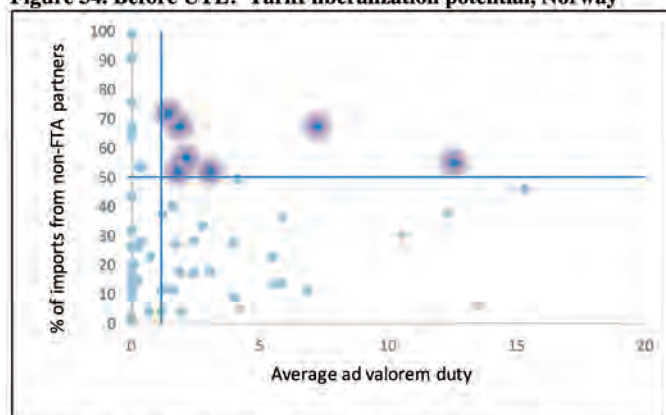
³⁰⁵ See **Appendix 1**, worksheet "Norway HS6 tab".

Case study 3: Norway

313. Next, we consider the degree of *effective* tariff liberalization performed by UTL. As before, we define effective UTL as a function of the initial tariff level and the share of imports from non-FTA or non-preferential partners (imports that are subject to the full MFN import duty).

314. Figure 34 plots the *potential* for *effective* tariff liberalization prior to Norway's UTL reforms for *all non-agricultural products* on the HS2 level. The horizontal axis shows *ad valorem* tariffs (in %), while the vertical axis depicts the fraction of imports originating in non-FTA countries (in %). The greater the initial tariff and the greater the share of imports from non-FTA countries that faced the tariff, the greater the potential for effective tariff liberalization. The HS2 chapters with the greatest tariff liberalization potential are in the upper right quadrant and denoted by large dark blue dots with the purple halos around them. All other HS chapters are denoted by light blue dots.

Figure 34. Before UTL: Tariff liberalization potential, Norway



Source: Authors based on **Appendix 1**, worksheet "Norway HS2 tab".

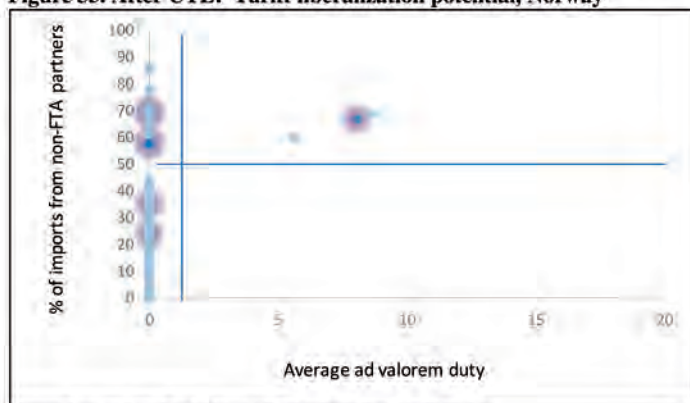
Notes: The chart reports all HS chapters on the 2-digit level, *excluding* agriculture but *including* commodities; the x-axis shows *ad valorem* tariffs (in %); the y-axis depicts the fraction of imports originating in non-FTA countries (in %). HS chapters in the upper right quadrant (dark blue dots) have the biggest potential for effective UTL.

315. By our criteria, the HS chapters that had the greatest potential for effective tariff liberalization are those with an average tariff above the median (1.2%) and an import share from

Case study 3: Norway

non-FTA partners above 50%.^{306,307} Seven chapters met these criteria, as shown in the upper right quadrant of Figure 34. Figure 35 depicts the same scatter plot but post-UTL.

Figure 35. After UTL: Tariff liberalization potential, Norway



Source: Authors based on **Appendix 1**, worksheet “Norway HS2 tab”.

Notes: See Figure 34, above.

316. As shown in Figure 35, the tariffs were eliminated across all of those seven chapters,³⁰⁸ except for on HS2 chapter, namely *apparel and clothing, knitted* (HS61). All tariffs in the lower right quadrant of Figure 34 were eliminated, save for two chapters: interestingly, these two chapters – *other worn textile articles* (HS63) and *apparel and clothing (not-knitted)* (HS62) – actually *moved into* the upper right quadrant, because the non-FTA import share increased to above 50%, and tariffs, while generally decreased, nevertheless remained above the median.³⁰⁹ Specifically, tariffs decreased from 12.3% pre-UTL to 5.6% post-UTL, and from 15.3% pre-UTL

³⁰⁶ Norway is a part of the European Free Trade Area (“EFTA”) with Iceland, Switzerland and Liechtenstein. Consequently, it negotiates FTAs with other countries predominantly through EFTA. Norway has access to the EU Single Market through its membership of the European Economic Area (“EEA”). Agriculture and fisheries, as well as EU’s customs union and common trade policy, are not covered by the EEA. Prior to UTL in 2006, Norway (through EFTA) had concluded FTAs with Chile, Israel, Jordan, Macedonia, Mexico, Morocco, Palestinian Authority, Singapore, Tunisia, and Turkey, and was actively pursuing FTAs with other countries within the EFTA framework during UTL’s implementation (see <http://www.efta.int/legal-texts/free-trade-relations>). At the time of its UTL, in 2006, over 70% of imports were from FTA partners.

³⁰⁷ We opted for the median tariff (here: 1.2%) as the dividing line between what constitutes a higher and a lower tariff rate. We prefer the median to the mean because the sample size was not large and included outliers; hence, we considered the median more representative of the pre-UTL tariff. Similarly, we chose 50% as the benchmark import share as there was no particular reason to choose a number above or below the halfway point. Ocular scrutiny of the figures reveals that different criteria would affect the number of chapters in the upper right quadrant, albeit only slightly.

³⁰⁸ Those seven chapters are listed in Table 8, below.

³⁰⁹ This points to trade diversion towards non-FTA import sources. More on the topic of trade diversion in para. 318, below.

Case study 3: Norway

to 8.6% post-UTL, respectively; the non-FTA import share increased from 38% to 60%. 46% to 69%, respectively.

317. To take a closer look at the tariff liberalization potential of the UTL reform, Table 5 lists the HS2 chapters with the highest UTL potential (as measured by simple *ad valorem* duties and percentage of imports from non-FTA partners pre-UTL), and how the potential was realized post-UTL. The HS lines in Table 5 are sorted by the size of pre-UTL *ad valorem* duty. Only one HS chapter (HS61) remained non-duty free after UTL.

Table 8. HS chapters with the greatest potential for tariff liberalization, Norway

HS description	HS code	Simple average of AV duties before	% of imports from non-FTA partners	Simple average of AV duties after	imports from non- FTA partners
		UTL		UTL	
Articles of apparel and clothing accessories, knitted or c	61	12.6	55.0	8.1	66.7
Articles of leather; saddlery and harness; travel goods, t	42	7.3	67.5	0.0	70.0
Toys, games and sports requisites; parts and accessories	95	3.1	52.4	0.0	57.4
Aluminium and articles thereof	76	2.2	56.3	0.0	35.3
Prepared feathers and down and articles made of feath	67	1.9	67.8	0.0	68.2
Musical instruments; parts and accessories of such articl	92	1.8	52.2	0.0	58.6
Ships, boats and floating structures	89	1.5	72.1	0.0	23.6

Source: Authors based on **Appendix 1**, worksheet “Norway HS2 tab”.

318. Next, we consider the issue of trade diversion that may have resulted from Norway’s UTL. Specifically, we assess whether and to what degree UTL has tilted the composition of imports away from FTA partners and towards non-FTA based importers. To that end, we isolate the 101 tariff lines at the HS4-level with an *ad valorem* duty cut of at least 1.7 percentage points (the average tariff pre-UTL) and an increase in non-FTA import share of at least 10 percentage points.

319. Unfortunately the trade diversion table is too large for the main text; the reader can find it in **Appendix 1** (tab “Norway Trade Diversion”). Of the 101 tariff lines that fit this criteria, over half are textiles and apparel, footwear, and linens; there is also a variety of consumer goods and intermediate inputs.

320. For instance, consider *yarn of fine animal hair* (HS5108). Norway’s average tariff decreased from 5.9% to zero, while the non-FTA share of imports increased from less than one

Case study 3: Norway

percent to 88.4%. Before UTL, 99.87% of imports came from the EU; after Norway's UTL reform, Peru and Bolivia accounted for 88% of imports.³¹⁰

321. Similarly, consider *hand tools* (HS8201), on which the pre-UTL tariff was 4%, and it dropped to zero after UTL. Before UTL, the largest import source was the EU (accounting for 80% of imports), and after UTL, the EU accounted for 59%, with China, Chinese Taipei, and other non-FTA partners accounting for 40.6%.

322. While it is unlikely UTL caused trade diversion *per se*, Norway for a time had been increasingly pivoting to Asia as a trading partner (more on that, below), and UTL likely helped to accommodate that shift.

B. Background and context of Norway's UTL experience

Country Economic profile: Norway

Norway is a highly developed country. It has the second-highest GDP per capita among European countries, and the sixth-highest GDP (PPP) per capita in the world. Today, Norway ranks as the second-wealthiest country in the world in monetary value, with the largest capital reserve per capita of any nation.*

The country is richly endowed with natural resources in addition to oil and gas, including hydropower, fish, forestry, and minerals. Norway is also a major shipping nation and has the world's sixth largest merchant fleet.

The Norwegian economy is an example of a mixed economy, a prosperous capitalist welfare state and social democracy country featuring a combination of free market activity and large state ownership in certain key sectors.

Norway has successfully avoided the "resource curse". This has been associated with its strong institutions and sound management of the revenues from the petrol sector.** A special fund ("Pension Fund Global" or the "Government Pension Fund of Norway") was set up in 1990 to collect and manage the surplus wealth produced by Norwegian petroleum income. The Government's objectives with the Fund were to stabilize the economy, to make the use of oil revenues transparent, to sterilize excess funds, and to provide a stable basis for future fiscal management.† The Fund is presently valued at around \$800 billion in 2016,‡ and thus 200%-250% of Norway's GDP. This makes the Fund the largest sovereign wealth fund in the world.

The petroleum and natural gas industry is the backbone of the Norwegian economy and brings in most of the export revenues. Hence, Norway's terms of trade are closely tied with energy prices. Mineral products exports (namely, crude petroleum and petroleum gas) accounted for 67% of Norway's exports. The petroleum sector provides about 9% of jobs, 15% of GDP, and 39% of exports (2015 figures).# The State also has large ownership positions in other key industrial sectors, too, such as hydroelectric energy production (Statkraft), aluminium production (Norsk Hydro), the largest Norwegian bank (DNB), and telecommunication provider (Telenor). World

³¹⁰ Source: World Trade Organization, *Tariff Analysis Online*; available online at <https://tao.wto.org/>.

Case study 3: Norway

Bank data indicate that agriculture as a share of GDP (value-added) was roughly 2%, while services accounted for 63% of Norway's GDP in 2015.[†]

From 2000 to 2007, Norway recorded strong economic growth and on average expanded its GDP by 2.5% annually. The economy slowed during the Global Financial Crisis and returned to moderate growth between 2010 to 2015, averaging 1.5%.[°]

Norway conducts its trade policy both independently and through the European Free Trade Association ("EFTA") that includes Switzerland, Iceland and Liechtenstein. Norway trades heavily with the EU, with 80% of its exports having gone to EU 28 countries in 2015. Manufacturing contributes to 10.2% of Norway's exports, while agricultural goods (mainly aquaculture) constitute around 21% of its exports. Its import sources are more diverse, with the United States and China accounting 6.3% and 10.4% of total imports, and EU 28 constituting 61% of imports in 2015).[‡] Norway's simple average applied tariff in 2015 was 6.6%. However, this figure is somewhat misleading, since the average duty on non-agricultural products was just 0.5%, while 43.6% being the average tariff on agriculture products (the average tariff on animal and dairy products being a full 330%).^{*}

Norway's labor market has a high participation rate for both men and women. Norway holds the second position in *The Economist's* glass ceiling index,⁺ an index for gender equality at work. Norway also has a robust unemployment benefits and social security system. The unemployment rate has traditionally been fairly low and well managed, averaging around 3.7% in the 21st century. Surprisingly, unemployment stayed low even during the Global Financial Crisis (3.2% in 2009).[§]

[†] CIA Factbook: Norway; available at <https://www.cia.gov/library/publications/the-world-factbook/geos/no.html>.

^{**} See Holden (2013); and Gupta *et al.* (2014), p. 18.

[†] As a result of changing demographics including an aging population, expenses to pensions were expected to increase from 10% of mainland GDP in 2004 to 20% in 2050, and petroleum sector revenues were expected to fall from 17% to 1% during the same period. See WTO (1996a), p. xi, and WTO (1996b), para. 17.

[‡] *Economist Intelligence Unit*, Country Profile: Norway; available at: <http://country.eiu.com/norway>.

^{*} *Economist Intelligence Unit*, Country Profile: Norway; available at: <http://country.eiu.com/norway>.

[°] *World Development Indicators*, "Services as a % of GDP", World Bank; available at <http://data.worldbank.org/indicator/NV.SRV.TETC.ZS>.

[°] OECD, Country Statistical Profile: Norway; available at http://www.oecd-ilibrary.org/economics/country-statistical-profile-norway_20752288-table-nor.

[°] WTO, *Norway and the WTO*; available at https://www.wto.org/english/thewto_e/countries_e/norway_e.htm.

[°] WTO, *Norway and the WTO*; available at https://www.wto.org/english/thewto_e/countries_e/norway_e.htm.

⁺ See *The Economist* (2016), "The best-and worst-places to be a working woman"; available at

<http://www.economist.com/blogs/graphicdetail/2016/03/daily-chart-0>.

[§] OECD, Country Statistical Profile: Norway; available at http://www.oecd-ilibrary.org/economics/country-statistical-profile-norway_20752288-table-nor.

323. Apart from the general background provided in the above text box, there are two contextual factors that seem worthwhile discussing here: Norway's dependence on foreign value-added in high-tech exports, and the increasing role of Asia as a source for important intermediate inputs. These two factors are important to appreciate Norway's (possible) motives for UTL, which we will discuss in the next section.

324. *First*, although Norway, like any developed economy, participates in global supply chains, it does so mainly as a *forward* participant. That is, other countries use Norwegian intermediate

Case study 3: Norway

goods as input into their respective exports. For instance, Norway's mining sector shows one of the highest forward participation rates in global value chains.³¹¹ This is not surprising given Norway's large value of exports in natural resources, which are generally low-tech, and very much "upstream" in global value chains.

325. While Norway does use import components in manufacturing and finished goods which it exports, the country's import content of exports is significantly below the OECD average. At the time of Norway's UTL, the import content of Norway's exports was 15.9% in 2006, as compared to the OECD average of 22.4%.³¹² OECD data show that for Norway, foreign value added is more important in the final demand for manufactured goods than for the OECD average. Norway's foreign value added share is upwards of 90% in textiles and apparel and electrical equipment.³¹³

326. Overall, these statistics, which Norway was presumably very aware of, show that Norway should take efforts to "move up" global value chains (*i.e.*, move downstream towards higher value-added), and to produce (and export) higher-tech products. Eliminating nuisance tariffs on manufacturing would be one way to lower manufacturing costs and increase cost competitiveness for Norway's exports.³¹⁴

327. *Second*, over the last two decades prior to Norway's UTL, imports from Asia made up an increasing share of Norway's imports. Figure 36 provides a timeline of Asia's share of imports into Norway between 1996 and 2014.

³¹¹ OECD Data, Import Content of Exports, and "Global Value Chains, Norway," OECD; available at: <http://www.oecd.org/sti/ind/GVCs%20-%20NORWAY.pdf>.

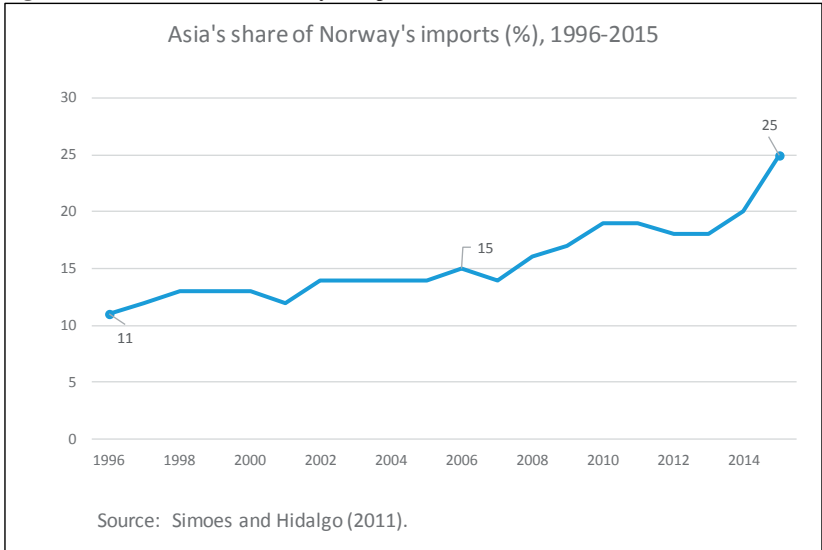
³¹² OECD Data, Import Content of Exports, and "Global Value Chains, Norway," OECD; available at: <http://www.oecd.org/sti/ind/GVCs%20-%20NORWAY.pdf>.

³¹³ OECD Data, Import Content of Exports, and "Global Value Chains, Norway," OECD; available at: <http://www.oecd.org/sti/ind/GVCs%20-%20NORWAY.pdf>.

³¹⁴ Other, possibly more effective, solutions for moving up the value chain would include reducing domestic manufacturing costs, domestic producer prices, and consumer prices.

Case study 3: Norway

Figure 36. Asia’s share of Norway’s imports, 1996-2015 (%)



328. Prior to its UTL, Asia’s share of Norway’s imports had increased slightly over the years, from 11% in 1996 to 15% in 2006. After UTL, that share continued to increase and reached 25% by 2015. Top import sectors included machines, electronics, broadcasting equipment, and transportation.³¹⁵ The increase of Asian imports prior to UTL is consistent with Norway’s participation in global supply chains, and with Asia’s increasing prominence in these sectors during that period.

329. The shift to Asia is also present in political dialogue and policy statements by Norwegian officials that underscore shared interests between Norway and Asia on sustainable development and the maritime sector.³¹⁶

C. Analysis of domestic discourse prior to the implementation of UTL

330. In this section, we focus on the domestic discourse relating to the UTL reform prior to its implementation. We note at the outset that there is little to no documentation for the policy goals

³¹⁵ Simoes and Hidalgo (2011).

³¹⁶ See article by Norway’s Foreign Minister Børge Brende (2016) describing how Norway has actively sought stronger relations with Asia. Hasli (2009) provides a comprehensive examination of the political and economic factors driving Norway’s outward FDI flows. The author explains the surge of investment into Asia and the maritime sector in the region. OECD data confirm the magnitude and direction of these FDI flows, see OECD (2012) and (2014).

Case study 3: Norway

of Norway's UTL; tariffs declined to zero across the board with little or no formal announcement from the Government.³¹⁷ Equally, there is nearly no public record of the discourse between private sector stakeholders and the Government. We are thus limited in our analysis.

331. Available documentation from IMF Article IV reports, WTO Trade Policy Reviews, and our one interview with a Norwegian trade policymaker suggests that the Norwegian Government pursued three key goals with its UTL: *first*, a general desire to eliminate nuisance tariffs; *second*, enable cheaper imports from non-FTA trade partners (mainly Asia); and *third*, to diversify the Norwegian export base by increasing the domestic import-content of exports. We explain in turn.

332. *First*, Norway seemed to be driven by the general desire to eliminate all nuisance tariffs. After the Uruguay Round and in the wake of the newly created WTO, there appears to have been a general drive by Norway's Government to push its agenda towards greater openness to trade. Eliminating nuisance tariffs had been on the agenda for Norway in the years leading up to the 2006-2007 UTL action (*see* Melchior, 2007). In the non-agricultural market access ("NAMA") negotiations in 2005, Norway, together with Canada, submitted a proposal calling for the elimination of nuisance tariffs (applied rates under five percent). The Communication states:

Canada and Norway propose the elimination of low tariffs because experience has shown us that low rates are ineffective as a form of tariff protection and at the same time are costly and time-consuming for the business community. Their elimination would simplify tariff structures, reduce the administrative burden on governments and industry, and lower input costs, as these low rates often apply to manufacturing inputs.³¹⁸

333. *Second*, as discussed in the last section,³¹⁹ the emergence of Asia in Norway's trade flows also seems to have fostered Norway's decision to liberalize unilaterally. While EFTA and EEA partners still dominated Norway's trade in the early 2000s, Asia's share of Norway's imports increased steadily over the years (*see* Figure 36). Norway did not have FTAs in place with many of the Asian economies and negotiations between EFTA and Asian economies were at early stages. Therefore, UTL seems to have been an obvious choice to expedite Norway's desire to get access to cheaper inputs from Asian economies.

334. *Third*, given Norway's dependency on natural resources, it seems that the Government was keen to diversify its export base away from resources, raw materials, and energy-intensive

³¹⁷ According to Melchior (2007), the Norwegian administration prides itself of dealing with many policy reform issues behind closed doors, and not to "wash its dirty laundry in the public".

³¹⁸ WTO (2005).

³¹⁹ *See* paras. 323-328, above.

Case study 3: Norway

low-tech products (such as aluminum). As discussed above,³²⁰ Norway's import content of exports was consistently low, which underscores the need for access to cheaper imports of intermediate goods. A decrease in import prices through UTL is thus a step towards making Norway's export more competitive and spurring an increase in demand for Norway's industrial exports. The unilateral elimination of manufacturing tariffs was thus consistent with Norway's aim to move domestic industrial production downstream and up the value chain, to help domestic industries become more competitive, and to find export markets beyond Europe.³²¹

335. Motivation for UTL aside, it appears there was broad Government and industry support for eliminating manufacturing tariffs. One commentator notes that the Norwegian Government expressed its intention to eliminate all manufacturing tariffs, while continuing import protection for agriculture.³²² If ever there was any discussion or opposition within the Administration, these were not carried out in public.³²³ According to the author, manufacturing and service business federations in the Nordic countries also promoted the complete elimination of manufacturing tariffs in the WTO.³²⁴

336. We find little to no evidence of opposition to the elimination of manufacturing tariffs. This is hardly surprising, given that tariffs went from a very low rate to zero. UTL went after the elimination of nuisance tariffs, as opposed to substantively cutting tariffs that had genuinely protected any domestic industries from import competition (which commonly is the largest reason for domestic opposition). This naturally minimized any "pain" felt in connection with its UTL measures.³²⁵ Norway's UTL was also primarily focused on manufacturing goods and left import tariffs on sensitive agricultural products untouched. Lastly, UTL eased the administrative burden for Norwegian manufacturers that import intermediate inputs and participate in global supply chains. In sum, Norway's UTL did no harm.

³²⁰ See paras. 324-326, above.

³²¹ This information is based on an expert interview we conducted, and Regjeringen (2017).

³²² Melchior (2007), pp. 107-108.

³²³ "There are surely internal fights and contradictions when policy is made, but most of this is not known to the general public". See Melchior (2007), p. 106.

³²⁴ Melchior (2007), p. 111.

³²⁵ Going after nuisance tariffs, rather than making large-scale tariff cuts also absolved the Government from having to devise specific compensation schemes for the most likely losers of its UTL measures – declining import-competing industries; see footnote 11, above. At any rate, Norway had in place an excellent social safety net that provided all job-seeking Norwegians with unemployment benefits, healthcare, and further education and worker re-training opportunities. This safety net was able to mitigate the negative consequences suffered by individuals affected by UTL reform (if any), namely workers in import-competing firms unable to compete against international imports.

Case study 3: Norway

337. Two groups from which opposition may have been expected – the textiles and apparel industry, and the pro-development civil society groups – remained silent. In the case of the textile industry, this may be due to the carve-outs from tariff elimination that remained in place,³²⁶ or to the fact that import interests today outweigh import-competing interests.³²⁷ In the case of pro-development groups, one would have expected advocacy for a *more ambitious* UTL package and outrage over the carve-outs for Norway's agricultural sector.³²⁸ However, it seems that pro-development groups were to some extent "bought off" by the Government's continuous commitment to development aid, which is largely seen as making up for its lack of openness to trade in agriculture.³²⁹

D. Assessment of UTL experience

1. Domestic economic effects of UTL on the Norwegian economy

338. In this section, we provide the results of our own independent quantitative work that we performed on the economic effects of the UTL. We apply different modeling techniques to assess the effect that UTL has had on exports, productivity, and employment in Norway. While the UTL was the main policy reform that Norway engaged in at the time, we did face challenges with respect to disentangling the effects generated specifically by the UTL from those generated by other dynamics, particularly that of the Global Financial Crisis and Norway's labor market reforms of 2005-2006. We try to isolate the implications of the UTL experience to the best of our abilities using the appropriate empirical tools.

339. As for the case studies of New Zealand and Canada before, we apply three independent quantitative methods in our efforts to quantify the impact of UTL on key economic variables: (i) descriptive statistics; (ii) a Before/After approach in the form of an "event study", using an autoregressive distributed lag ("ARDL") model, and (iii) a difference-in-difference ("DID")

³²⁶ See para. 316, above.

³²⁷ While there is a long history of protection in the textile and apparel industry in Norway (as in much of the Northern hemisphere), the Norwegian textile industry has largely dissipated in recent years. In 2008, the Norwegian Government commissioned a feasibility study on a Norway-China FTA. The study noted that Norway's textile industry, once thriving, contributed just 0.3% to the country's GDP in 2008, and that a big proportion of Norway's market demand for textile and apparel products depended on imports. See Norwegian Ministry of Trade and Industry (2008), p. 35.

³²⁸ Norway takes development aid seriously. Civil society organizations see modern trade policy as aligned with its enhanced focus on global development issues, and the Government sees trade policy as a main pillar for aid. This includes increased market access for developing countries, increased trade-related aid (capacity building), and aid for industrial development. See Melchior (2007), p. 106.

³²⁹ See Farsund (2010). Development aid is also a mechanism with which the government deals with anti-globalization advocates and opponents to trade liberalization in general. "When the critics say 'globalization is bad!' the answer is not 'you are wrong' but 'we need globalization with a human face'". See Melchior (2007), p. 106.

Case study 3: Norway

approach, in which we compare the economic indicator in question in Norway with that of the G7 countries (US, UK, Germany, Japan, France, Canada, and Italy), which collectively act as the control market. We apply these empirical methods – where appropriate – to three economic variables of interest: export growth, productivity, and employment.³³⁰

340. We are not aware of any studies that provide an *ex post* empirical assessment of Norway's UTL. In general, our experience was that Norway's UTL has not received much attention among trade scholars (or any other commentators, for that matter), since Norway was quite discreet in its efforts for implementing UTL. This is where our original quantitative work comes into play.

The effect of UTL on Norway's exports

341. As usual, we start our analysis of the impact that Norway's UTL had on the country's export performance with an ocular scrutiny test, namely descriptive statistics of Norway's export performance over time.

342. Norway's main exports have traditionally been dominated by crude petroleum and petroleum gas. In 2005, these two commodities made up more than 60% of Norway's exports by value.³³¹ For the purpose of our analysis, however, Norway's exports in commodities are largely irrelevant. Thus, for the rest of this section we focus uniquely on Norway's "traditional" exports (agriculture, fisheries, and manufacturing) and also exclude ships, vessels, and aircraft.³³² Figure 37 depicts the time series of traditional real exports (blue line) and its trend (red line) over time.³³³ The black vertical line represents the beginning of UTL in Norway in 2006. Real exports in the first quarter ("Q1") of 2006 are indexed to 100.

³³⁰ We apply the descriptive statistics approach for all three variables, the Before/After approach for exports and employment, and a DID analysis for productivity. The reasons for these modeling choices are described in detail in **Technical Appendix A**. That appendix also provides a more technical introduction into each of these modeling approaches.

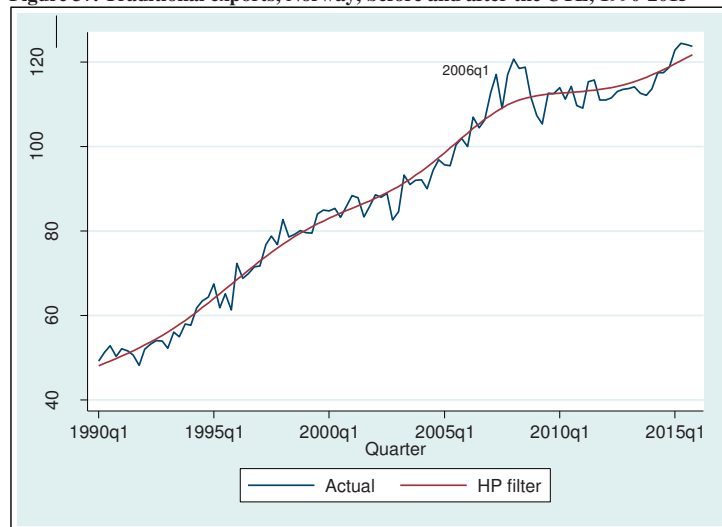
³³¹ Simoes and Hidalgo (2011).

³³² As we explain in detail in **Technical Appendix D (Norway)**, due to the low-volume/high-price nature of the industries, including ships, vessels, and aircrafts into our export analysis would have yielded unacceptable swings in the export growth rate, which is the metric we analyze below. Although the value added in the construction of ships and aircraft occurs over several years, for the purpose of exportation, transactions are registered only once at the time of sale. This leads to high variance and to numerous outliers in quarterly data. With such a high variance in the data, it would have been difficult, if not impossible, to select the right empirical models to predict counterfactual growth rates. We thus opted for excluding ships, vessels, and aircraft volumes from the basket of "traditional exports".

³³³ Export data are in constant prices and are seasonally adjusted. For constructing the trend, we use a Hodrick-Prescott ("HP") filter, which removes the cyclical- and seasonal components of the data.

Case study 3: Norway

Figure 37. Traditional exports, Norway, before and after the UTL, 1990-2015



Source: Statistics Norway.

343. The blue line in Figure 37 shows that traditional exports of Norway grew at a fairly constant pace between 1990 and 2000 and then stopped growing in the first three years of the new millennium. A period of sizable growth followed between 2003 and 2008, during which Norway's traditional exports grew 41% in real terms.³³⁴ This period came to an abrupt end with the start of the Global Financial Crisis and the Great Trade Collapse that occurred in its wake in 2008. The impact of the 2008/2009 Global Financial Crisis is evident, with exports falling 11.3% below their pre-crisis peak.³³⁵ However, contrary to what we see in other developed countries (e.g., Canada), Norwegian traditional exports did not bounce back after the crisis, reaching their pre-crisis level only in Q4 of 2014, a full five years after the crisis. Regarding the policy effect of UTL, we do observe that a few quarters after Norway's UTL implementation, export growth increased substantially above the trend (red line). This is a first indication that UTL may have had a positive impact on Norwegian exports.

344. So, even though high growth rates of traditional exports seem to correlate strongly with the introduction of UTL in the two years following its inception, the picture in Figure 37 is not

³³⁴ Calculated from data sourced from *Statistics Norway*; available at <https://www.ssb.no/en/statistikkbanken>.

³³⁵ To be fair, the post-crisis export slump that Norway experienced was less pronounced than for many other countries. As reported, Canada's exports, for example, fell 23% below the pre-crisis peak because of the Global Financial Crisis (see Figure 23).

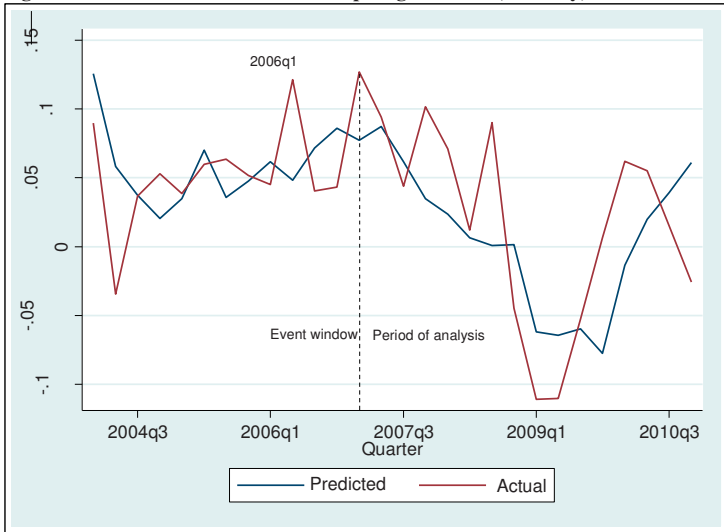
Case study 3: Norway

entirely clear by just applying ocular scrutiny on account of the effects triggered by the Global Financial Crisis.

345. To analyze the impact of Norway’s UTL on exports in more detail, we once again apply a Before/After approach, more specifically, an event study in the form of an ARDL model.³³⁶

346. Figure 38 reports graphically the results of the event study, as specified and further discussed in **Technical Appendix D (Norway)**. It depicts the actual and predicted quarterly year-on-year exports growth (in percent, vertical axis) between 2004 and 2011 (horizontal axis). The actual export growth is pictured as a red line, while the predicted (counterfactual) export growth is pictured as a blue line. The solid black vertical line depicts the start of Norway’s UTL in Q1/2006. The dotted black vertical line represents the beginning of the analysis period, which starts four quarters after the beginning of the UTL in 2006.³³⁷

Figure 38. Actual and counterfactual export growth rate, Norway, ARDL model



Source: Authors.

³³⁶ As explained before, the ARDL model uses time-series techniques to detect changes in the nature of the data and to assess whether such changes can be attributed to the policy change (here, the UTL policy reform). The conclusions are premised on the comparison between the actual value of a variable (*with* UTL in place) and the counterfactual value predicted by the model (*in the absence* of UTL). For further details on the model, see **Technical Appendix A**.

³³⁷ The period between the two lines is the so-called “event window”, which includes the first four quarters following the introduction of the UTL. The actual period of analysis (forecasting period) commences thereafter. For further explanation, see footnote 93, above.

Case study 3: Norway

347. The graphical analysis in Figure 38 shows that for much of the analysis period (Q1/2007 and thereafter) *prior to* the Global Financial Crisis and the concomitant Great Trade Collapse the blue line, *i.e.*, the predicted export growth (which represents the world *without* UTL), is below the red line that depicts the actual export growth dynamics (*with* UTL). This suggests that in the pre-crisis forecasting period Q1/2007-Q3/2008 Norway's UTL reform has had a considerable effect on Norwegian export volumes. The Cumulative Average Residual ("CAR"³³⁸), which is the empirical difference between actual and predicted export growth in the analysis period, estimates an annual effect size of 3.5%, meaning that actual exports, on average, were 3.5% higher than predicted by the model over the pre-crisis forecasting period between Q1/2007 and Q3/2008. This result is statistically significant.³³⁹

348. This result, encouraging as though it is, has to be treated with caution, since we stopped the ARDL model just before the Great Trade Collapse. While this approach enabled us to completely circumvent contamination of the results by the Great Trade Collapse, the model results described above were based on a forecasting period of only seven quarters, which does not cover a full business cycle and is prone to statistical outliers.³⁴⁰

349. To cover an entire business cycle within the forecasting period and to integrate the entire Great Trade Collapse (decline plus catch-up), we extend the forecasting period from Q1/2007 to Q4/2010. Calculating the CAR over this extended period reduces the effect of UTL to 1.2%. This result, however, is no longer statistically significant on the commonly used 10% significance level. This result is likely not contaminated by the effects of the Great Trade Collapse, which falls entirely into the forecasting period.³⁴¹ Due to the absence of any other concomitant trade policy reforms enacted at or around the same time next to the UTL, we also do not run the risk of mis-attributing effects to UTL that in reality are owed to other domestic reform packages.

350. In sum, we conclude that even though UTL did have a positive impact on Norwegian exports in the short run, its medium-term impact on Norway's overall export performance was

³³⁸ See **Technical Appendix A** for a description of CAR.

³³⁹ See **Technical Appendix D (Norway)** for details.

³⁴⁰ We recall that the period of analysis for both New Zealand and Canada was 16 quarters, or four years. This is standard in forecasting, because a business cycle is typically 4-5 years. The CAR for a shorter period (seven quarters here) is thus more susceptible to outliers in the underlying data.

³⁴¹ When modeling the effect of UTL on export growth in Canada (*see* Chapter III.D.1.a, above), we controlled for the impact of the Great Trade Collapse on Canada's export performance. This was necessary, since our forecasting model straddled that of the Collapse. The forecasting period was unable to sufficiently track the dip in exports and the following post-crisis recovery, thus potentially biasing our results. The specifications of our model for Norwegian exports includes the crisis and the post-crisis period, thus netting out its effects (the errors of our model during the crisis did not stand out as outliers). This alleviates the need to consider specifically the catch-up period.

Case study 3: Norway

less pronounced. While the econometric error terms are positive throughout – which is just an econometric way of saying that the empirical data points to *positive* effects of UTL throughout – these error terms are not statistically significant for the longer forecasting model that covers an entire business cycle.

351. Combining the insights that the result for the first period of analysis was positive and statistically significant, but not for the entire period of prediction, this suggests that Norway's UTL has had a small but positive impact on exports over the course of the entire business cycle. Focusing on a shorter pre-crisis period from Q1/2007 to Q3/2008, we estimate a UTL-induced growth effect of 3.5%. UTL thus contributed 45% to Norway's export growth over the same time period.³⁴² Using the longer period from Q1/2007 to Q4/2010, we estimate a UTL growth effect of 1.2%, which is equivalent to a 30% contribution to Norway's export growth over the period.³⁴³

*The effect of UTL on productivity in Norway*³⁴⁴

352. As previously mentioned, economic theory would predict that trade liberalization is a potential avenue for countries to boost their productivity levels by allowing domestic producers to have cheaper access to inputs of similar or better quality, increasing competition in import-competing sectors etc. (IMF 2016).³⁴⁵ Below, we analyze the effect of UTL on productivity in two ways: *first* by using descriptive statistics, and *second* by applying a DID approach in which we compare Norway's productivity with the productivity of the G7 countries, which together act as a non-UTL control market.³⁴⁶

353. For ocular scrutiny, Figure 39 reports how productivity levels in Norway (vertical axis) evolved over time (horizontal axis). The results are indexed for Q1/2006, the beginning of Norway's UTL. The red line depicts productivity as real output per employed worker (labor productivity), while the blue line marks out the trend.³⁴⁷

³⁴² In the time period between Q1/2007 and Q3/2008, traditional Norwegian exports grew by 7.7% annually on average. Hence, the contribution of UTL to overall annual growth was $3.5\%/7.7\% = 45\%$.

³⁴³ In the time period between Q1/2007 and Q4/2010, traditional Norwegian exports grew by 4% per year on average. Hence, UTL contributed to $1.2\%/4\% = 30\%$ to that year-on-year export growth rate.

³⁴⁴ For the purposes of this section, we define productivity as output per worker, or *labor* productivity, *i.e.*, the ratio of GDP to total employment. This is in line with what we did for New Zealand and Canada, above. We were unable to use *hourly* productivity data as a robustness check (like we did in the case of New Zealand and Canada), because these data are unavailable for mainland Norway.

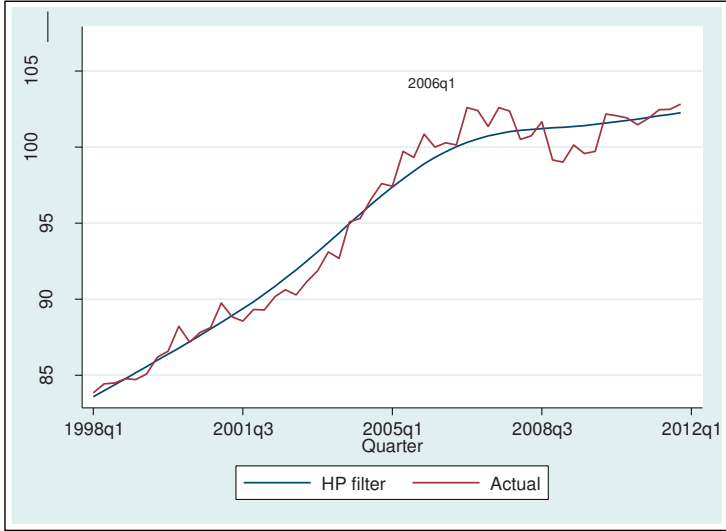
³⁴⁵ Since we want to exclude productivity in the oil sector, we only look at the mainland productivity, which excludes offshore production.

³⁴⁶ The reason why we opt for a DID approach is explained in footnote 107, above.

³⁴⁷ As before, a HP filter is used to extract the trend component of the time series.

Case study 3: Norway

Figure 39. Mainland productivity levels in Norway, 1998-2011



Source: Authors' calculations based on relevant GDP and employment data from *Statistics Norway*.

354. As Figure 39 shows, productivity growth in mainland Norway was strong before the country enacted its UTL. Even though we observe a few spurts of productivity growth after the beginning of the UTL, the economy could not maintain its earlier momentum. A stagnation in productivity levels set in about two years after the implementation of the UTL – which was exactly the time when the Global Financial Crisis hit. During the crisis, productivity decreased and unlike in Canada, Norway's productivity failed to rebound in the post-crisis period. Thus, from a purely ocular perspective, it seems that over the medium term UTL did not achieve the hypothesized productivity gains in mainland Norway.

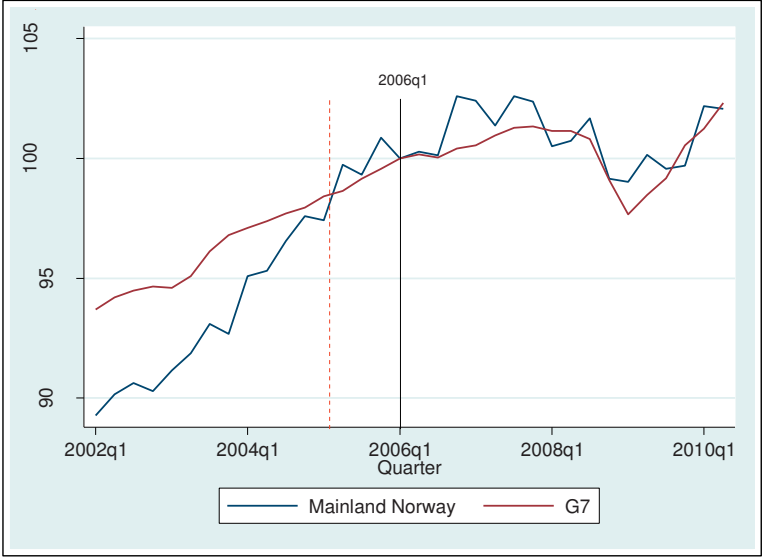
355. To see whether this preliminary conclusion holds true, or instead is owed to the contaminating effect of the Global Financial Crisis, we apply a graphical DID approach to compare the evolution of productivity experienced in Norway with that achieved across the G7 countries.³⁴⁸ We examine the productivity dynamics in Norway and for the G7 average prior to Norway's UTL, and compare these pre-UTL dynamics with those experienced in the period after the implementation of UTL in Norway.

³⁴⁸ We selected an average across the G7 countries, because these countries together represent the average productivity in industrialized economies. Taking the average across G7 countries also controls for underlying policy changes which may have occurred in any *specific* country. The motivation for using the G7 average as Norway's control market for our comparative analysis is further described in **Technical Appendix D (Norway)**.

Case study 3: Norway

356. Figure 40 plots the labor productivity levels (vertical axis) in mainland Norway (blue line) and G7 (red line) between Q1/2002 and Q1/2010 (horizontal axis). The productivity level has been indexed to Q1/2006, the beginning of UTL in Norway. The solid black vertical line depicts the introduction of UTL in Norway in 2006.

Figure 40. Norway (mainland) and G7 productivity levels



Source: Authors, based on relevant GDP and employment data sourced from OECD.

357. Figure 40 indicates that Norwegian mainland productivity growth over-performed as compared of that in G7 countries in the period before Q4/2004 (this can be judged by the slope of the two lines in the pre-UTL phase, which represents growth of productivity). Thereafter, the two regions follow a similar trajectory of productivity growth starting from Q1/2005 (the beginning of this period is depicted in Figure 40 as a red dotted line). Productivity in both regions evolves more or less in lockstep. This suggests that there is *no* marked difference in productivity performance after Q4/2004.³⁴⁹ This period notably *includes* the implementation of UTL in the treatment market of mainland Norway.

³⁴⁹ This results seems entirely plausible once we examine in more depth the dynamics that have driven productivity growth in Norway in the past. Norway is unique among developed countries in that it boasts high levels of productivity levels despite relatively low R&D spending, which is typically considered as one of the major drivers of productivity. This has often been termed as the “Norwegian Paradox” (see Fagerberg *et al.*, 2009, and Feenstra *et al.*, 2015, and their attempts at explaining the Norwegian Paradox). Productivity growth in manufacturing was slow in the late 1990s, primarily because of low competition in protected sectors. One of the major drivers behind Norway’s

Case study 3: Norway

358. We thus conclude that UTL has not resulted in a positive impact on productivity growth in mainland Norway. The effect of UTL on productivity thus can be described as neutral.

The effect of UTL on employment in Norway

359. As a last step in our quantitative analysis we assess the potential impact of Norway’s UTL reform on employment levels. As before, we begin by presenting simple descriptive statistics, followed by a more technical approach in the form of an ARDL event study.

360. Figure 41 presents the level of employment and active population (vertical axis; in ‘000 persons) in Norway from 1995 to 2011 (horizontal axis). The blue line represents the number of employed persons on the mainland,³⁵⁰ while the red line represents the active population. The beginning of UTL in Norway is represented by black vertical line.

Figure 41. Employment and active population levels in (mainland) Norway



Source: Statistics Norway.

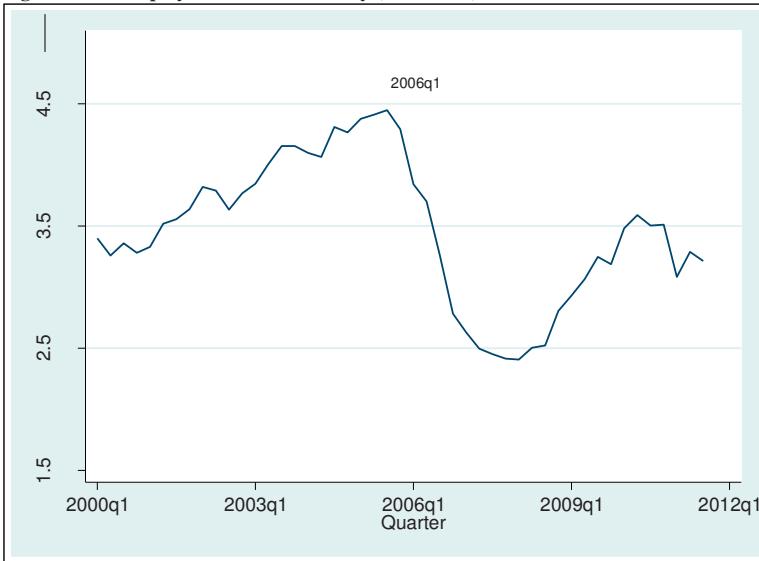
productivity boost in the early 2000s was strong gains in the manufacturing sector. Norwegian productivity recovered due to global competition and real exchange rate appreciation, which forced Norwegian companies to respond by becoming more productive and competitive. As a result, growth rates achieved rates of 4-5% in early 2000s (see OECD, 2007, pp. 20-21). However, this spurt in productivity was not sustainable as it was not rooted in factors that typically sustain long-term productivity (such as R&D). This explains the reversion of Norwegian productivity back to G7 levels in the post-2005 period. In short, Norway’s productivity problems were more of a structural nature, which UTL alone was unable to fix.

³⁵⁰ Recall that we exclude the petroleum industry from our analysis; this is why we eliminate offshore employment on drilling rigs and focus on the Norwegian mainland.

Case study 3: Norway

361. Unemployment in Norway was quite low at any point in time. In Figure 41 we observe that the number of employed persons on the mainland increased steadily after the implementation of UTL, while we witness a gentle dip in employment during the Global Financial Crisis. This is also mirrored in the unemployment rate of Norway for the same time period, which is reported in Figure 42. This figure shows the quarterly unemployment rate (in %, vertical axis) in Norway from Q1/2000 to Q4/2011 (horizontal axis). As before, the beginning of UTL in Norway is represented by the grey vertical line.

Figure 42. Unemployment rate in Norway (2000-2012)



Source: OECD database.

362. According to Figure 42, the unemployment rate in Norway fell around the time of the implementation of UTL, and increased during the Global Financial Crisis, albeit at a lesser rate. Upon closer inspection, however, we note that the decrease in employment had started *before* UTL was implemented. What happened? Between 2005 and 2006, the Norwegian Government passed a number of labor market reforms aimed at reducing unemployment and increase labor market participation through various incentive schemes.³⁵¹ These included reforming the unemployment benefit scheme, re-organizing the public employment services, and other changes

³⁵¹ See OECD (2005), p. 5.

Case study 3: Norway

in active labor market policies.^{352,353} As Figure 41 demonstrates, these labor market reforms seemed to have been effective: higher expenditure on vocational training and reorganization of Norway's labor policy structure around 2005/2006 seem to be directly related to the higher employment growth between 2006 and 2008, in which the number of participants in active labor market policies increased by nearly 20%.

363. Given the timing of labor reforms, ocular scrutiny would suggest that the decline in unemployment witnessed in Figure 42 and the corresponding rise in employment numbers explored in Figure 41 stem directly from the changes in labor-market policy, not from UTL.

364. To examine this relationship in more depth, we apply another ARDL model. The approach is similar to the one used to detect changes in Canada and New Zealand's employment levels.³⁵⁴ As in the previous case study, we use *active population* as the explanatory variable to determine employment,³⁵⁵ and create counterfactual outcomes for employment after the implementation of UTL. We then compare the counterfactual with the actual growth in employment to identify the impact of the underlying policy changes (which include the UTL and labor market reforms discussed earlier).

365. Figure 43 graphically depicts the results of our ARDL model on employment. The vertical axis represents growth of employment in percent; the horizontal axis marks the Q1/2004-Q4/2010 period. The black vertical line represents the beginning of UTL in Norway, the red vertical dashed line marks the period when the implementation of labor market reforms started in Norway. The figure shows the difference between the counterfactual growth in employment *without* policy reforms (blue line), as predicted by the ARDL model, and its actual growth pattern *with* policy reforms (red line).

³⁵² For example, the Government decided to direct the majority of spending to wage subsidies and labor training aimed at supporting working age population not in the labor market. See OECD (2009), pp. 85-86.

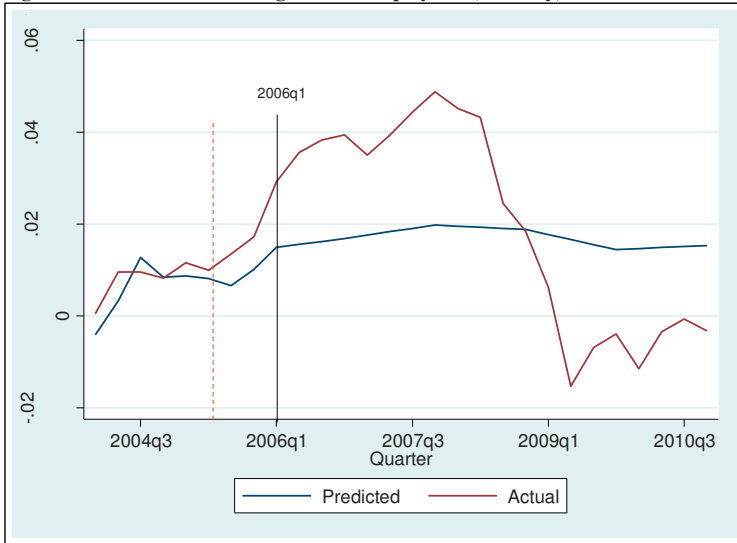
³⁵³ In July 2006, the Government streamlined the domestic labor administration and launched a new agency called "NAV" (Norwegian Labour and Welfare administration) with the aim of limiting benefit dependency and preventing people from leaving the labor market. NAV merged the State Public Employment Service and the National Insurance Administration in an effort to streamline the functioning of labor policy and coordinate their services. See OECD (2005), p. 26.

³⁵⁴ See Chapters II.D.1.a and III.D.1.a, above.

³⁵⁵ As discussed in **Technical Appendix A**, we prefer using the metric *active population*, which is defined as the number of 15 to 64-year olds in the economy, as the dependent variable. As a robustness check we replace active population by *labor force*. As we report in **Technical Appendix D (Norway)**, the results are not significantly affected by this alternative data source.

Case study 3: Norway

Figure 43. Predicted vs. actual growth of employment, Norway, ARDL model



Source: Authors, based on relevant GDP and employment data sourced from *Statistics Norway*.

366. Based on the graphical illustration in Figure 43, we observe that the actual growth rate of employment (*with* UTL) is quite a bit higher than the predicted growth rate (*without* UTL) in the period after labor reforms were implemented. This result holds until the Global Financial Crisis occurred in Q2/2008. The CAR, which, as mentioned before, calculates the average difference between predicted and actual growth, is 2.1% for the period between Q1/2006 and Q3/2008 and is statistically significant. This means that on average, actual employment growth was 2.1% higher than predicted employment growth in the time prior to the Global Financial Crisis. This, however, represents the *combined* impact of both UTL *and* labor market reforms which were introduced during 2005-2006.

367. Unfortunately, it is econometrically difficult, if not impossible, to disentangle the two different policy changes – namely the labor market reforms and the passage of UTL – on employment using the event study methodology. However, from our earlier experience with New Zealand and Canada, we know that UTL has had a marginal impact on employment, with the largest portion of effects occurring due to labor market reforms and other macroeconomic changes. We thus have reason to believe that the bulk of the positive performance on employment is owed to labor market reform that preceded the 2006 UTL intervention. Norway's UTL reform may have amplified the effects and bolstered their magnitude in the long run. This is

Case study 3: Norway

consistent with economic theory,³⁵⁶ and with the positive export growth that we detected above for the period between Q1/2007 and Q3/2008 (higher exports would have marginally increased employment).

Summary: the effect of UTL on exports, productivity, and employment in Norway

368. When it comes to the economic effects that Norway's UTL had on traditional exports, mainland productivity, and mainland employment, our results suggest the following: *First*, we find a positive, but statistically insignificant, impact of UTL on exports for a longer four-year forecasting period that covers the Global Trade Collapse (and the subsequent rebound in export rates). The estimated annual effect is a 1.2% year-on-year increase in export growth that can be attributed to UTL, which is equivalent to a 30% contribution to Norway's export growth over the period. Yet, we find a significantly higher UTL-induced export effect than predicted by the model over a shorter pre-Trade Collapse forecasting period. The estimated average annual effect for that shorter forecasting period is highly statistically significant, and the point estimate is 3.5%, meaning that yearly export growth was 3.5% higher than forecasted, thus contributing 45% to Norway's overall export growth over the same time period.

369. *Second*, regarding the possible effects of UTL on productivity in mainland Norway we find that both descriptive statistics and the DID analysis suggest that Norway's productivity performance from the second half of the 2000s on was rather unspectacular. Compared to the G7 region as control market, we see no evidence that UTL was able to sustain Norway's productivity growth. Norway's productivity problems seem to have been more structural.

370. *Third*, regarding the potential effect of UTL on employment in mainland Norway, our empirical model indicates that actual employment growth was considerably higher than predicted by the model in the period before the Global Financial Crisis (Q1/2006 to Q3/2008). The empirically estimated effect on employment for the period following the implementation of UTL was 2.1% and statistically significant. However, there is strong reason to believe that Norway's reorientation of labor market policy as well as higher expenditure on wage subsidies and training during 2005/2006 (that is, prior to UTL) had a stronger impact on employment levels than UTL itself. While in theory UTL can increase employment levels through higher growth in the export sector and through productivity gains, we believe that the bulk of the estimated employment

³⁵⁶ See **Technical Appendix A** and paras. 138 and 285, above.

Case study 3: Norway

effects is due to labor market reforms. The contribution of UTL to employment growth in Norway in the medium- to long -run, to our mind, was thus small, albeit positive.

2. International political implications and impact on FTAs

371. Our interview partner confirmed that Norway sees its UTL experience as a success. When it comes to drawing international implications, a few “lessons learned” have transpired.

372. *First*, regarding its multilateral standing, Norway (together with countries such as Iceland and Canada) is widely regarded as being amongst the most “extreme” unilateral liberalizers of industrial tariffs. Today, Norway only has 144 dutiable tariff lines on industrial goods; the remaining industrial tariff lines are duty-free.³⁵⁷ This is widely perceived as positive among WTO Members. In a way, Norway is setting an example for other WTO Members to follow.

373. Norway has been a strong proponent of UTL in the WTO, in particular on the elimination of nuisance tariffs. As mentioned above, in 2005, Norway, together with Canada, submitted a proposal to the NAMA negotiations calling for the elimination of such nuisance tariffs (WTO, 2005). In this way, Norway’s own UTL was only consequential: Norway showed that it is willing to be measured by its own actions.

374. Having said this, some of our non-Norwegian interview partners have – in confidence – criticized a certain hypocrisy and double standard in Norway’s zeal to be seen as a beacon of free trade. These interviewees opined that it is easy for Norway to reduce tariffs in “safe” sectors in which there are little to no domestic import-competing industries. When it comes to sensitive sectors like agriculture and fisheries, however, Norway has one of the world’s strictest import regimes. As one interviewee put it, Norway’s recalcitrance in opening these sensitive sectors “is a ‘chink’ in [its] armor as the White Knight of free trade”.

375. *Second*, concerning the impact of UTL of Norway’s willingness and ability to conduct further FTAs, Norway does not seem the least bit worried on that front. Some observers may argue that UTL reduces a country’s policy space in trade negotiations, but this has prevented Norway neither from unilaterally liberalizing its tariffs nor from concluding new FTAs.³⁵⁸ Norway is thereby acting from a position of strength: the country is doing very well thanks to its

³⁵⁷ We were unable to determine whether Norway has notified its consolidated tariff list at the WTO. Norway certainly has not bound its liberalized tariffs as commitments at the WTO.

³⁵⁸ Together with its EFTA partners, Norway has pursued – and is pursuing – a rather aggressive FTA policy that currently includes talks with Mercosur, Malaysia, Pakistan (as per Joint Declarations on Cooperation), and other countries and blocs. See <http://www.efta.int/legal-texts/free-trade-relations>.

Case study 3: Norway

abundant natural resources; it is also tightly integrated into the European economy thanks to its membership in the EEA. Finally, Norway is benefitting from the fact that it acts alone when it comes to UTL, but negotiates new FTAs as part of a larger trade bloc – EFTA. This allows Norway to dissociate itself to some degree from its past decisions to liberalize unilaterally during FTA negotiations. In that sense, Norway can pursue UTL without having to care about any (real or imaginary) repercussions for its FTA negotiations.

E. Lessons learned for the Swiss context

376. Although our research for the Norway case study was exacerbated by a lack of publicly available information and interview partners, we nevertheless distill a number of common “themes” that may provide useful lessons learned for Switzerland’s own UTL endeavors.

- **Don’t wait for the crisis:** In contrast to both Canada and New Zealand, Norway’s UTL was not triggered by any outside event and was not part of a larger policy reform package. This shows that UTL can be implemented on its own and neither needs an external trigger event that serves as scapegoat, nor must ride in the wake of a larger policy upheaval.
- **The path of least resistance may be the way forward:** Like Canada, Norway walked the path of least resistance with its UTL by (i) largely eliminating nuisance tariffs (which, by their very nature, have few domestic advocates); (ii) sparing sensitive import-competing industries, particularly agriculture and fisheries (as well as selected certain textile and footwear sectors); and (iii) ensuring that users of intermediate inputs were benefitting from the revocation of nuisance tariffs. By devising this strategy of least resistance that by design produces mostly winners from liberalization, the Norwegian Government also availed itself from having to work out assistance plans to compensate the potential losers of liberalization.³⁵⁹
- **All in one go:** Norway is the only of the three case study countries that implemented its UTL in one sweeping stroke, over the course of 12 months or less. While this decisiveness is laudable, it cannot be said that Norway “ripped the band-aid off in one go”, because there simply was not much by way of economic “pain” (for import-competing industries) accompanying its UTL: as discussed above, the elimination of nuisance tariffs on industrial goods was a win-win proposition without much domestic opposition. So, the morale of the story probably is that if the scale and scope of a UTL is relatively small and holds most domestic stakeholders harmless, then it may well be implemented in one single swoop.
- **A “silent” approach – will it work elsewhere?** Norway implemented its UTL without much public debate and participation, or at least behind closed doors.³⁶⁰ To the best of our knowledge UTL was not announced ahead of time (and if it was, this announcement did not receive much public attention). UTL was enacted and implemented swiftly and without much public discussion. This “silent” approach evidently served Norway well – we could not find any domestic opposition to the Government’s UTL reform. Whether a similar approach would work in the Swiss context, however, is questionable. Legal

³⁵⁹ On this note, recall footnote 325 and accompanying text.

³⁶⁰ On that note, see footnotes 317 and 323.

Case study 3: Norway

restrictions notwithstanding,³⁶¹ policy-making in Switzerland has always been a participative and collaborative effort: thanks to its direct democracy heritage, the Swiss citizenship is extremely well-informed and highly alert. Business sector associations are also used to open and constructive discussions with the Swiss authorities. Any appearance of “behind-closed-door” politicking or exclusionary negotiations is skeptically viewed by the Swiss public.

- **Stronger together:** As part of EFTA and member of the EEA, Norway was able to undertake unilateral tariff reduction decisions, but does not have to worry about potential blowback (in the form of reduced bargaining power) in future FTA negotiations. In FTA negotiations, Norway is part of a much larger and more powerful economic group, namely EFTA.

³⁶¹ In Switzerland, the Federal Council can only decide on temporary tariff suspension. Any act of UTL would have to pass through Parliament, which by its very nature would exclude unannounced or overly swift UTL action.

Conclusion and outlook

V. CONCLUSION AND OUTLOOK

377. This report conducted three independent case studies of countries that have lived through the UTL experience at different points in the past, under different domestic and global circumstances, and applied different sets of implementation strategies. For each of the three countries, we have considered how the implementation process was communicated and organized. By applying a mix of qualitative and quantitative methods, we answered questions relating to expectations and experiences surrounding UTL reforms in each country.

378. By way of conclusion, this final chapter now aims at drawing some useful “lessons learned” for the Swiss Government.³⁶² When it comes to UTL, Swiss policymakers will likely have three overarching questions: *first*, is UTL worth it? And, if the response to the first question is affirmative, *second*, how to best prepare and implement UTL to generate optimal domestic support? Finally, *third*, should we be worried about possible blowback on the international stage? We will tackle these issues in their logical order below.

379. Before we do so, it seems worthwhile highlighting the parallels and differences between the three countries at the time they engaged in UTL and the current Swiss context in terms of basic global economy, domestic economic structure, and relevant political circumstances. This may help the reader gauge which of the case studies are more pertinent for the Swiss context.

380. UTL in New Zealand was only a small part of a much larger and ambitious economic reform whose objective was to avoid insolvency. The scale and scope of UTL was deep and broad, meaning that action on tariffs and reform of related non-tariff measures (elimination of quotas, import licenses, subsidies, etc.) was all-encompassing and decisive. Also, UTL occurred nearly 30 years ago, when in many ways, the world economy was a different place than today. While interesting lessons can be gleaned about NZ’s implementation and communication strategies (more on that, below), it does not seem that NZ’s UTL experience is the most appropriate benchmark for Switzerland.

381. During the time of its UTL, Canada was in solid economic shape. While never in existential danger, the Government of Canada took the 2008/2009 Global Financial Crisis as an

³⁶² We repeat that we do not intend to make any explicit recommendations to SECO or the Swiss Government as to whether, and, if so, how to pursue its own UTL strategy. Rather, we merely provide some “lessons learned” that the SECO and the Swiss Government may find useful when contemplating its own UTL actions. This selection of “lessons learned” is by its very nature subjective. Reasonable minds may differ about what can be learned from the three case studies.

Conclusion and outlook

occasion to engage in political reforms in order to stay ahead of the game and to enact important public policy reforms. Canada's UTL was highly selective, in that it excluded agricultural products and many other import-sensitive industries. Overall, its scope of UTL was moderate, with a mix of eradication of nuisance tariffs and substantive tariff cuts. The timing of Canada's UTL was not too abrupt, and stretched in stages over more than five years. The integrative consultation and communication strategy pursued by the Government of Canada were exemplary. Overall, it seems that Swiss policymakers would be well-advised to take a close look at the case of UTL in Canada.

382. Norway's UTL apparently was not triggered by any exogenous event. It seemed to have occurred because the Government of Norway felt it had unfinished business from the Uruguay Round and that the elimination of remaining nuisance tariffs on industrial goods could provide a welcome push to trigger structural changes in the domestic economy. Norway's UTL also spared its highly sensitive agricultural sector. The country organized its UTL in one quick swoop (within the span of 12 months). While all this seems to pair well with the Swiss context, there are important issues that make the Norwegian case unique. *First*, the lower level of ambition: tariff cuts occurred from a low basis, which enabled an aggressive timeline for its UTL. *Second*, and possibly connected to the previous point, best we can tell Norway's UTL occurred without much public discussion and consultation. Such a cloaked policy reform seems unsuitable for Switzerland, which prides itself for participatory policy-making and a well-informed and active private sector and citizenship.

A. Is UTL worth it?

383. Our original research on the economic effects of UTL confirms economic theory: UTL reaps significant effects, particularly for export-oriented countries, such as Switzerland.

384. Regarding the effect of UTL on exports, economic theory predicts that tariff liberalization implies lower input costs, greater quality, and/or greater variety of intermediate products for downstream businesses, including exporters. Overall, lower import tariffs lead to more efficient resource allocation that particularly benefits exporters who tend to be among the most efficient firms.³⁶³

³⁶³ See footnote 14, above, and **Technical Appendix A**.

Conclusion and outlook

385. Our own empirical research based on a series of ARDL event studies confirm this. In the case of NZ we found a statistically significant impact of UTL, at least during the implementation of the more ambitious second wave of UTL (starting in 1993). We estimate that for the four-year forecasting period 1993-1996 UTL has had a measurable average annual effect of 2.4% on NZ's export growth – an export boost that constitutes 43% of the overall year-on-year growth in exports achieved in NZ during the same period of analysis.

386. We also detected a statistically significant impact of UTL on Canada's export performance. Even when controlling for a catch-up effect that potentially spilled over from the Great Trade Collapse into the forecasting period we calculated that UTL increased annual exports of Canada by between 0.36% and 0.75% on average over the 2010-2014 period (depending on the nature of the catch-up scenario). This effect corresponds to a contribution of between 8% and 16.7% to total year-on-year export growth over the same period.

387. For Norway, we found a positive, but statistically *insignificant* impact of UTL on “traditional” exports when using a longer forecasting period that encompassed an entire business cycle (2007-2010). Specifically, we measured a UTL-induced annual effect on export growth of 1.2%. This result was not significant on the customary 10% confidence level. However, when using a shorter forecasting period that stopped right before the Great Trade Collapse (2007-2008), we found a larger and statistically significant effect of 3.5%, meaning that yearly export growth on average was 3.5% higher than forecasted on account of UTL, thus contributing 45% to Norway's traditional annual export growth over the same time period. Together, these results do indicate a measurable, but potentially short-term, effect of Norway's UTL on export performance.

388. Taken together, we find a strong and robust correlation between the magnitude of tariff cuts and the increases in exports this affords.³⁶⁴ For New Zealand, the average unilateral tariff cut over the course of the second wave of UTL was 9.8 percentage points,³⁶⁵ and our estimated results suggest a *compounded* increase in export growth over the same 1993-1996 period of 9.95%.³⁶⁶ For Canada, the overall tariff cut was 1.2 percentage points.³⁶⁷ The estimated effect of

³⁶⁴ This is a direct confirmation of Lerner's (1936) well-known “tax theorem”, which says that a tax on imports is tantamount to a tax on exports.

³⁶⁵ See para. 62, above.

³⁶⁶ Recall that the effect of UTL on export growth we measured was 2.4% (see para. 113, above). This number is an annual growth rate. Looking at the 4-year horizon of the forecasting period of the second wave of UTL (1993-1996), this implies a compounded growth of $(1 + 0.024)^4 = 1.0995$, or 9.95%. We use the same formula for Norway and Canada.

³⁶⁷ See para. 204, above.

Conclusion and outlook

UTL on export growth was between 0.36% and 0.75% per year, depending upon the manner in which we controlled for the catch-up period. This results in a compounded increase in exports of between 1.4% and 3.0% for the 2010-2014 forecast period.³⁶⁸ For Norway, the overall reduction in tariff was 1.75 percentage points%.³⁶⁹ The estimated annual effect over the longer period of analysis was 1.2%.³⁷⁰ This results in a compounded export growth rate of 4.9% over the 2007-2010 period of analysis. Except for Norway,³⁷¹ our results are broadly in line with what one would expect, namely that a 1% across-the-board tariff cut will yield between a 1% and 2% compound export growth rate over the course of a business cycle (typically four to five years).

389. When it comes to the effect of UTL on productivity, economic literature recognizes trade liberalization as one of the potential avenues for countries to increase productivity levels.³⁷² The economic mechanism through which UTL affects productivity include: better allocation of resources across sectors; stronger competition in domestic import-competing industries; decrease in prices of, improvements in quality of, and increase in variety for important intermediate goods; and shift in resource allocation towards more productive sectors, notably in the export sector.

390. Once again, our empirical work applying a DID analysis is consistent with economic theory. For NZ, we observe a measurable impact of UTL on productivity growth, as compared to the control market. Specifically, we calculated a UTL-induced annual productivity growth effect of 0.27 percentage points, a contribution of 15% of New Zealand's overall productivity gain in the period of analysis. For the case of Canada we estimate that at least 23% of the country's overall productivity gains between 2010 and 2015 can be explained by UTL. This converts into an average annual contribution of UTL to Canada's productivity growth of 0.2 percentage points. Only for the case of Norway, were we unable to detect an effect of UTL on productivity. It seems that Norway's elimination of nuisance tariffs on manufacturing goods was simply insufficient to save the country's stagnating productivity levels.

391. When it comes to the effect of tariff liberalization on employment economic theory is more ambiguous:³⁷³ while higher productivity and higher exports resulting from UTL may well

³⁶⁸ See para. 261, above.

³⁶⁹ See para. 311, above.

³⁷⁰ See para. 349, above.

³⁷¹ Recall, however, that our point estimate for Norway was statistically *not* significant, thus casting doubt on its reliability. Also, we were forced to conduct our econometric work on a subset of Norwegian exports ("traditional exports") on account of the sizable volatility (and therefore instability) of total export data (see **Appendix D (Norway)** for details). This may additionally have inflated our results for Norway.

³⁷² See footnote 15, above, and **Technical Appendix A**.

³⁷³ See footnote 16, above, and **Technical Appendix A**.

Conclusion and outlook

improve employment in the long run,³⁷⁴ the competitive pressures that UTL imposes on domestic import-competing sectors may *depress* employment, specifically in the short term.³⁷⁵ Also, any impact by UTL is likely overshadowed by general business cycles (*e.g.*, the Global Financial Crisis) and other types of domestic policy reforms, notably dedicated labor market, tax, or capital market reforms. This means that UTL, while unlikely to significantly affect employment rates on its own, may amplify and accelerate ongoing dynamics in labor markets.

392. The results from our empirical ARDL event studies on the effect of UTL on employment are mixed. As a general matter, we found it challenging to isolate any effects generated by UTL reform from the 2008/2009 Global Financial Crisis and ongoing labor market reforms enacted at or around the same time as UTL.

393. For the case of NZ, we estimate that following the first wave of UTL (1989-1992) the average annual difference between the actual and predicted employment growth was statistically significant and negative (-1.2%), indicating that employment decreased by 1.2% as a result of policy events taken by the NZ Government. In the second phase of UTL (1993-1996), the estimated annual effects were statistically significant and positive (0.83%).³⁷⁶ However, our quantitative findings are exacerbated by the confounding effect of policy reforms that occurred at or around the same time as NZ's two UTL waves. Yet, resorting to economic theory, we conclude that it may well be that UTL had an indirect (and therefore less pronounced) effect on employment via its proven effect on export and productivity. Increased export performance and productivity increases after 1993 may have had a positive spillover impact on the labor market, leading to employment growing faster than labor force participation, thus contributing to the observable decline in NZ's unemployment rate.

394. We were faced with a similar situation for the case of Canada: our findings suggest small statistically significant employment gains in the time at or around the country's UTL. Once we control for potential catch-up effects stemming from the Global Financial Crisis preceding the UTL, the annual effect of policy reforms against a counterfactual forecast is between 0.08% and

³⁷⁴ UTL, in fostering competitiveness, higher exports, and higher overall productivity may help to create additional employment in the medium- to long run.

³⁷⁵ Import-competing industries that previously enjoyed high levels of protection may be forced to lay off workers and to streamline their production to adjust to increased foreign competition.

³⁷⁶ The estimated effect for the two waves of UTL combined (1988-1996) was -0.33%, marginally negative, but statistically insignificant. This underscores the role of trade liberalization on employment found in the economic literature according to which there is continued reallocation of resources from less to more productive sectors. See OECD (2012). This reallocation is largely numerically neutral and is thus not reflected in unemployment data.

Conclusion and outlook

0.22%. However, changes in employment levels over Canada's UTL period seem to have been driven less by UTL and more by concurrent labor market reforms. Yet, we find some evidence that increased export performance and productivity growth after the UTL had *some* positive spillover effects on the Canadian labor market. These effects would be expected to lead to employment growing faster than it otherwise would have, thus contributing in a speedy recovery of Canada's unemployment rate.

395. Lastly, regarding the potential effect of UTL on employment in Norway, our empirical model indicates that the period following the implementation of UTL had a large and statistically significant annual effect of 2.1% on employment. However, this is probably owed to a large-scale labor market reform that came into force at or around the same time as the UTL. This reform included reorientation of labor market policy, as well as massive expenditure on wage subsidies and retraining. UTL presumably only helped to facilitate and expedite the employment trends. This leads us to conclude that the contribution of UTL to employment growth in Norway was small but positive.

396. While our analysis suggests significant export and productivity gains from UTL, we address in closing one potential concern by policymakers, namely whether economic gains will really outweigh monetary losses in tariff revenue. None of the three governments have discussed (let alone presented any explicit calculations on) foregone tariff revenues from UTL, or administrative costs saved on customs procedures. Nevertheless, our analysis provides no indication that policymakers or the public at large in these countries were in any way worried that monetary losses from tariff revenue could outweigh export and productivity gains generated by UTL. Consider the following points: *First*, tariff income has become a negligible source of revenue for modern developed countries.³⁷⁷ *Second*, there exists a robust literature indicating that even *developing* economies (who, up to this day, generate a substantial fraction of public funds from import duties) stand to gain financially from tariff opening.³⁷⁸ *Third*, in the context of Canada, Ciuriak and Xiao (2014) estimated based on their CGE model that eliminating *all* tariffs

³⁷⁷ Recent estimates suggest that, on average, trade tax revenues account less than 1% in high income countries. See, e.g., Kowalski (2005).

³⁷⁸ For example, the Information Technology & Innovation Foundation ("ITIF") recently published a study about how tariff revenue losses in the context of the Information Technology Agreement ("ITA") are easily offset by increased use of the products subject to tariff liberalization, which, in turn, spurs productivity and economic growth while deepening companies' participation in global value chains. This, in turn, generates new tax revenues to partially or fully offset tariff losses experienced by developing countries. The ITIF authors show that Argentina, for example, would generate 133% of lost tariff revenue within 10 years of implementing ITA tariff cuts. See Ezell and Wu (2017). See also <https://itif.org/how-joining-information-technology-agreement-spurs-growth-developing-nations-graphics> for compelling infographics on that topic.

Conclusion and outlook

would cost the Federal Government \$4 billion a year in revenue (less than 1.8% in the 2013/14 Budget Plan or 1.5% of total budgetary revenue).³⁷⁹ However, this would easily be outweighed by output gains from UTL in the order of \$20 billion a year – economic windfall gains that result from a boost in economic activity due to cost-savings to firms engaged in trade. Taken together, this evidence indicates that tariff revenue losses from UTL should be of secondary (if not tertiary) concern to policymakers contemplating UTL.

B. How to best implement UTL?

397. If Swiss trade policymakers were to consider that UTL is going to be in the nation's enlightened self-interest, the logical next question is the "how to", that is, how to best implement the policy reform so as to maximize stakeholder support and minimize domestic opposition. Here are some lessons that we distilled from the three case studies and that we think are relevant to the Swiss context:

- **Don't wait for the crisis:** In contrast to both Canada and New Zealand, Norway's UTL was not triggered by any outside event and was not part of a larger policy reform package. This shows that a successful UTL reform can be implemented on its own and neither needs an external trigger event that serves as "hook", nor must piggyback as part of a larger policy reform agenda.
- **A less ambitious scale and scope (at least initially) may create momentum:** Canada and Norway both took an *à la carte* approach to UTL whereby each country carefully calibrated the tariff lines to be liberalized. Both countries liberalized the import of intermediate inputs, which secured applause and support from local producers. Both countries also eliminated nuisance tariffs (that, by their very nature, have little domestic advocates) and spared sensitive import-competing industries, particularly textile, footwear, and agriculture. Doing so enabled the governments to forge a strong domestic coalition in favor of UTL, without alienating many domestic groups.³⁸⁰ In the case of Canada, the Government also excluded sensitive manufacturing tariff lines from its UTL schedule.³⁸¹ All of this helped minimize domestic resistance to UTL and gather pro-trade momentum. Overall, by devising a strategy of least resistance both countries maximized domestic support from tariff liberalization, they also availed themselves from having to work out assistance plans to compensate the losers of liberalization.³⁸²
- **Gradual phase-outs:** Canada's tariffs (and to some extent NZ's, too) were phased out through a gradual process spanning several years and in multiple waves of UTL. This step-by-step process increased predictability, created confidence on the part of domestic stakeholders in the Government's actions, and secured buy-in from private sector and the general public alike. As confidence increased, certain domestic industries were soon

³⁷⁹ Ciuriak and Xiao (2014), p. 28.

³⁸⁰ NZ's level of ambition pursued by UTL was higher: the country undertook massive tariff cuts across the board. Arguably, its Administration could afford this on account of the massive economic crisis and the fact that the significance of UTL paled in comparison to the other policy reforms that were ongoing at the same time.

³⁸¹ Recall Figure 21 and para. 200.

³⁸² See footnotes 227 and 325 (and accompanying text).

Conclusion and outlook

requesting the Government to engage in *more*, rather than less, UTL (as was the case with the retail sector that led to the latest wave of UTL in Canada, starting in January 2017).

- **Communicate early, listen, and be flexible:** Canada and NZ's experiences illustrate the benefit of communicating well and early. Both countries were up-front and transparent about their objectives, and communicated their intentions well ahead of time. Through summits, conferences, and inclusive committee work, the Administrations of both countries engaged key stakeholders throughout the UTL process – and in the case of Canada continues to involve them. In both cases, this helped to shape a broad pro-trade coalition consisting of think tanks, trade associations, private sector groups, and labor unions.

An important lesson from the Canadian case study is that the Government seems to have entered its stakeholder meetings without a preconceived plan as to which sectors to liberalize. It was willing to listen and to stakeholder concerns and demands. Stakeholder meetings were thus not simply photo-ops to make the Administration look good, but actual work meetings in which the private sector was able to shape the outcome of the country's decisions.

These communication efforts stand in contrast to what we believe occurred in the case of Norway, where discussions (if any) seemed to have been held behind closed doors and to the exclusion of the private sector. Although this strategy evidently worked for Norway, this does not seem to be the way forward for Switzerland.

- **Listen to experts and follow an evidence-based approach:** Successful UTL appears to be based in part on an administration's willingness to listen to internal and external experts, and to follow an evidence-based approach. In the case of Canada and NZ, credible analyses by seasoned government economists, think tanks, and trade associations prior to the UTL decision seemed to have been a key factor for the success of the reforms.
- **Don't overpromise:** Some of our interviewees bemoaned the fact that in many countries the public has oftentimes been misled by the promised economic benefits of FTAs. This has resulted in frustration by industry and citizens alike, and exacerbated the already prevalent tendency to highlight the negatives (rather than the positives) of trade liberalization.

While trade is an integral part of many economies, trade policy is not a panacea for domestic economic frictions. Our analysis of economic effects in the three countries suggests that the results of UTL were positive, but limited in scale and scope (as compared to large-scale domestic reforms). Particularly when it comes to employment, the effects of UTL were not clearly identifiable. This means that any government contemplating UTL should engage in reasonable expectation management.

Our research has shown that Canada and NZ, in their communication outreach to domestic stakeholders, have not made the mistake of making overblown promises regarding the expected outcomes of the UTL reforms. If Switzerland opts for UTL, policymakers should heed the advice of not overpromising its economic gains.

C. Is there possible blowback in the international arena?

398. Two issues about possible blowback in the international trade realm seem most pertinent here: does UTL weaken a country's hand in bilateral and multilateral trade negotiations, since doing so reduces a country's policy space?; and how does UTL affect a country's standing in the trade community? We will address these issues in turn.

Conclusion and outlook

399. *First*, few of the trade policymakers with whom we spoke showed concern that UTL may weaken a country's hand in bilateral and multilateral trade negotiations. Such apprehension was only voiced by some people close to NZ's UTL experience, in which the country liberalized agricultural, industrial, and consumer goods at the same time and on an ambitious scale.

Countries concerned about loss of policy spaces may wish to think creatively about offering interesting bargaining chips beyond tariffs – and potentially even beyond trade measures, such as access to natural resources, training/capacity building, teacher or student exchanges, visa exemptions, and other issues that are of value to trading partners.

400. For the two countries that predominantly focused their UTL on industrial goods (Canada, Norway) the overwhelming consensus was that UTL has not made it more difficult to enter into FTA negotiations. According to our interviewees there is a general misconception that trade is synonymous with trade in *goods* when in fact modern-day FTAs give much more prominence to trade in services, trade-related intellectual property rights, investment issues, e-commerce, *de minimis* thresholds, and other so-called “trade-and” topics. The multilateral currency of trade in goods is fading, and any loss in bargaining power from UTL (if any) seems increasingly negligible. Bargaining chips beyond trade in goods are more powerful, according to our interviewees.

401. At any rate, a large subset of our interview partners opined that a successful conclusion of an FTA is more a matter of political resolve by trade policymakers than the remaining policy space after UTL. Also, a country that is negotiating FTAs together with other countries (as is the case of Norway) may be able to dissociate itself from its previous UTL decisions by conducting FTA negotiations as part of a larger trade bloc (EFTA in the case of Norway).

402. Canadian officials we interviewed even felt that by engaging in UTL – rather than in binding tariff liberalization – the country actually retained policy spaces in the multilateral (and bilateral/regional) trade realm. According to one interview partner, Canada's decision not to bind its UTL at the WTO has served the country to retain degrees of freedom, since it is discretionary (rather than binding). UTL also helped foster Canada's pro-FTA stance by winning over domestic stakeholders and making them “hungry” for more trade liberalization.

403. *Second*, regarding a country's reputation in the international trade community, all three countries' decisions to unilaterally liberalize appear to have improved their standing in the

Conclusion and outlook

international community, as exemplified by the praise received by the IMF, the OECD, the WTO, and other international organizations.

404. However, low import tariffs are only one, but by no means the determining, factor that influences a Member's standing and reputation in the international trade arena. Other factors that play a vital role in a country's reputation include the perceived neutrality and non-interest in the subject matter, as well as the caliber of its trade officials. For this reason, small countries like New Zealand, Hong Kong, and Singapore continue to send their most experienced diplomats as WTO ambassadors and place world-class trade experts on the roster of WTO Dispute Settlement Body ("DSB") panelists. These countries have also made successful attempts at attaining chairmanships of pivotal WTO committees, including the General Council, Committee on Agriculture, or the TRIPS Council.

TABLE OF REFERENCES

Aghion <i>et al.</i> (2005)	Aghion, P., Bloom, N., Blundell, R., Griffith, R. and Howitt, P. (2005). "Competition and Innovation: an Inverted-U Relationship". <i>The Quarterly Journal of Economics</i> , 120(2), pp.701-728.
Bagwell and Staiger (2002)	Bagwell, K. and Staiger, R. (2002). <i>The economics of the world trading system</i> . Cambridge, Mass.: The MIT Press.
Baldwin (2010)	Baldwin, R. (2010). "Unilateral Tariff Liberalisation". <i>The International Economy</i> , (14), pp.10-43. Also published as Baldwin, R. (2010). "Unilateral Tariff Liberalisation". <i>NBER Working Papers</i> , 16600. Available at http://www.nber.org/papers/w16600.pdf .
Baldwin and Taglioni (2009)	Baldwin, R. and Taglioni, D. (2009). The great trade collapse and trade imbalances. In: R. Baldwin, ed., <i>The Great Trade Collapse: Causes, Consequences and Prospects</i> . VoxEU.org. Available at: https://www.researchgate.net/profile/Sonia_Araujo3/publication/277045408_%27The_Great_Synchronization_Tracking_the_trade_collapse_with_high-frequency_data/links/556eb81f08aeab777226aaf3/The-Great-Synchronization-Tracking-the-trade-collapse-with-high-frequency-data.pdf .
Baldwin and Yan (2015)	Baldwin, J. and Yan, B. (2015). Trade and Productivity: Insights from Canadian Firm-Level Data. In: S. Tapp, A. Van Assche and R. Wolfe, ed., <i>Volume VI: Redesigning Canadian Trade Policies for New Global Realities</i> . Institute for Research on Public Policy.
Bank of Canada (2016)	Bank of Canada (2016). "A New Balance Point: Global Trade, Productivity and Economic Growth". Transcript of speech by Governor Stephen Poloz, April 26. Available at: http://www.bankofcanada.ca/2016/04/new-balance-point-global-trade-productivity-economic-growth/ .
Bhagwati (2002)	Bhagwati, J. (2002). <i>Free trade today</i> . Princeton (N.J.): Princeton University Press.
Bollard (1991)	Bollard, A. (1990). New Zealand: Radical market-oriented reform. In: P. Hugh and L. Meissner, ed., <i>Pacific Basin Industries in Distress: Structural adjustment and trade policy in the nine industrialized economies</i> . New York: Columbia University Press, p. 176.
Bollard (1994)	Bollard, A. (1994). New Zealand. In: J. Williamson, ed., <i>The Political Economy of Policy Reform</i> . Washington: Peterson Institute for International Economics.
Bollard and Hunt, (2005)	Bollard, A. and Hunt, C. (2005). "Monetary policy and economic performance: The experience of New Zealand". <i>Reserve Bank of New Zealand Bulletin</i> , 68. No.4. Available at: http://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Bulletins/2005/2005dec68-4bollardhunt.pdf .
Brainard and Verdier (1994)	Brainard, L. S. and Verdier, T. (1994). "Lobbying and Adjustment in Declining Industries". <i>European Economic Review</i> 38(3-4), pp. 586-95.

Table of References

Brash (1998)	Brash, D. (1998). “New Zealand’s economic reforms: a model for change”. Transcript of speech, <i>Reserve Bank of New Zealand Bulletin</i> , 61. No.2. Available at: http://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Bulletins/1998/1998jun61-2brash03jun.pdf .
Brende (2016)	Brende, B. (2016). “Norway, a reliable partner for Asia”. <i>Vietnam News</i> . Available at: http://vietnamnews.vn/world/348005/norway-a-reliable-partner-for-asia.html#VAqTyHj0Tt4DumrJ.97 .
Business Council of Canada (2017)	Business Council of Canada (2017). “Statement to the Senate Committee on Foreign Affairs and International Trade Re. CETA”, April 13, 2017. Available at : http://thebusinesscouncil.ca/publications/statement-senate-committee-foreign-affairs-international-trade-re-ceta/ .
Cabral <i>et al.</i> (2006)	Cabral, L., Poulton, C., Wiggins, S. and Zhang, L. (2016). “Reforming Agricultural Policy: Lessons from Four Countries”. <i>Future Agricultures Consortium</i> , July 2006. Available at: http://www.future-agricultures.org/publications/research-and-analysis/915-reforming-agricultural-policy-lessons-from-four-countries/file .
Canada Gazette (2011)	Canada Gazette (2011). “Invitation to submit views on proposed Most-Favoured-Nation tariff elimination on certain products”, Customs Tariff, Department of Finance. Available at: http://gazette.gc.ca/rp-pr/p1/2011/2011-02-05/html/notice-avis-eng.html .
Carney (2008)	Carney, M. (2008). “Capitalizing on the Commodity Boom: the role of monetary policy”. Transcript of speech. Bank of Canada, June 19, 2008. Available at: http://www.bankofcanada.ca/wp-content/uploads/2010/03/sp08-7.pdf .
Carney (2012)	Carney, M. (2012). “Exporting in a post-crisis world”. Transcript of speech. Bank of Canada, April 2, 2012. Available at: http://www.bankofcanada.ca/wp-content/uploads/2012/04/remarks-020412.pdf .
Ciuriak and Xiao (2014)	Ciuriak, D. and Xiao, J. (2014). “Should Canada Unilaterally Adopt Global Free Trade?”. Canadian Council of Chief Executives, Ottawa.
Conference Board of Canada (2007)	The Conference Board of Canada (2007). “Canada’s Changing Role in Global Supply Chains”.
Cullen (2004)	Cullen, M. (2004). “The 1st Term of the 4th Labour Government,” Transcript of speech. Government of New Zealand, April 30, 2004. Available at: https://www.beehive.govt.nz/speech/1st-term-4th-labour-government .
Dalziel (2002)	Dalziel, P. (2002). “New Zealand’s Economic Reforms: an assessment”. <i>Review of Political Economy</i> , 14(1).
Dalziel and Saunders (2014)	Dalziel, P. and Saunders, C. (2014). <i>Wellbeing Economics: Future Directions for New Zealand</i> . Bridget Williams Books.
Datt <i>et al.</i> (2011)	Datt, M., Hoekman, B. and Malouche, M. (2011). “Taking stock of trade protectionism since 2008”. <i>The Economic Premise</i> , The World Bank. Available at: http://siteresources.worldbank.org/INTPREMNET/Resources/EP72.pdf .

Table of References

Douglas (2004)	Douglas, R. (2004). "Roger Douglas: Reflecting on the Fourth Labour Government," <i>New Zealand Herald</i> , April 30, 2004.
Easton (1989)	Easton, B. (1989). <i>The Making of Rogernomics</i> . Auckland, N.Z.: Auckland University Press.
Easton (1994)	Easton, B. (1994). "Economic and Other Ideas Behind the New Zealand Reforms". <i>Oxford Review of Economic Policy</i> , 10(3), pp.78-94.
Easton and Gerritsen (1996)	Easton, B. and Gerritsen, R. (2017). Economic Reform: Parallels and Divergences. In: F. Castles, R. Gerritsen and G. Vowles, ed., <i>The Great Experiment</i> . Auckland, N.Z.: Auckland University Press.
Edwards and DeHaven (2002)	Edwards, C. and DeHaven, T. (2002). <i>Save the Farms — End the Subsidies</i> . CATO Institute. Available at: https://www.cato.org/publications/commentary/save-farms-end-subsidies .
Embassy of Canada (2011)	Embassy of Canada (2011). <i>The Finance Crisis: Lessons learned from Canada and the way forward</i> . Conference Report, Washington, DC.
Epstein (2001)	Epstein, R. (2001). "Employment and Labor Law Reform in New Zealand". <i>Case Western Reserve Journal of International Law</i> , 33(3). Available at: http://scholarlycommons.law.case.edu/cgi/viewcontent.cgi?article=1480&context=jil .
European Commission (2012)	European Commission (2012). "Has the crisis left a lasting mark on global trade?". Quarterly Report on the Euro Area.
Evans and Grimes (1996)	Evans, L. and Grimes, A. (1996). "Economic Reform in New Zealand: 1984-1995: The pursuit of efficiency". <i>Journal of Economic Literature</i> .
Evans and Richardson (1998)	Evans, L. and Richardson, M. (1998). in New Zealand: Unilateralism at Work?. In: J. Bhagwati, ed., <i>Relaxed Reciprocity: Historical and Modern Experience with Unilateral Trade Liberalization</i> . MIT Press.
Ezell and Wu (2017)	Ezell, S. and Wu, J. (2017). "How Joining the Information Technology Agreement Spurs Growth in Developing Nations". Information Technology & Innovation Foundation, May 2017. Available at https://itif.org/publications/2017/05/22/how-joining-information-technology-agreement-spurs-growth-developing-nations .
Evans(1994)	Evans, N. (1994). "Up From Down Under: After a Century of Socialism, Australia and NZ are Cutting Back Government and Freeing Their Economies". <i>National Review</i> , 46 (16), pp. 47-51.
Fagerberg et al. (2009)	Fagerberg, J., Mowery, D. and Verspagen, B. (2009). "Innovation-systems, path-dependency and policy: The co-evolution of science, technology and innovation policy and industrial structure in a small, resource-based economy". <i>Working Paper No. 20080624</i> . University of Oslo, TIK Centre for technology, innovation and culture.
Farsund (2010)	Farsun, Arild (2010). "Norway: Agricultural exceptionalism and the quest for free trade," International Research Institute of Stavanger. Available at: <a 1.pdf"="" href="http://paperroom.ipsa.org/papers/paper_710">http://paperroom.ipsa.org/papers/paper_710"1.pdf .

Table of References

Feenstra <i>et al.</i> (2015)	Feenstra, R., Inklaar, R. and Timmer, M. (2015). The Next Generation of the Penn World Table. <i>American Economic Review</i> , 105(10), pp.3150-3182.
Fernandes (2007)	Fernandes, A. (2007). "Trade policy, trade volumes and plant-level productivity in Colombian manufacturing industries". <i>Journal of International Economics</i> , 71(1), pp.52-71.
Focus Economics	Focus Economics (Various years). "GDP in Canada". Available at: https://www.focus-economics.com/country-indicator/canada/gdp .
Freund (2016)	Freund, C. (2016). "The Global Trade Slowdown and Secular Stagnation". Peterson Institute of International Economics. Available at: https://piie.com/blogs/trade-investment-policy-watch/global-trade-slowdown-and-secular-stagnation .
Garnaut (2002)	Garnaut, R. (2017). Australia: A case study of unilateral trade liberalization. In: J. Bhagwati, ed., <i>Going Alone: The Case for Relaxed Reciprocity in Freeing Trade</i> . Cambridge, USA: MIT Press, pp.139-166.
Goldfarb (2006)	Goldfarb, D. (2006). "Too Many Eggs in One Basket? Evaluating Canada's Need to Diversify Trade", Commentary, C.D. Howe Institute.
Government of Canada (2009)	Government of Canada (2009). <i>Canada's Economic Action Plan: A First Report to Canadians</i> , Department of Finance, March, 2009. Available at: http://www.budget.gc.ca/2009/pdf/budget-planbudgetaire-eng.pdf .
Government of Canada (2010a)	Government of Canada (2010). "Leading the Way on Jobs and Growth", <i>Canada's Economic Action Plan Year 2</i> . March 4, 2010. Available at: http://www.budget.gc.ca/2010/pdf/budget-planbudgetaire-eng.pdf .
Government of Canada (2010b)	Government of Canada (2010). "Canada Poised to Become 'Tariff-Free Zone' for Manufacturers Thanks to Budget 2010", Department of Finance, March 9, 2010. Available at: https://www.fin.gc.ca/n10/10-019-eng.asp .
Government of Canada (2011)	Government of Canada (2011). <i>Red Tape Reduction Commission</i> , New Release, January 13, 2011. Available at: https://www.scribd.com/document/64091417/What-Was-Heard-Red-Tape-Reduction-Commission-report .
Government of Canada (2012)	Government of Canada (2012). <i>Red Tape Reduction Action Plan</i> , Treasury Board of Canada Secretariat. Available at: https://www.canada.ca/content/dam/canada/tbs-sct/migration/hgw-cgfpriorities-priorites/rtrap-parfa/rtrapr-rparfa-eng.pdf .
Government of Canada (2014a)	Government of Canada (2014). "Responsible Resource Development, Conserving Canada's Natural Heritage, and Investing in Infrastructure and Transportation". <i>Budget 2014, Chapter 3.3</i> . Department of Finance. Available at: http://www.budget.gc.ca/2014/docs/plan/ch3-3-eng.html .
Government of Canada (2014b)	Government of Canada (2014). <i>Economic Action Plan 2014</i> . Department of Finance. Available at: http://www.fin.gc.ca/pub/C31/04-eng.asp .
Government of Canada (2015)	Government of Canada (2015). <i>Budget 2015</i> . Department of Finance. Available at: http://www.budget.gc.ca/2015/docs/plan/budget2015-eng.pdf .

Table of References

Government of Canada (2017)	Government of Canada (2017). “Trade and Investment Agreements” Global Affairs Canada. Available at: https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/index.aspx?lang=eng .
Gupta et al (2014)	Gupta, S., Segura-Ubiergo, A., and Flores, E. (2014). “Direct Distribution of Resource Revenues: Worth Considering?”. <i>IMF Staff Paper</i> , June, 2014. Available at: https://www.imf.org/external/pubs/ft/sdn/2014/sdn1405.pdf .
Hasli (2009)	Hasli, S. (2009). <i>Norwegian Foreign Direct Investment: Destination Singapore, Inc.</i> Master Thesis. Department of Political Science, University of Oslo.
Helpman and Krugman (1985)	Helpman, E. and Krugman, P. (1985). <i>Market structure and foreign trade: increasing returns, imperfect competition and the international economy</i> . Cambridge, USA: MIT Press.
Hembry (2011)	Hembry, O. (2011). “In the shadow of Think Big,” <i>New Zealand Herald</i> , January 31, 2011.
Holden (2013)	Holden, S. (2013). “Avoiding the Resource Curse: the case of Norway,” <i>Working Paper</i> . Department of Economics, University of Oslo.
House of Commons (2010)	House of Commons (2010). <i>Report to the Public Accounts Committee</i> , Parliament of Canada. Available at: http://www.ourcommons.ca/DocumentViewer/en/41-1/PACP/report-10/response-8512-411-167 .
Hufbauer and Schott (2009)	Hufbauer, G., and Schott, J. (2009). “Buy American: Bad for Jobs, Worse for Reputation”. <i>Policy Brief 09-2</i> . Peterson Institute for International Economics. Available at: https://piie.com/sites/default/files/publications/pb/pb09-2.pdf .
Imbs (2010)	Imbs, J. (2010). “The First Global Recession in Decades”. <i>IMF Economic Review</i> , 58(2), pp.327-354.
IMF (1996)	IMF (1996). “New Zealand: Recent Economic Developments”. <i>Staff Country Report</i> No. 96/14.
IMF (2004)	IMF. (2004). “Trade Liberalization and Firm Productivity: The Case of India”. <i>IMF Working Papers</i> , WP/04/28.
IMF (2010)	IMF. (2010). “Canada: 2010 Article IV Consultation- Staff Supplement”. December, 2010.
IMF (2016)	IMF (2016). “Reassessing the Productivity Gains from Trade Liberalization”. <i>IMF Staff Paper</i> , March 23, 2016.
Kowalski (2005)	Kowalski, P. (2005). “Impact of Changes in Tariffs on Developing Countries’ Government Revenue”. <i>OECD Trade Policy Papers</i> , No. 18, OECD Publishing, Paris. Available at: http://dx.doi.org/10.1787/210755276421 .
Lloyd (1989)	Lloyd, P. (1989). <i>Textiles, clothing and fibres in Australia and New Zealand</i> . Adelaide: Centre for International Economic Studies.

Table of References

Manufacturing Automation (2015)	Manufacturing Automation (2015). “Canada eliminates all tariffs in machinery, equipment and inputs used in industrial manufacturing” April 20, 2015. Available at: https://www.automationmag.com/industry-news/news/5148-canada-eliminates-all-tariffs-on-machinery-equipment-and-inputs-used-in-industrial-mfg .
McKonnon (2003)	McKonnon, M. (2003). <i>The New Zealand Treasury 1840-2000</i> , Wellington, N.Z.: Auckland University Press.
Melchior (2007)	Melchior, A. (2007). Trade Policy Democracy: The Norwegian Experience. In: M. Halle and R. Wolfe, ed., <i>Process Matters: Sustainable Development and Domestic Trade Transparency</i> . Manitoba: International Institute for Sustainable Development.
Melitz (2003)	Melitz, M. (2003). “The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity”. <i>Econometrica</i> , 71(6), pp.1695-1725.
Ministry of Commerce (1987)	Ministry of Commerce (1987). <i>Tariff Working Party Report to the Minister of Trade and Industry</i> . Wellington, New Zealand.
Miroudot <i>et al.</i> (2013)	Miroudot, S., Rouzet, D., and Spinelli, F. (2013), “Trade Policy Implications of Global Value Chains: Case Studies”, <i>OECD Trade Policy Papers</i> , No. 161, OECD Publishing.
Mobile Offshore Drilling Units Remission Order (2004)	Government of Canada (2004). “Mobile Offshore Drilling Units Remissions Order, 2004,” Number SOR/2004-107, published by the Minister of Justice. Available at: http://laws-lois.justice.gc.ca/eng/regulations/SOR-2004-107/page-1.html ; codified as: http://laws-lois.justice.gc.ca/PDF/SOR-2004-107.pdf .
Nagel (1994)	Nagel, J. (1994). “Market Liberalization in New Zealand: the interaction of economic reform and political institutions in a pluralitarian democracy” University of Pennsylvania. Available at: http://pdf.usaid.gov/pdf_docs/PNABU200.pdf .
Nagel (1998)	Nagel, J. (1998). Social Choice in a Pluralitarian Democracy: The Politics of Market Liberalization in New Zealand. <i>British Journal of Political Science</i> , 28(2), pp.223-267.
New Zealand Business Roundtable (1994)	New Zealand Business Roundtable (1994). <i>New Zealand: The Old and the New</i> . Wellington, N.Z.: New Zealand Business Roundtable.
New Zealand Manufacturers (1987)	New Zealand Manufacturers (1987). “Tariff Protection Case Argued from First Principles”. Submission to the Tariff Working Party, December 7, 1987, Wellington.
Nielsen Company (2015)	Nielsen Company (2015). “Monitoring Retail Prices of Babies’ Clothing and Sporting Goods Post Tariff Elimination,” prepared for the Department of Finance Canada. Available at: https://www.fin.gc.ca/pub/nielsen/retail-prices-prix-details-eng.pdf
Norwegian Ministry of Trade and Industry (2008)	Norwegian Ministry of Trade and Industry (2008). “Norway-China Free Trade Agreement – Joint Feasibility Study”. On file with the authors.

Table of References

OECD (2005a)	OECD (2005). <i>OECD Economic Survey: New Zealand 2005</i> , OECD Publishing.
OECD (2005b)	OECD (2005). “Norway 2005”, Social Policy Division, OECD, Paris.
OECD (2007)	OECD (2007). <i>OECD Economic Surveys: Norway 2007</i> , Volume 2. OECD Publishing.
OECD (2009)	Duell, N., Singh S. and Tergeist, P. (2009). “Activation Policies in Norway”, <i>OECD Social, Employment and Migration Working Papers</i> , No. 78; available at: http://www.keepeek.com/Digital-Asset-Management/oecd/social-issues-migration-health/activation-policies-in-norway_226388712174#.WUP32WiGMdU .
OECD (2010a)	OECD (2010). <i>OECD Economic Surveys: Canada 2010</i> , OECD Publishing.
OECD (2010b)	OECD (2010). <i>Cutting Red Tape: Why is administrative simplification so complicated?</i> OECD, Paris.
OECD (2012)	Newfarmer, R. and Sztajerowska, M. (2017). Trade and Employment in a Fast-Changing World. In: D. Lippoldt, ed., <i>Policy Priorities for International Trade and Jobs</i> . OECD Publishing. Available at https://www.oecd.org/site/tadicite/50286917.pdf .
OECD (2014)	OECD (2014). <i>OECD International Direct Investment Statistics 2014</i> , OECD, Paris.
OECD Data (2017)	OECD data (2017). Import content of exports, various years, Canada. Available at: https://data.oecd.org/trade/import-content-of-exports.htm .
Osbert (2009)	Osbert, L. (2009). “Canada’s Declining Social Safety Net: The Case for Reform”. Canadian Centre for Policy Alternatives, Ottawa (June). Available at: https://www.policyalternatives.ca/sites/default/files/uploads/publications/National_Office_Pubs/2009/Canadas_Declining_Safety_Net.pdf .
Regjeringen (2017)	Regjeringen (Government of Norway). (2017). “Norway’s Free Trade Agreements”. Available at: https://www.regjeringen.no/no/tema/naringsliv/handel/nfd---innsiktsartikler/frihandelsavtaler/norways-free-trade-agreements/id457017/ .
Sayre (2003)	Sayre, L. (2003). “Farming without Subsidies? Some lessons from New Zealand”. Rodale Institute. Available at: http://www.newfarm.org/features/0303/newzealand_subsidies.shtml .
Scobie and Janssen (1993)	Scobie, G. and Janssen, J. (1993). “Liberalizing New Zealand’s Economy: Rehabilitation and Recovery,” <i>Policy</i> , vol.9, Spring 1993. Available at: https://www.cis.org.au/app/uploads/2015/04/images/stories/policy-magazine/1993-spring/1993-9-3-grant-m-scobie-and-john-janssen.pdf .
Sharpe (2003)	Sharpe, A. (2003). “Why are Americans More Productive than Canadians?”. Centre for the Study of Living Standard. Available at: http://www.csls.ca/ipm/6/sharpe-e.pdf .

Table of References

Simoes and Hidalgo (2011).	Simoes, A. and Hidalgo, C. (2011). "The Economic Complexity Observatory: An Analytical Tool for Understanding the Dynamics of Economic Development". Workshops at the Twenty-Fifth AAAI Conference on Artificial Intelligence.
Sims (2013)	Sims, R. (2013). "Australia's experience driving economic growth through competition policy reforms". Transcript of speech. Australian Competition and Consumer Commission, April 23 2013.
Statistics Canada (2017)	Statistics Canada (2017). Labour Force Survey, Unemployment Rate, various years. Available at: http://www5.statcan.gc.ca/cansim/a26?id=2820087
Syntec (1988)	Syntec Economic Services (1988). <i>Industry assistance reform in New Zealand</i> . Report for the Ministry of Agriculture and Fisheries. Wellington: Institute of Economic Research.
The Economist (2005)	The Economist. (2005). "David Lange, Obituary," August 29, 2005. Available at: http://www.economist.com/node/4315184 .
Topalova and Khandelwal (2011)	Topalova, P., and Khandelwal, A. 2011. "Trade Liberalization and Firm Productivity: The Case of India." <i>The Review of Economics and Statistics</i> , 93 (3): 995-1009.
Treasury (1984)	The Treasury of New Zealand (1984). <i>Economic Management: Briefing to the Income Government 1984</i> , Wellington, July. Available at: http://www.treasury.govt.nz/publications/briefings/1984i/ .
Treasury Board of Canada Secretariat (2014)	Treasury Board of Canada Secretariat (2014). "Minister Clement Releases Inaugural Red Tape Reduction Scoreboard". Quotes Archived. Available at: https://www.canada.ca/en/news/archive/2014/01/minister-clement-releases-inaugural-red-tape-reduction-scorecard.html?=&wbdisable=true .
UNCTAD (2013)	UNCTAD (2013). "The impact of trade on employment and poverty reduction". Trade and Development Commission, Geneva, 17–21 June 2013. Available at: http://unctad.org/meetings/en/SessionalDocuments/cid29_en.pdf
USTR (1997)	Office of the United States Trade Representative (1997). <i>National Trade Estimates Report 1997</i> . Washington, DC.
Vitalis (2007)	Vitalis, V. (2007). Agricultural subsidy reform and its implications for sustainable development: the New Zealand experience. <i>Environmental Sciences</i> , 4(1), pp.21-40.
Wilson Center (2010)	Woodrow Wilson International Center for Scholars (2010). "Buy American / Buy Canadian: The New Protectionism?". <i>One Issue two voices</i> , (12 April). Available at: https://www.wilsoncenter.org/sites/default/files/CI_100126_One%20Issue%20121.pdf .
Winkelmann and Winkelmann (1998)	Winkelmann, L. and Winkelmann, R. (1998). "Tariffs, quotas and terms of trade: The case of New Zealand". <i>Journal of International Economics</i> , 46, pp. 313-332.
Wood (1995)	Wood, J. (1995). <i>New Zealand: A Blueprint for Economic Reform</i> . New Zealand: Heritage Foundation.

Table of References

WTO (1996)	World Trade Organization (1996). <i>New Zealand Trade Policy Review Report by the Secretariat</i> , WT/TPR/S/20. Geneva.
WTO (1996a)	World Trade Organization (1996). <i>Norway Trade Policy Review Report by the Secretariat</i> , WT/TPR/S/15. Geneva.
WTO (1996b)	World Trade Organization (1996). <i>Norway Trade Policy Review Report by Government of Norway</i> , WT/TPR/G/15. Geneva.
WTO (2005)	World Trade Organization (2005). "Elimination of Low Rates". Communication from Canada and Norway, TN/MA/W/52, March 11, 2005.
WTO (2006)	World Trade Organization (2006). "World Tariff Profiles 2006". Available at: http://onlinebookshop.wto.org/shop/article_details.asp?Id_Article=728 .
WTO (2010)	World Trade Organization (2010). "Canadian Government Actions to Unilaterally Eliminate Certain Most-Favoured-Nation Applied Tariffs". Communication from Canada, G/MA/W/101, 19 April 2010.
WTO (2011a)	World Trade Organization (2011). <i>World Trade Report 2011; The WTO and preferential trade agreements: From coexistence to coherence</i> . The WTO Secretariat. Available at : https://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report_11_e.pdf .
WTO (2011b)	World Trade Organization (2011). <i>Canada Trade Policy Review Report by Government of Canada</i> , WT/TPR/G/246. Geneva.
WTO (2013)	World Trade Organization (2013). <i>Switzerland and Liechtenstein Trade Policy Review Report by the Secretariat</i> , WT/TPR/S/280. Geneva. Available at: https://www.wto.org/english/tratop_e/tptr_e/tp380_e.htm .
WTO (2017)	World Trade Organization (2017). "Canadian Government action to unilaterally eliminate certain most-favored nation applied tariffs". Communication from Canada, G/MA/W/130, April 21, 2017.

List of Annexes

LIST OF ANNEXES

Submitted separately to this report:

- Appendix 1: “Final trade and tariff tabs for SECO”
- Appendix 2: “User Manual for Tariff liberalization file”).
- Technical Appendix A: “Methods and Empirical Approaches”
- Technical Appendix B: New Zealand
- Technical Appendix C: Canada
- Technical Appendix D: Norway

A. Introduction and roadmap

The objective of this appendix is twofold. *First*, it intends to provide the reader with a theoretical background of the expected economic effects of unilateral tariff liberalization (“UTL”). This will be discussed in Section B. *Second*, in Section C, we provide an introduction to the different methods used to estimate the economic effects of UTL. We do this with respect to three macroeconomic indicators, namely exports, productivity, and employment. Finally, Section D explains when and under which circumstances certain empirical methods are appropriate for the assessment of specific macroeconomic indicators.

B. Description of the three empirical approaches used in this report

There exists a large body of literature that has tried to describe the economic effects of unilateral trade liberalization (*i.e.*, asymmetric change in trade barriers) from the perspective of the liberalizing country. The main channels discussed in the literature are the effect of UTL on: exports; productivity; employment; consumer prices; and the access to a greater variety of imports.

1. The effect of UTL on exports

There exists a common understanding in the literature that a tariff on imports is equivalent to a tax on exports. In his seminal contribution, Lerner (1936) showed that an *ad valorem* import tariff will have the same effect as an export tax. The intuition is that import tariffs distort domestic prices. Inputs that are produced behind a tariff wall become more expensive for companies that are producing goods destined for export. Hence, from the perspective of the liberalizing country, UTL should not just lead to increased flow of imports at lower prices, but also trigger higher exports as well, owing to availability of cheaper inputs, making exports more competitive in the world market.

2. The effect of UTL on productivity

There are benefits from improved access to other countries’ markets. However, countries benefit most from the liberalization of their own market. We prefer to measure productivity as *labor* productivity (as GDP per worker), although we use *hourly* productivity for the purpose of robustness checks.¹ One of the drivers of productivity is competition in the domestic market in which unproductive firms wither away and their market share is replaced by more efficient firms. Hence, import competition boosts productivity and living standards by reallocating scarce resources (including financial, human resource, and physical resources) to the most efficient industries and companies in the economy. The economic literature identifies several channels through which trade liberalization (and therewith UTL) can boost

¹ We derive labor productivity levels from GDP and total employment data. We prefer labor productivity to hourly productivity, since the necessary data for GDP and employment is available on a quarterly (rather than a yearly) basis, which greatly increases the number of observations.

Technical Appendix A

productivity and, hence, output. *First*, lower trade barriers can strengthen competition in the liberalized sector(s), putting pressure on domestic producers to: lower price margins; exploit economies of scale (Helpman and Krugman, 1985); improve efficiency; absorb foreign technology; or innovate (Aghion *et al.*, 2005). *Second*, since productivity gains from liberalization accrue disproportionately to more efficient and more productive firms, and since exporters are among the most efficient and most productive firms in any economy, a policy that enables firms to easily reach global markets will lead to further gains (Melitz, 2003). *Third*, trade liberalization can boost productivity by decreasing the price, improving the quality, and increasing the variety of intermediate inputs available to domestic producers, including exporters (Grossman and Helpman, 1991).

3. The effect of UTL on (un)employment

The third macroeconomic metric we are interested in is employment. While the linkages between trade liberalization (including UTL), and exports and productivity are well established in economic orthodoxy, the same cannot be said about trade liberalization and employment. The literature recognizes that trade reforms can have disruptive effects on import-competing industries that previously benefited from high tariff protection, leading to higher unemployment. However, this effect is typically seen as transitory and therefore short-lived.² In the long run, higher productivity and higher exports resulting from tariff liberalization can improve employment.³

Our hypothesis is thus that disruptive trade liberalization may initially and temporarily have a negative impact on unemployment, but whenever gains from trade liberalization are large, the overall benefit to employment should be positive in the medium to long term. However, given the relatively minor effect that trade has in most countries, these gains can be expected to be minor overall. Such effects may be overshadowed by larger economic events (such as business cycles or economic crises), and by domestic policies that are specifically geared to influence the labor market. Labor market economists typically hold the view that labor market outcomes are largely determined by domestic policies such as unemployment benefits, the structure of collective bargaining, employment protection legislation, minimum wage regulations and education.⁴ Not surprisingly, empirical studies suggest that the degree of trade openness is not an important determinant of unemployment.⁵

² See note by UNCTAD Secretariat on “The impact of trade on employment and poverty reduction”; available at: http://unctad.org/meetings/en/SessionalDocuments/cid29_en.pdf.

³ In the classical theory of trade, in which a *capital*-abundant country liberalizes trade, the *capital* owners gain at the expense of the less abundant factor: labor. The wage differential between developed and developing countries supports the relocation of some labor and low-skill intensive activities from developed to developing countries. Initially, labor intensive industries will restructure and shed jobs, while capital and labor flow from previous protected industries to industries that stand to benefit from trade liberalization. Over the long term, trade reforms are poised to lead to structural improvements, since they lead to more competition and better resource allocation.

⁴ See OECD (2006).

⁵ See note by UNCTAD Secretariat on “The impact of trade on employment and poverty reduction”; available at: http://unctad.org/meetings/en/SessionalDocuments/cid29_en.pdf.

4. Lower consumer prices of imports and increased variety

Trade liberalization not only benefits producers who depend on imported inputs for production, but also consumers. Lower tariffs can help to lower prices for essential consumer goods and broaden the range and quality of goods that are available on the market. A study by Langenfeld and Nieberding (2005) estimates that the benefits to consumers as a result of US trade expansion between 1992 and 2002 to be around 15 to 20% of the total increase in annual real disposable income.

For the purpose of this study, we limit our analysis to the three macroeconomic indicators exports, productivity and employment. One of the reasons why we selected these variables is their importance identified in the literature with respect to trade liberalization (as described above). Next, in and of themselves, these three variables also represent a well-rounded image of a functioning economy. For a small open economy like Switzerland, exports have a big influence on the strength and welfare of its economy.⁶ Productivity, meanwhile, is an excellent metric for judging the impact on the overall economy, and thus a vital area of study. It is also a major determinant of long-run welfare of any market economy. Employment, finally, is an important structural metric in the public policy debate. A final reason for having selected these three metrics is data availability from consistent publicly available data sources and for sufficiently long time-series.

C. Description of the three empirical approaches used in this report

For the remainder of this Appendix, we provide an introduction to the methods and empirical approaches we adopt for estimating the economic effects of UTL on the three selected macroeconomic metrics.

There exist a myriad of approaches to measure policy effects that have been used in the empirical literature. Given the nature of the policy context and the available data at issue, one can typically find the following approaches:

- a) Descriptive statistics;
- b) “Before/After” approaches;
- c) Difference-in-difference (“DID”) approaches;
- d) Computable general equilibrium (“CGE”) approaches⁷

⁶ Trade constitutes around 60% of Switzerland’s GDP.

⁷ CGE models enable economists to examine in a systematic and tractable manner the medium- to long-term effects of policy reforms on an economy-wide and a sectoral basis, with an emphasis on the *systemic* (direct and indirect) effects on the initiating country. CGE models are thereby able to consider the fact that there are many country markets, each with many different sectors, and that these markets interact in complex ways. For instance, demand for one good (say, steel) depends on the prices of other goods (say, energy, coke, iron, etc.) and on factor income. Income, in return, depends on wages, profits and rents, which themselves depend on technology, factor supplies and production, and so on. By modeling the entirety of these effects within and between sectors, CGE models are uniquely able to quantify all those effects over the medium to long-term. One of the most popular and most widely-used CGE models in trade analysis is the *Global Trade Analysis Project* (“GTAP”). Since its inception in 1993, GTAP has become the workhorse model in domestic and international

Technical Appendix A

Given the complexity of CGE models, it would have gone beyond the scope of this project to apply general-equilibrium approaches to the analysis of the UTL experience in the three countries at issue. Hence, our inquiry into the effects of UTL on the three identified metrics relies on the first three of the four approaches mentioned above (that is, descriptive statistics; Before/After models; and DID approaches). We will explain each of these methods in turn.

1. Descriptive statics

The first step of any quantitative analysis typically involves a “macroscopic” approach whereby the data is eyeballed for what one might call an “ocular scrutiny” test. Applying descriptive statistics does not require any “microscopic” modeling approach. Rather, the researcher secures the best available time-series data, extracts specific trends in these data, and correlates the structural changes with the underlying policy implementation.

2. Before/After analysis

The family of Before/After approaches quantitatively examines temporal variation in the variable under study (same country at different times). This involves identifying the event window and studying conspicuous changes in trends in the variable of interest prior to and after the event window. Within the array of approaches that can be used to perform a before/after analysis, we use what is known in the literature as an “event study”.

Event studies have been used to analyze events as varied as the impact of merger announcements, tax increases, and social policy changes.⁸ An event study consists of (1) estimating an accurate model of economic performance in the pre-UTL period; (2) constructing the “counterfactual” by forecasting the economic performance that would have prevailed in the *absence* of the UTL experience using the estimated model’s parameters in the post-implementation period; and (3) determining whether the difference between the *observed* (actual) economic performance and the *estimated* (counterfactual) economic performance is statistically different from zero.

The comparison of the “actual” with the forecasted “counterfactual” when estimating the impact of an event (here: UTL policy reform) on the economic outcomes of interest requires the deployment of time-series techniques. These techniques enable the researcher to predict the outcome variables of interest in the period following the UTL and use them as counterfactuals, *i.e.*, situations *without* the policy reform at issue. The difference between the actual and predicted values defines the magnitude of the policy change.

economic analysis. Over the past two decades, GTAP has proven to be a useful tool for governments and policymakers around the world for estimating economic and trade impacts of policy reforms. While CGE models have various benefits, they also have some significant disadvantages. CGE models such as GTAP are complex which exacerbates straightforward interpretation of results and any intuitive links between model inputs, policy shocks, and model outputs. Next, CGE models are at a high level of aggregation, which makes it difficult to break out results for particular sectors of interest or to single out effects on specific affected stakeholder groups.

⁸ See Adda *et al.* (2012).

Technical Appendix A

The problem with an event study is isolating different policy reforms and general economic dynamics that are going on in the background at the same time as the event. If there is more than one reform which could have impacted our variable of interest in the post-policy (analysis) period, it may be difficult, if not impossible, to clinically attribute the difference in outcomes to one specific policy. In the presence of such non-attribution factors, the researcher is well advised to look at the difference between the actual and counterfactual outcomes within those specific time periods that can be uniquely assigned to the policy under study.

An event study begins with splitting the observed data into three periods: the estimation, the event, and the post-event windows (also called period of analysis). Assume that we have 16 years of quarterly data for the outcome variable of interest (call it R_t), such that $t \in [0,64]$. Furthermore, suppose that the event occurs at $t = 40$ and its implementation is staggered over four quarters $t \in [40,44]$. The estimation window then contains all of the data before the event (*i.e.*, $t \in [0,39]$). Based on the data contained in the estimation window, the best model is selected.⁹

$$R_t = \alpha + \beta X_t + \varepsilon_t, \quad (1)$$

where X_t is some vector of independent variables or lagged dependent variables over time that explain R_t . α is as constant, while β is the coefficient relating to different explanatory variables. As usual, ε_t describes an error term.

Equation (1), is formulated very generally here. The actual model specification and the respective explanatory variables are determined on a case-by-case basis; they depend on the variable under study and on data availability (more on how to select the best model in the next two subsections).

Since we are dealing with macroeconomic time series, particular attention has to be paid to the issue of whether the underlying data is *stationary* or not. Non-stationarity of time series data is a severe problem, since an event study involves using time series to produce forecasts, which requires that the data to be stationary.¹⁰ To avoid so-called “spurious regression” results, we convert our data from levels into growth rates by comparing a given year’s quarter with the same quarter of the previous year.¹¹ Hence, all of our analysis is depicted in growth rates of variables we study.

After having selected the optimal model specification, we next produce predictions, or forecasts, for the post-event period (the so-called “period of analysis”) based on the model. These predictions serve as counterfactual outcomes, *i.e.*, how the world would have looked in

⁹ See Lerner (1936).

¹⁰ See Hamilton (1994).

¹¹ This approach has certain advantages over using quarter-on-quarter growth rates: *First*, the approach is less sensitive to seasonal factors. *Second*, cyclical movements are more visible. *Third*, our time-series data becomes stationary.

Technical Appendix A

the absence of the policy reform. Hence, Equation (1) is used to predict R_t for the outcome variable covering the period $t \in [44, 64]$.¹² The predicted values over time will be termed \widehat{R}_t . \widehat{R}_t will serve as the counterfactual and is compared against the actual realization of R_t . Specifically, the estimated policy effect of the event for $t \in [44, 64]$ is defined as:

$$\delta_t = R_t - \widehat{R}_t \quad . \quad (2)$$

The final step consists of determining whether there exists an effect that can be determined as statistically abnormal. A common approach from the literature is examining the Cumulative Average Residual (“CAR”).¹³ In our example, the CAR will be calculated as follows:

$$CAR(t_{44}, t_{64}) = \left[\sum_{44}^{64} \delta_t \right] / (64 - 44 + 1) \quad . \quad (3)$$

If the null hypothesis of no effect of the event is true, CAR should just be a noisy zero. We test this using a t-test by simply regressing the residuals on a constant:

$$\delta_t = \alpha + \varepsilon_t \quad , \quad (4)$$

where one would expect $\hat{\alpha} = 0$ under the null hypothesis (*i.e.*; no policy effect, in which case α is not statistically different from zero) and ε_t a noisy process that explains all the variations in δ_t .

The researcher may be faced with the problem of multiple policy changes occurring at or around the same time as the policy shock at issue, and potentially having an impact on variable under study. Whenever multiple policy interventions occur at or around the same time as the policy of interest, it is difficult to unambiguously assign effect sizes to specific policies taken at or around the same time. When this happens, the researcher has limited options: A feasible option is to rely on inferences drawn based on those specific time periods that can be uniquely assigned to the policy under study. In that case, the researcher examines the CAR for that sub-period which can be uniquely assigned to the policy change under consideration.¹⁴ Another option is to adduce economic theory to parse the (timing of) effects generated by different policy interventions. In our three case studies, we resort to both techniques.

¹² Predictions are based on the selected model and the actual realizations of variables in vector X in the period following the event window. In essence, we only produce counterfactuals of R_t using the actual values of independent variables.

¹³ This is the mean of the cumulative error term. See Kothari and Warner (2006) for more details.

¹⁴ For example, in case of New Zealand, a series of policy changes were going on during the first UTL wave but not during the second wave of UTL. In such circumstances, more weight should be assigned to CAR during the second wave, as it can be assumed that it reflects UTL as the underlying policy change more cleanly.

Technical Appendix A

a. *The optimal model for forecasting exports*

As mentioned, the most important task in any event study consists of identifying the optimal model for forecasting the economic variable of interest (the structure of which was broadly introduced in Equation (1)). As mentioned, the actual specification of each model will be different depending on the variable of interest and the available data. In this subsection, we explain our approach for identifying the correct model for estimating *export* growth.¹⁵

A well-calibrated model is characterized by its ability to explain accurately variations in the *actual* data while ensuring that the coefficient estimates have the expected sign and thus make economic sense.

There exists a long-standing literature on how to model and to forecast exports for small, open economies.¹⁶ Typically, export volumes are seen as a function of foreign real income (as a measure of foreign demand) and a country's price competitiveness. Our Equation (1), as it pertains to exports, is determined based on using data *pre-event window* only. A key assumption of an event study is that the structural relationship between *export volumes*, *real foreign income*, and *price competitiveness* would not have changed in the absence of the policy change.

As a measure of price competitiveness, we use the real effective exchange rate ($reer_t$). The "real" aspect of $reer_t$ accounts for the purchasing power of different currencies, essentially bringing the exchange rate at parity in terms of each currency's purchasing power. All the bilateral exchange rates of the home country are then merged into one vector by weighing different exchange rates with a foreign country's share in home exports (this is the "effective" part of $reer_t$). We thus have one metric that can account for the price competitiveness of home country's exports in the world market.

As a metric for real foreign income, we create our own demand index for each country.¹⁷ Since the home country has many export partners, we derive a weighted average of trade partners' GDP, termed GDP*, whereby weights are given by the share of the home country exports to each of its partners. This acts as a proxy for the demand of home country's exports in the world market.

We exclusively rely on *autoregressive distributed lag* ("ARDL") models to forecast counterfactual times series for exports. ARDL models are standard least squares regressions that include lags of both the dependent variable and explanatory variables as regressors.^{18,19}

¹⁵ The approach for identifying the optimal model for forecasting *employment* will be discussed in the next subsection.

¹⁶ See Senhadji and Montenegro (1998).

¹⁷ The actual demand indices for the three countries are shown in the respective technical appendices. See **Technical Appendices B, C, and D**.

¹⁸ When the model includes a moving average component, the correct term technically is "ARMAX", and not "ARDL", but we ignore this technical subtlety here.

¹⁹ See Greene (2008).

Technical Appendix A

Our ARDL model for the event study analyzing the impact of UTL on exports is based on a methodology published by the International Monetary Fund (Senhadji and Montenegro, 1998). This method consists of bringing the export demand equation into a dynamic form. In formulaic terms, our model structure is as follows:

$$PCY(x_t) = \gamma_0 + \gamma_1 PCY(x_{t-1}) + \gamma_2 PCY(reer_t) + \gamma_3 PCY(GDP_t^*) + \gamma_4 MA(i) + \varepsilon_t \quad (5)$$

Equation (5) relates to Equation (1) in our framework discussed above.²⁰ We use growth rates, expressed as the suffix *PCY* representing year-on-year growth rates over the same quarter last year, as it helps us circumvent the problem of non-stationarity and seasonality in our data.

Equation (5) relies on the fact that country's export growth (x_t) depends upon last period's export growth (x_{t-1}), its *real exchange rate* ($reer_t$), as well as the demand for home country's exports in foreign markets, measured by the demand index (GDP_t^*). The model includes a moving average ("MA") component if needed; i describes the lag of the MA component. The actual specification of each country export model depends on the data, which is different for each country.²¹

After having settled on the most appropriate model specification, we simulate Equation (5) to forecast our counterfactual outcome, *export volumes* (\widehat{R}_t) in our case.²² We thereby use actual data for *real foreign income* (GDP_t^*) and *real exchange rate* ($reer_t$). As described in Equation (2), the difference between the simulated export volume time series (\widehat{R}_t) and the actual export volumes (R_t) is defined as policy effect (δ_t).

The final step then consists of determining whether the difference between the counterfactual/predicted export performance (\widehat{R}_t) is statistically different from the actual and observed outcome (R_t) by using a t-test by simply regressing the policy effect (δ_t) on a constant (Equation (4)).

b. *The optimal model for forecasting employment*

As discussed in the subsection on exports, the first step in identifying a model for employment is to identify Equation (1). We again use an ARDL approach to specify our model.

The next step is to determine the variables to be included in the ARDL model. There is a close relationship between employment and active population, which is the subgroup of the population that is 15-64 years old. Over each business cycle, we expect the ratio of active population and employment to remain constant. However, policy changes, such as labor and

²⁰ Recall that Equation (1) was just a general statement of the model structure; the actual specifications and the explanatory variables are determined based on the data and the variable under study.

²¹ For model specifications, we refer to the respective country specific technical appendices. See **Technical Appendices B, C, and D**.

²² All the counterfactuals produced in an event study are dynamic predictions starting one year before the event window.

Technical Appendix A

structural reforms (like UTL) may change this ratio. Typically, this happens when reforms lead to people finding jobs faster and increasing participation rate. If we fail to find such a change after a policy reform, we can conclude that it did not impact employment levels in the economy.

Our model for employment thus includes the active population in the country (emp_t) as the independent variable. We prefer to *active population* (the number of 15-64 year olds) over *labor force* (the sum of employed and unemployed persons in the country) as the dependent variable. Although labor force tracks employment very well, using labor force for employment modelling has its issues. It is by no means exogenous from employment dynamics. In a business cycle, labor force and employment tend to move together and are influenced by the same factors. As employment prospects increase, people tend to come back to labor force and they tend to leave the labor market when the conditions are bad. This may result in *endogeneity*, and thus negatively bias our results.²³ This is not the case with active population, which tends to be more stable, at least in the short run.²⁴

The fact that employment and active population are cointegrated also enables us to work in levels, rather than growth rates.^{25,26} Our ARDL model structure for employment has the following form:

$$emp_t = \gamma_0 + \gamma_1 popn + \gamma_2 emp_{t-1} + \gamma_3 MA(i) + \varepsilon_t \quad (6)$$

The expression *popn* thereby is the population. The term emp_{t-1} represents the autoregressive component, while the term $MA(i)$ represents any possible moving average components in the data. Again, the actual specification of each model depends on the data, which is country-specific.

For each country study, we follow the same procedure. Once we have estimated the model, we use the model to forecast employment changes in the post-UTL phase. We then compare the predicted values of employment level by the actual value and calculate the CAR.²⁷ In the absence of any policy effect, we would expect the CAR to be zero since our period of analysis is 16 quarters, thus covering a usual business cycle.²⁸

²³ When policies improve labor market conditions, labor force increases as well. If there is a positive impact on employment, labor force increases as well. A model based on labor force, however, already includes the positive feedback through the impact employment has on labor force. This is the reason why we have a downward bias in the policy result (effectively because the model already incorporates part of the positive impact on employment).

²⁴ However, as discussed in the **Technical Appendices B, C, and D**, we apply labor force the purpose of the robustness checks.

²⁵ Cointegration occurs when the trend in one variable can be expressed as a linear combination of trends in other variables. This obviates the need to check for stationarity in variables. See Hamilton (1994), Chapter 19.

²⁶ For simplicity, the graphical representation of our results in the main body of the text is still depicted in terms of growth rates.

²⁷ Just as a reminder, we perform the analysis by converting levels into growth rates to maintain consistency.

²⁸ It is zero, because one would expect the upturn and downturn in a business cycle to cancel out.

3. Difference-in-Difference (DID)

The basic idea behind a DID analysis is to use a comparative market as a reliable predictor of what would have occurred in the absence of a policy change. Since the seminal work by Ashenfelter and Card (1985), the number of studies applying some sort of DID-related method has exploded and ranks today among the most preferred methods to evaluate policy outcomes.

A DID analysis compares changes in the outcome variable (*e.g.*, export) affected by the policy variable (here: UTL) in the country of interest (the “treatment” group) to changes in the same outcome variable unaffected by the policy change in another country (the “control group”). In the simplest case, the difference in these changes provides a causal estimate of the impact of the treatment on the outcome of interest and is known in the literature as **treatment effect**. Randomized control trials prevalent in development economics oftentimes follow this approach.

The simplest structure is one in which two groups are observed during two periods. The groups are ideally identical in all aspects but one: the first group is exposed to the policy change (“treatment effect”) and the second is not. In the initial period, group 1, as well as group 2, are subject to the same policy. In period 2, only group 1 (“treatment group”) is exposed to a policy change (here: UTL), while group 2 (“control group”) continues to evolve under the old policy. The policy effect is then measured as the observed difference between group 1 and group 2 in period 2 with respect to the outcome variable.

The policy effect can be estimated econometrically: Suppose the outcome variable of interest is denoted as Y_i . The policy effect then can be estimated by the following equation.

$$Y_i = \alpha + \beta T_i + \gamma t_i + \delta(T_i * t_i) + \varepsilon_i \quad , (6)$$

where the T_i is a dummy variable $\in [0,1]$, taking the value 0 or 1 (0 for the control group and 1 for the treatment group), and t_i is a dummy for the time period after the implementation of UTL. The constant term is denoted as α ; β controls for permanent differences between treatment and control group unrelated to the policy change; γ defines a time trend that is common to both groups; δ is the true treatment effect; ε_i , as usual, is an error term.²⁹ The magnitude of the policy change can be determined by the coefficient on the interaction term (δ).

²⁹ For more information, please see the NBER lecture notes on the topic available at http://www.nber.org/WNE/lect_10_diffindiffs.pdf.

Technical Appendix A

D. Suitability of the three different quantitative approaches

As detailed in the main body of the text of this report, as well as in **Technical Appendices B-D**, we do not use all three methods – descriptive statistics, Before/After, and DID – for all of the macroeconomic variables of interest – exports, productivity, and employment – at the same time. We now briefly describe the cases under which the various method are suitable.

The credibility of Before/After approach is premised on a forecast of what the world would have looked in the absence of the policy change at issue (here: UTL). The Before/After approach is particularly well suited to studying the impact of policy changes on exports, since there exists a longstanding literature on how to estimate export demand equations and identify structural changes in the time series.³⁰

In contrast, forecasting the macroeconomic indicator productivity is more difficult, as the economic mechanisms at work between policy shocks, such as innovation and R&D on the one hand, and productivity gains on the other hand, are generally not well understood, and are likely to be very complex and dynamic. Fortunately, productivity dynamics have been shown to be fairly similar across comparable countries over time.³¹ This makes the DID approach the obvious choice when it comes to examining the economic effects of UTL on productivity.

Finally, labor market dynamics can vary quite a bit from one country to another depending on the institutional settings in each country. While countries with a liberal market (*e.g.*, United States) experience bigger swings in the unemployment rate, countries with heavily regulated labor markets (*e.g.*, France) tend to have more stable, but higher rates of unemployment. In every country, the labor market evolves around a long-run trend which is country-specific. Policy changes may affect the long-run trend which makes the Before/after analysis the ideal methodical approach. We thus we rely on a Before/After approach to investigate the impact of UTL on labor markets.

³⁰ See Senhadji and Montenegro (1998).

³¹ See Islam (2003).

Technical Appendix A

References

- Adda, Jérôme, Samuel Berlinski, and Stephen Machin (2012), “Market Regulation and firm performance: The Case of Smoking Bans in the United Kingdom,” *Journal of Law and Economics* 55.2 (2012):365-391.
- Aghion, Philippe, Nick Bloom, Richard Blundell, Rachel Griffith and Peter Howitt (2005) “Competition and innovation: An inverted-U relationship,” *Quarterly Journal of Economics*, Vol. 120, No. 2, pp. 701-728.
- Ashenfelter, Orley and David Card (1985), “Using the Longitudinal Structure of Earnings to Estimate the Effect of Training Programs,” *The Review of Economics and Statistics*, Vol. 67, No. 4, pp. 648-660.
- Grossman, Gene and Elhanan Helpman (1991), “Trade, Knowledge Spillovers, and Growth” *European Economic Review*, Vol. 35, pp. 517-526.
- Hamilton, James, ed. (1994), *Time Series Analysis*, Princeton, NY: Princeton University Press.
- Helpman, Elhanan and Paul Krugman (1985), *Market Structure and Foreign Trade Increasing Returns, Imperfect Competition, and the International Economy*, MIT press.
- Islam, Nazrul (2003), “Productivity dynamics in a large sample of countries: A Panel Study”, *The review of income and wealth*, vol. 49, issue 2, pp 247-272.
- Kothari, S.P., and Jerold B. Warner (2006), “The Econometrics of Event Studies. B. Aspen Gecko, ed., *Handbook in Empirical Corporate Finance*.”
- Langenfeld, James and James Nieberding (2005), “The Benefits of Free Trade to U.S. Consumers – Quantitative Confirmation of Theoretical Expectation,” *Business Economics*, July 2005, pp. 41-51.
- Lerner, Abba (1936), “The Symmetry Between Import and Export Taxes,” *Economica*, Vol. 3(11).
- Melitz, Marc (2003), “The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity,” *Econometrica*, Vol. 71, No. 6. (Nov., 2003), pp. 1695-1725.
- OECD (2006), “The Determinant of Unemployment across OECD Countries: Reassessing the Role of Policies and Institutions,” *OECD Economic Studies* No. 42, 2006/1.
- Senhadji, Abdelhak and Claudio Montenegro (1998), “Time Series Analysis of Export Demand Equations: A Cross-Country Analysis,” *IMF Working Paper*, WP/98/149.

TECHNICAL APPENDIX B (NEW ZEALAND)

A. Introduction and roadmap

While the main body of the New Zealand (“NZ”) case study provides the results of our empirical exercise of measuring the impact of UTL on the three macroeconomic variables of choice (exports, productivity and employment), it does not discuss the specifications of the models used, their validity, or the robustness of their results. This appendix will deal with these issues.

In the following, we discuss our empirical work for each of the macroeconomic variables of interest: Section B deals with the Before/After approach (event study) that we apply to exports. Section C explains our DID approach with which we examine the effect of UTL on labor productivity. Section D, finally explains our event study for assessing the effect of UTL on employment. Each of the three sections starts by describing the data sources (subsections B.1, C.1, and D.1), and then moves on to the specifications of our selected model (subsections B.2, C.2, D.2). Finally, where applicable, we close with an analysis of how robust our model findings are by applying empirical robustness checks and/or model variations for estimating the impact of UTL (subsections B.3 and C.3).

B. Event study analysis on exports

1. Data

Our event analysis studying the effect of UTL on NZ’s export performance requires: (1) time-series data for NZ’s exports of goods, (2) a measure for demand, and (3) a measure for NZ’s external price competitiveness. Data for NZ’s exports of goods are available on *Statistics New Zealand’s* website. As a proxy for demand, we compile weighted composite of GDP of NZ’s main export partners (termed “Export Demand Index for New Zealand”). As a proxy for price competitiveness, we use the Consumer Price Index (“CPI”) based real effective exchange rate for NZ. We explain in turn.

Technical Appendix B (New Zealand)

1) NZ goods exports

The outcome variable of interest is the performance of NZ's exports. Unfortunately, seasonally adjusted quarterly real export data for NZ going back to the 1970s were not readily available. However, *Statistics New Zealand* provides monthly time-series data for nominal export (not seasonally adjusted) and an export price index covering the time period we needed.¹ Combining the two, we obtained real values for exports by adjusting the nominal times series using the export price index. We then constructed seasonally adjusted data using the *seasonal package* in the statistical software "R".

2) Export Demand Index for NZ

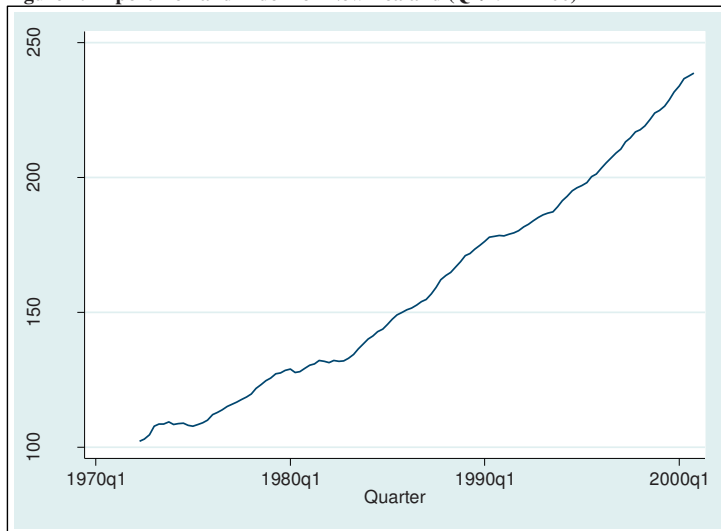
The Export Demand Index is calculated using a trade-weighted measure of NZ's main trading partners' GDP.² Each trading partner's GDP is weighted by the share of that country in NZ's exports (*see* Figure 1). NZ's demand index comprises of the top 5 export destinations for NZ's exports (the United States, the United Kingdom, Japan, Australia and China), which together accounted for approximately 55% to 70% of NZ's exports in the period between 1970 and 2000.

¹ See <http://www.stats.govt.nz/>.

² Data for GDP of partner countries was taken from OECD database (<https://data.oecd.org/gdp/gross-domestic-product-gdp.htm>). Data for bilateral trade was taken from New Zealand statistical yearbooks for 1970s and WITS database (<http://wits.worldbank.org/>).

Technical Appendix B (New Zealand)

Figure 1: Export Demand Index for New Zealand (Q1/1971=100)



Source: Authors, based on OECD and WITS data.

As Figure 1 shows the demand index increased more or less consistently over the whole time period of analysis. Looking at the data with which the figure was generated we see that between 1975 and 1987 (*i.e.*, prior to NZ's UTL), the demand index grew on average 3.4% per year. After NZ's first wave of UTL (1988), year-on-year growth was almost identical at 3.3% between 1988 and 2000.

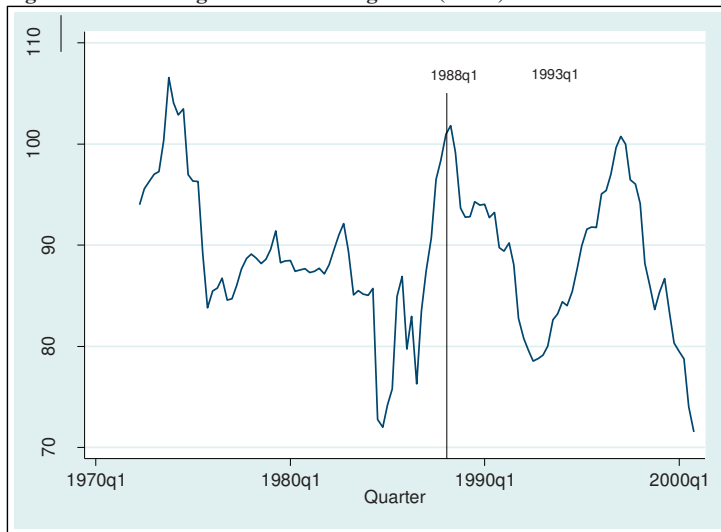
3) NZ dollar Real Effective Exchange Rate Index

As a proxy for price competitiveness, we use JP Morgan's index for real effective exchange rate of the NZ dollar ("NZ\$").^{3,4} Figure 2 depicts the real effective exchange rate of the NZ\$ over time. The two black vertical lines indicate the beginning of the two UTL waves in NZ in 1988 and 1993.

³ More on the composition of real effective exchange rate can be found in **Technical Appendix A**.

⁴ Sourced from JP Morgan via *Data Stream*, a data subscription service by Thomson Reuters.

Figure 2: Trade weighted real exchange rate (index) for New Zealand



Source: JP Morgan.

The data used to construe Figure 2 indicates that while NZ's real exchange rate depreciated significantly by 19.9% during the first wave of UTL from 1988 to 1992, the opposite holds true for the second wave of UTL. Between 1993 and 1996, the exchange rate appreciated by 26.5%.

2. ARDL Model for exports

The literature has shown that there exists a strong relationship between a country's export growth on the one hand and GDP growth in its main export markets on the other hand.⁵ This relationship tends to be rather stable. The demand for a country's exports depends also on its price competitiveness.

The intuition behind our event analysis is that *without* UTL, the relationship between NZ's exports and its real exchange rate on the one hand, and its foreign demand on the other hand, would have continued to hold. Using actual data for NZ's real exchange rate and GDP growth in NZ's main trading partners allows us to construct a counterfactual outcome for

⁵ See IMF (1998).

Technical Appendix B (New Zealand)

NZ's export activity. We then compare the counterfactual outcome with the actual and attribute the difference to UTL.

For our model selection, we use quarterly data between Q1/1972 and Q4/1987 (just before the first wave of UTL) to determine the relationship between exports, real exchange rate, and foreign demand. We then retain the selected model to forecast/simulate counterfactual outcomes for NZ's exports during the two waves of UTL. Next, we explore the extent to which the forecasted export growth data departs from the actual one. If there are observed discrepancies, we further explore the characterization of those departures.

As stated in **Technical Appendix A**, a key issue in the analysis is the model selection process. Since NZ's UTL involved two consecutive waves of UTL (1988-1992 and 1993-1996), for the purpose of this analysis, we use the same model to analyze the impact of UTL on exports during the first and the second wave of NZ's UTL. We thereby select our model based on data before the first UTL wave.⁶ To be as objective as possible, our time-series model of choice is selected by using the *auto.arima()* function in R's forecast package. The data are year-on-year growth rates ("PCY") of the respective quarterly time series (exports, export demand and the effective exchange rate). Regression coefficients can therefore be read as elasticities. Table 1 reports the results.

Table 1: Selected ARDL model

	AR1 (1)	MA4 (2)	Export demand growth (3)	Exchange rate growth (4)
Coefficient	0.59***	-0.62***	1.32***	-0.35**
Standard Errors	0.12	0.14	0.26	0.16

Source: Authors. *** indicates significance at 1% level. ** indicates significance at 5% level.

The ARDL model reports that exports are sensitive to external demand factors. All results are statistically significant at least at the 5% level. An improvement of external demand (as measured by the demand index) by 1% leads to an increase of 1.3% in goods exports (column (3)). An appreciation of the NZ\$ of 1% has a negative impact on NZ's goods exports to the order of -0.35% (column (4)). The export growth is highly dependent on the value attained in the previous quarter, as can be seen by the coefficient of AR1 (column (1)), which is the autoregressive component of the model and captures the impact of the value of the last period

⁶ In a robustness check in subsection 3, below, we perform an analysis uniquely on the second wave of UTL.

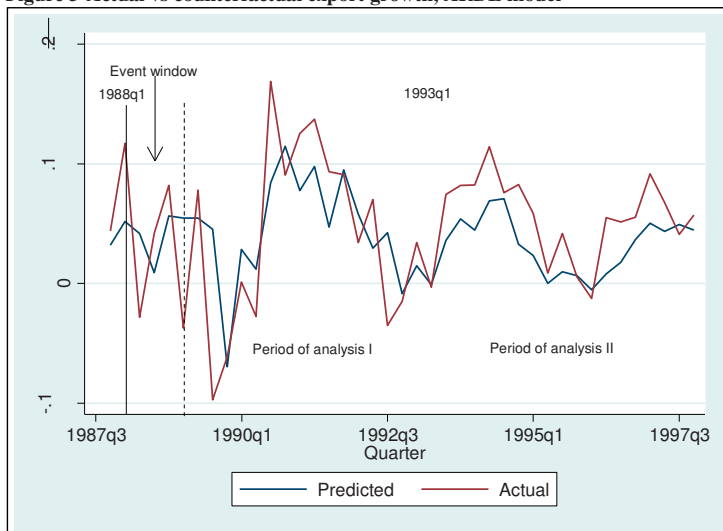
Technical Appendix B (New Zealand)

on the independent variable. The model also has a significant moving average (“MA”) component, which captures how the current period’s export growth is related to last periods’ error term.

Based on the above identified model, we predict/simulate counterfactual export growth figures using actual data for NZ’s demand index as well as its real exchange rate. These predictions (counterfactual export growth rates) are based on what the trajectory of exports would have been if there had not been any underlying policy change. We then compare the counterfactual with the actual export growth in the post-UTL phase.

Figure 3 (which is also reported in the main body of the NZ case study) plots the actual and predicted export growth for NZ. The two solid black vertical lines represent the implementation of two UTL waves. The dashed black line marks the start of the analysis period.⁷

Figure 3-Actual vs counterfactual export growth, ARDL model



Source: Authors.

The next step consists of quantifying the impact of policy change in the post-UTL phase. The Cumulative Average Residual (“CAR”), which is the average difference between actual

⁷ Since exports react to favorable macroeconomic environment with a lag, we start our period of analysis four quarters after the UTL was first implemented (Q1/1989).

Technical Appendix B (New Zealand)

and predicted outcomes, quantifies the impact of policy changes on the variable under study.⁸ In the case of no policy change, the CAR would be a noisy zero. For much of the four-year period following the implementation of the first UTL wave (1989-1992), the blue line, *i.e.*, the predicted export growth (which, recall, presents a world *without* UTL), is *above* the red line, *i.e.*, the actual export growth. The CAR from the period from 1989-1992 is -0.9%. If at all, this would (counter-intuitively) suggest that UTL actually had a slightly negative impact on export volumes. However, this results is not statistically significant,⁹ and thus the point estimate cannot be interpreted with any confidence.

Turning to the second wave of UTL (1993-1996), we witness a different picture. The actual export growth with UTL (red line) was consistently higher than that predicted by the model without UTL (blue line). Calculating the CAR for the second wave of UTL we calculate an export growth rate effect of 2.43%, and the result is statistically significant. During the second wave of UTL, NZ's overall exports grew on average by 5.5% per year.¹⁰ Thus, based on our results, UTL played a major role in the growth of exports, contributing up to 43% to year-on-year export growth in NZ between 1993 and 1996.¹¹

3. Robustness checks

The above results suggest that the first wave of UTL had no measurable effect on exports, while UTL had a positive impact on export volumes in the *second* phase of UTL's implementation. The results were thereby based on a model that used data dating back to prior to the first wave of UTL (up to Q4/1987).

As a robustness check, we treat the first wave of UTL as part of the historical period, and shorten the forecasting period to include the four-year cycle 1993-1996. In other words, we calibrate the model using an extended time period that includes the first UTL wave and includes all data leading up to Q4/1992. We then perform another event study, with model selection again based on the *auto.arima()* function in R's forecast package. The model results are displayed in Table 2.

⁸ For the exact theoretical formulation of CAR, please see **Technical Appendix A**.

⁹ To find whether the calculated CAR is significant or not, we regress the difference between actual and predicted values of the variable on a constant. The magnitude of the constant determines the significance of the CAR. For all the CARs, we determine significance at 5% using a t-test on the constant.

¹⁰ This growth rate is all the more impressive, given the fact that during the same period NZ's real exchange rate appreciated by more than 26% (see Figure 2, above).

¹¹ This is calculated by taking the ratio of 2.4% and 5.5%, which is 43%.

Technical Appendix B (New Zealand)

Table 2-Selected ARDL model for robustness

	AR1 (1)	AR2 (2)	SAR1 (3)	SAR2 (4)	Export demand growth (5)	Exchange rate growth (6)
Coefficient	0.41***	-0.27*	-0.44***	-0.42***	1.14***	-0.38***
Standard Errors	0.14	0.14	0.11	0.13	0.29	0.13

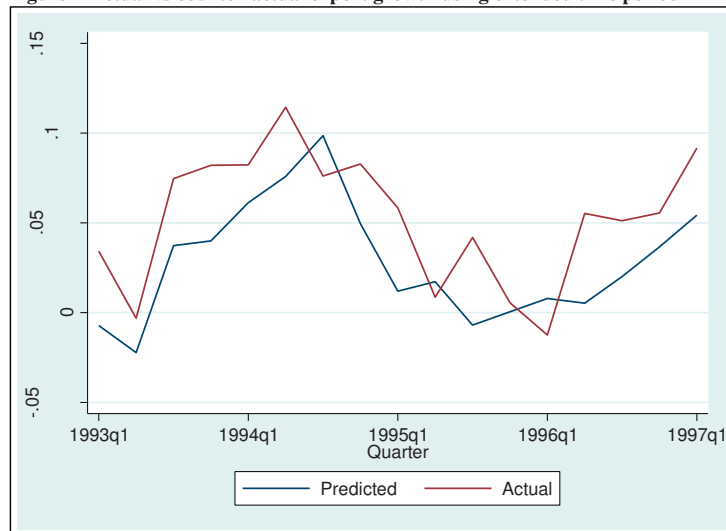
Source: Authors.

Notes: *** indicates significance at 1% level; ** indicates significance at 5% level; * indicates significance at 10% level.

Compared to the model in Table 1, we find that when covering the historical time period up to Q4/1992 point estimates are similar for price elasticity with 1.1% (column (5)), but slightly lower demand elasticity with -0.38% (column (6)), respectively. Overall, the changes compared to the previous model run are minor, indicating the robustness of our results.

As before, we simulate counterfactual growth rates for exports, using the updated robustness model, and then compare them with the actual performance. Figure 4 illustrates:

Figure 4-Actual vs counterfactual export growth using extended time period



Source: Authors.

We again finish with a calculation of the CAR for the period of analysis. The CAR for the period following the second wave of UTL is 2.38%, a result that is statistically significant. Comparing this to the result of the original model run (2.43% and statistically significant), we find considerable similarity in the results. This reinforces our earlier finding for the

Technical Appendix B (New Zealand)

significant empirical impact that NZ's UTL has had on export growth during the second wave of UTL.

C. DID analysis for productivity

1. Data

For analyzing the impact of UTL on productivity, we first need to define a measure of productivity. We chose *labor* productivity, which is the annual output per employed worker.^{12,13} However, as we discuss below, we perform a robustness check in which we use *hourly* productivity as an explanatory variable. Data for hourly productivity, however, is only available on an yearly basis.¹⁴

Our DID analysis is based on two comparator markets for the treatment market NZ: labor productivity rates in the G7,¹⁵ and, as a robustness check, labor productivity in the United States.¹⁶ Our first choice for a control market was Australia. However, Australia was going through its own period of reforms during the same period, and UTL was one of them. This rendered Australia as a control market infeasible, as one of the key tenets is that the control market is free from the policy intervention at issue. We thus chose the average across the G7 countries as the next best alternative. Using the G7 average is a good gauge of the overall productivity dynamics in the developed world during the period of analysis. The G7 countries together represent the average productivity in industrialized economies. Taking the average across G7 countries also controls for underlying policy changes which may have occurred in any *specific* country.

Our choice for the United States as an alternative control group for the purposes of our robustness check can be explained as follows: the US has traditionally been at the frontier of innovation and technology, reaping consistently high productivity growth rates. Comparing NZ against the best-in-class can then yield conservative but robust results, because if NZ were to outperform the United States during the period of analysis, some important

¹² In **Technical Appendix A**, we explain our preference for labor productivity over hourly productivity.

¹³ Data for GDP and total employment sourced from Statistics New Zealand; available at <http://www.stats.govt.nz/>.

¹⁴ Hourly productivity data from OECD database; available at <https://data.oecd.org/lprdy/gdp-per-hour-worked.htm>.

¹⁵ The G7 include US, UK, Germany, Japan, France, Canada, and Italy.

¹⁶ Data for US and G7 to calculate labor productivity was sourced from OECD database; available at <https://data.oecd.org/>.

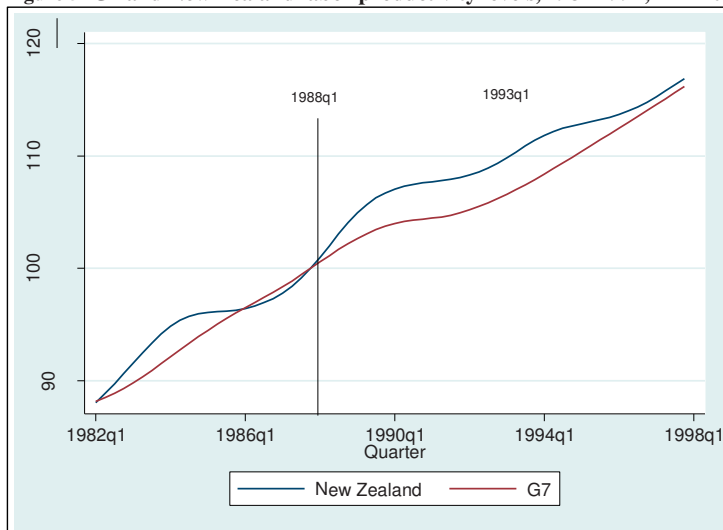
Technical Appendix B (New Zealand)

productivity shift must have occurred in NZ that has not been experienced in the United States.

2. DID analysis for productivity

We perform a graphical DID analysis against the G7 as the control market. Figure 5 reports productivity levels in the pre and post-UTL period. The chart plots the trend in labor productivity levels (vertical axis) in NZ (blue line) and the G7 (red line) between Q1/1982 and Q4/1997 (horizontal axis). The productivity level has been indexed to Q4/1987 (Q4/1987 = 100), and as such does not represent absolute levels. The two solid black vertical line depicts the introduction of two UTL waves.

Figure 5- G7 and New Zealand labor productivity levels, 1982-1997, HP filter



Source: Authors, based on data by *Statistics New Zealand* and OECD.

Looking at Figure 5, we can see that throughout most of the 1980s, the development of productivity levels in NZ and the G7 countries were fairly similar.¹⁷ Starting from the first UTL wave, we see an acceleration in the level of productivity in NZ compared to that of the G7 average. This difference in productivity levels widens until some point in the early 1990s and a consistent productivity gap between NZ and G7 remains for nearly 7 years. In fact,

¹⁷ Notice that productivity levels intersect three times over the span of six years prior to the UTL.

Technical Appendix B (New Zealand)

looking a bit more closely at the time after the second UTL wave, we can see that NZ's productivity experiences a small additional increase, as compared to the G7.

We calculate the UTL policy effect by quantitatively comparing the average difference in productivity levels *before* the first wave of UTL with the average difference in productivity levels *after* the first wave of UTL.¹⁸ While in the 8 years leading up to NZ's UTL the average difference in productivity levels between NZ and the G7 average was 2.7 percentage points, in the decade years following the first UTL wave, the average difference between the two markets more than doubled to 5.45 percentage points. This is suggestive that the level of productivity would have been 2.75 percentage points lower in the post-1988 period had it not been for NZ's UTL reform. This converts to a non-trivial UTL-induced annual productivity growth effect of 0.27 percentage points.¹⁹

3. Robustness checks

We perform a robustness check consisting of two modifications that we perform in parallel: *first*, we replace the G7 as control market with US. *Second*, we replace *labor* productivity with *hourly* productivity.²⁰

Figure 6 depicts the productivity level of NZ compared to that of the US. As before, the two solid black vertical lines represents the two waves of implementation of UTL.

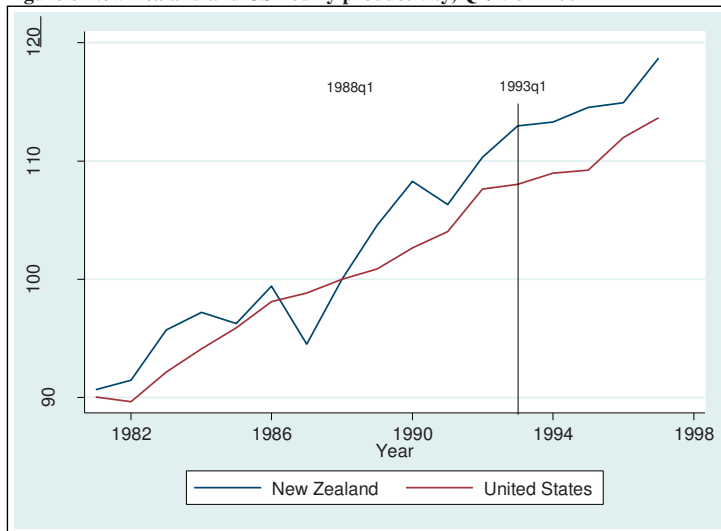
¹⁸ For the purpose of assessing the effects of UTL on productivity, we combine our analysis for the two UTL waves. This stands in contrast to our analysis of the effects of UTL on exports and employment, where we analyze the two phases separately (*see* Section B, above). As the productivity shock in one period has an impact on future productivity as well, we focus on overall productivity gains attributable to both waves of UTL.

¹⁹ The formula we used to generate this results is $(1+r)^{10} = 1.0275$.

²⁰ We also performed these two robustness checks *sequentially*. The results did not change from the ones reported here.

Technical Appendix B (New Zealand)

Figure 6-New Zealand and US hourly productivity, Q4/1987=100



Source: OECD productivity data.

Figure 6 shows that hourly productivity in the US and NZ evolve more or less in the same manner until 1987. After 1988, we see a jump in the productivity level of NZ, whereby it consistently remains above US productivity levels throughout the next decade.

While in the seven years prior to the UTL, the average difference in productivity levels between NZ and the G7 average was 0.92 percentage points, in the 10 years following the first UTL wave, the average difference between the two markets increased to 3.69 percentage points. This translates to a gain of 2.77% for NZ's productivity in the post-UTL phase. Converting this into annualized figure yields 0.27%, which is remarkable, given that we find the identical result with the G7 as the comparator market and use labor productivity. Using different productivity rates and a different comparator markets, hence, does not change our main results, and thus confirms our core findings.

Technical Appendix B (New Zealand)

D. Employment analysis

1. Data

For the purpose of employment modelling, we used data for employment levels in NZ, and for labor force, which is the sum of employed and unemployed persons in the economy. Both of these datasets were sourced from *Statistics New Zealand*.²¹

While as a general matter of economic theory we prefer using *active population* levels to *labor force* data,²² in the case of NZ we were unable to get hold of quarterly data for active population going back to 1970. We were thus forced to resort to labor force data for the explanatory variable.

2. ARDL Model for employment

As with our analysis of exports, we apply an ARDL model for employment. Our objective is to identify a model which can track changes in employment levels and employment growth using the pre-UTL period (Q1/1972-Q4/1987). We then use this model to forecast changes in employment in the post-UTL phase. The difference between actual and predicted values (counterfactuals) of the outcome variable are then empirically compared.

We calibrated our model using the actual values of employment growth and labor force growth. As before, the time-series model is selected by using the *auto.arima()* function in R's forecast package. Table 3 reports the results.

Table 3-ARDL model for employment growth

	AR1 (1)	Labor force growth (2)
Coefficient	0.90***	1.17***
Standard errors	0.04	0.05

Source: Authors. *** indicates significance at the 1% level.

The model has a significant autoregressive component AR1 (column (1)). The coefficient for labor force growth (column (2)) is statistically significant on the 1% level. The model results

²¹ Available at <http://www.stats.govt.nz/>.

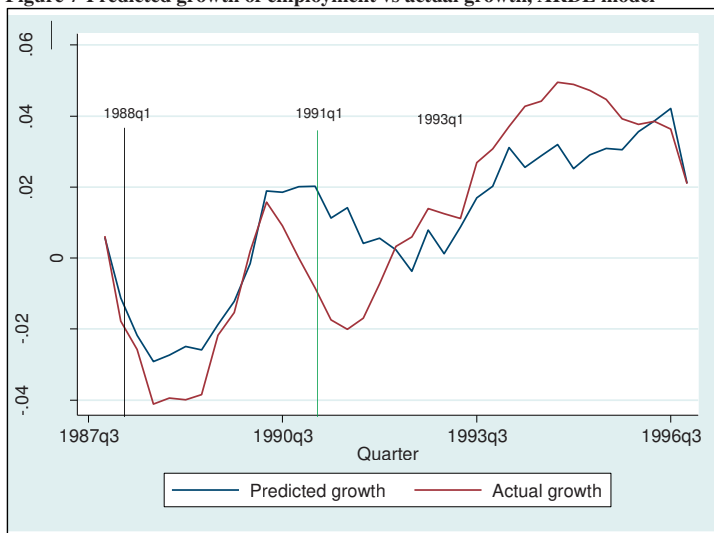
²² As we explain in **Technical Appendix A**, labor force and employment tend to exhibit co-movement which may lead to endogeneity problems. Hence our preferred choice of independent variable is active population.

Technical Appendix B (New Zealand)

also demonstrate that a 1% increase in labor force results in a 1.17% increase in employment growth.

As before, we proceed by using this model to produce employment levels after UTL (counterfactuals), and then compare the actual employment growth to its predicted values. Figure 7 gives the actual and predicted (counterfactual) labor force growth in the post UTL-phase in NZ. The two solid black vertical lines mark the beginning of two UTL phases, while the green line represents the enacting of an important labor-market reform, the Employment Contract Act (“ECA”) in 1991.

Figure 7-Predicted growth of employment vs actual growth, ARDL model



Source: Authors, based on *Statistics New Zealand*.

We observe that during the first wave of UTL between 1988 and 1992, actual employment growth (with UTL) was mostly below its predicted levels (without UTL). However, around 1992, the situation reversed and actual employment growth was exceeding predicted growth of employment. Indeed, the CAR, which calculates the average difference between the actual and predicted employment growth over time, was -1.2% (significantly negative) during the first wave of UTL (1988-1992), but shot up to 0.83% (significantly positive) in the second phase of UTL (1993-1996). The CAR for the two phases combined was -0.33%, marginally negative, but statistically insignificant.

Technical Appendix B (New Zealand)

REFERENCES

IMF (1998)	Senhadji, Abdelhak and Claudio Montenegro (1998), “Time Series Analysis of Export: A Cross-Country Analysis”. <i>IMF Working paper</i> WP/98/149.
------------	---

TECHNICAL APPENDIX C (CANADA)

A. Introduction and roadmap

While the main body of the Canada case study provides the results of our empirical exercise of measuring the impact of UTL on the three macroeconomic variables of choice (exports, productivity and employment), it does not discuss the specifications of the models used, their validity, and the robustness of their results. This is what this appendix will deal with.

This appendix discusses our empirical work for each of the three macroeconomic variables of interest: Section B deals with the Before/After approach (event study) that we apply to exports. Section C explains our DID approach with which we examine the effect of UTL on labor productivity. Section D, finally, explains our event study approach for assessing the effect of UTL on employment. Each of the three sections starts by describing the data sources (subsections B.1, C.1, and D.1), and then moves on to the specifications of our selected model (subsections B.2, C.2, and D.2). Finally, each section ends with an analysis of how robust our model findings are by applying empirical robustness checks and/or model variations for estimating the impact of UTL (subsections B.3, C.3, and D.3).

B. Event study analysis on exports

1. Data

Our event analysis into the effect of UTL on Canada's export performance requires: (1) time-series data for Canada's exports of goods; (2) a measure for demand; and (3) a measure for Canada's external price competitiveness. Data for Canada's exports of goods are readily available on *Statistics Canada's* website. As a proxy for demand, we compile weighted composite of GDP of Canada's main export partners (termed "Export Demand Index for Canada"). As a proxy for price competitiveness, we use the *Bank of Canada's* C\$ Real Effective Exchange Rate Index.

Technical Appendix C (Canada)

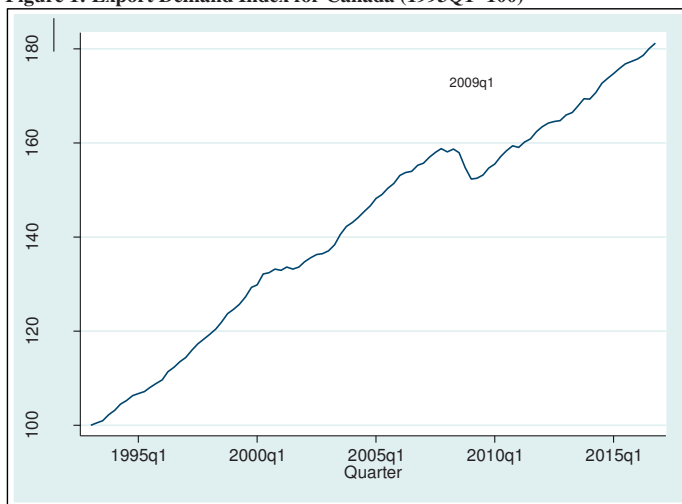
1) Canadian goods exports

The outcome variable of interest is the performance of Canadian good exports. Export data used are from the national accounts published by *Statistics Canada*.¹

2) Export Demand Index for Canada

The Export Demand Index is calculated using a trade-weighted measure of Canada's main trading partners' GDP.² Each trading partner's GDP is weighted by the share of that country in Canada's exports (*see* Figure 1). We take into account the top 4 export destinations for Canadian exports (the United States, the United Kingdom, Japan, and China), which together accounted for approximately 89% of Canadian exports between 1995 and 2008. The United States is the biggest export destination for Canada, accounting for 83% of exports between 1995 and 2008.

Figure 1: Export Demand Index for Canada (1993Q1=100)



Source: Authors, based on OECD data.

Figure 1 shows that prior to the financial crisis (2000-2007), the demand index grew on average about 2.6% per year. The decline in demand during the Global Financial

¹ See <http://www5.statcan.gc.ca/cansim/a45?lang=eng&CORID=3764>.

² Data for GDP of partner countries was taken from OECD database (<https://data.oecd.org/gdp/gross-domestic-product-gdp.htm>). Data for bilateral trade was taken from WITS database (<http://wits.worldbank.org/>).

Technical Appendix C (Canada)

Crisis/Great Trade Collapse (2008-2009) was approximately 4.0%. After the implementation of UTL, *i.e.*, between 2009 and 2016, the demand index grew on average at 2% per year.

3) C\$ Real Effective Exchange Rate Index

As proxy for price competitiveness, we use the *Bank of Canada*'s C\$ Real Effective Exchange Rate Index.^{3,4} Figure 2 depicts the real effective exchange rate over time. The black vertical line indicates the beginning of UTL in Canada.

Figure 2: Trade weighted real exchange rate for Canada



Source: Bank of Canada

The data used to construe Figure 2 indicates that between 2001 and 2007, the effective exchange rate index for Canada appreciated by 39.7%. After depreciating during the crisis, the Index appreciated to its pre-crisis level, before depreciating again by 18.8% during the six-year period from 2011 to 2016.

2. ARDL Model for exports

Economic literature has shown that there exists a strong relationship between a country's export growth on the one hand and GDP growth in its main export markets on the other

³ For more information on how the *Bank of Canada* calculates the Canadian-Dollar Effective Exchange Rate Index, please refer to <http://www.bankofcanada.ca/rates/exchange/ceri/>.

⁴ More on the composition of real effective exchange rate can be found in **Technical Appendix A**.

Technical Appendix C (Canada)

hand.⁵ This relationship tends to be rather stable. The demand for a country's exports depend on prices. The intuition behind our event analysis is that *without* UTL, the relationship between Canadian exports and its competitiveness (real exchange rate) on the one hand, and its foreign demand (export demand index) on the other hand, would have continued to hold. Using actual data for Canada's real exchange rate and GDP growth in Canada's main trading partners allows us to construct a counterfactual outcome for Canadian export activity. We then compare the counterfactual outcome with the actual and attribute the difference to UTL.

We use quarterly data between Q1/1993 and Q4/2007 to determine the relationship between exports, real exchange rate and foreign demand.⁶ We then retain the same model to forecast/simulate and explore whether this model maintains the same structure after Q1/2009. If there are observed discrepancies, we further explore origin and characterization of those discrepancies.

As stated in **Technical Appendix A**, a key issue in the analysis is the model selection process. To be as objective as possible, our time-series model of choice is selected by using the *auto.arima()* function in R's forecast package. The data are year-on-year growth rates ("PCY") of the respective quarterly time series (exports, export demand and the effective exchange rate). Regression coefficients in column 4 and 5 (Table 1) can therefore be read as elasticities.

Table 1 reports the results of the ARDL model:

Table 1: Selected ARDL model

	AR1 (1)	SAR1 (2)	SAR2 (3)	Export demand growth (4)	Exchange rate growth (5)
Coefficient	0.93***	-0.83***	-0.33***	2.02***	-0.27***
Standard Errors	0.06	0.19	0.15	0.37	0.10

Source: Authors. *** indicates significance at 1% level. ** indicates significance at 5% level.

The ARDL model reports that in the short run Canadian exports are sensitive to external demand factors. All results are highly statistically significant on the 1% level. An improvement of external demand (as measured by the demand index) by 1% leads to an

⁵ See IMF (1998).

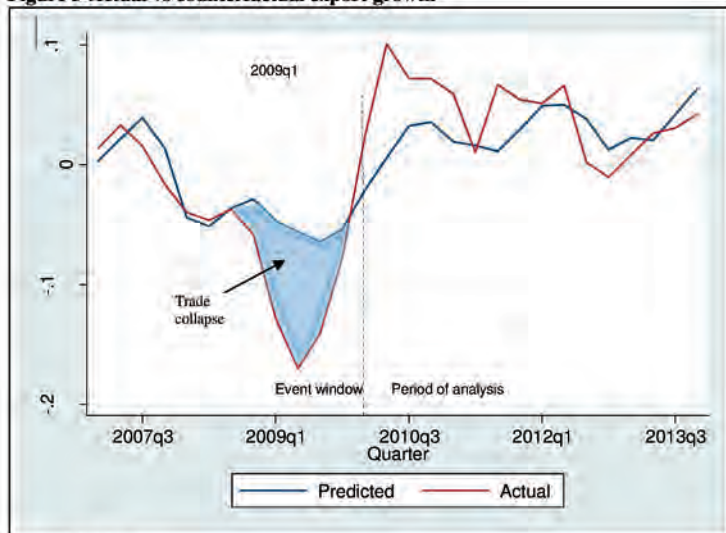
⁶ We deliberately exclude the period of the Global Financial Crisis (Q1/2008-Q1/2009), because the crisis period saw unexplained fluctuations in the data which may bias our results.

Technical Appendix C (Canada)

increase of 2.02% in goods exports (column (4)). An appreciation of the C\$ of 1% has a negative impact on Canadian goods exports to the order of -0.27% (column (5)). The export growth is highly dependent on the value attained in the previous quarter, as can be seen by the coefficient of AR1 (column (1)), which is the autoregressive component of the model and captures the impact of the value of the last period on the independent variable. Columns (2) and (3) report the seasonal autoregressive components (or “SAR”) in the model. If there is any seasonality in the dataset, these components capture and control for its occurrence.

With the above model identified, we then use it to predict growth of exports after the implementation of UTL. These predictions (counterfactual growth rates) are based on what the trajectory of exports growth would have been if there had not been any underlying policy change. We then compare the counterfactual with the actual exports growth in the post-UTL phase. Figure 3 (which is also reported in the main body of the Canada case study) plots the actual and predicted exports growth for Canada over time.

Figure 3-Actual vs counterfactual export growth



Source: Authors.

The next step was to quantify the impact of the policy change on export growth. Since exports react to favorable macroeconomic environment with a lag, we start our period of analysis 4 quarters after the UTL was implemented. The Cumulative Average Residual

Technical Appendix C (Canada)

(“CAR”), which is the average difference between actual and predicted outcomes, quantifies the impact of policy changes on the variable under study.⁷

In the case of no policy change, the CAR would be a noisy zero. In the period of analysis, the CAR was 2.0%. This result was statistically significant.⁸ In normal times, this would be considered the actual impact of policy change on the variable. However, as we explain in detail in the main text of the Canada case study, it seems prudent to factor in the effects that occurred in the wake of the Great Trade Collapse. Canada was just coming out of a crisis when the period of analysis began. This means that Canada’s actual export growth may have been inflated (as compared to the non-UTL counterfactual) not just because of the UTL effect, but also because of the rebound, or catch-up, effect.⁹ We thus have to account for the impact the crisis had on the post-UTL growth rates.

There are two ways of accounting for post-crisis catch-up: one is assuming full catch-up, and the other assuming partial catch-up.¹⁰

- For the full catch-up, we define the rebound effect from the Great Trade Collapse to be equal in size to the unexplained dip in actual exports *during* the crisis. We simply subtract, from our estimated policy effect of 2%, the unexplained drop in exports that occurred during the crisis (blue shaded plane in Figure 3). In other words, we pretend that the Great Trade Collapse had no lasting effects on actual export growth rates at all, and that export *gains* post-crisis fully made up for export *losses* while the crisis was ongoing. Assuming full catch-up, the impact of UTL declines from 2% to only 0.36% in the forecasting period 2010-2014. Since the overall increase in export in Canada during the same period was 4.5%, UTL was thus responsible for 8.0% of the growth in export.¹¹
- To allow for secular stagnation post-crisis in a scenario featuring partial catch-up, we compare the Canadian export growth experience with the pre- and post-crisis experience by a basket of advanced economies, namely the G7 countries US, UK, Germany, Japan, France, Canada, and Italy. Figure 4, which is also in the main body of the Canada case study, plots the export activity of the G7 countries and Canada (vertical axis, indexed at Q1/2010 = 100) over time (2005-2014, horizontal axis). The data for this chart are taken

⁷ For the exact theoretical formulation of CAR, please see **Technical Appendix A**.

⁸ To find whether the calculated CAR is significant or not, we regress the difference between actual and predicted values of the variable on a constant. The magnitude of the constant determines the significance of the CAR. For all the CARs, we determine significance at the 5% level using a t-test on the constant.

⁹ This means that export volumes bounce back once a crisis is over, and the economy registers higher-than-average growth rates.

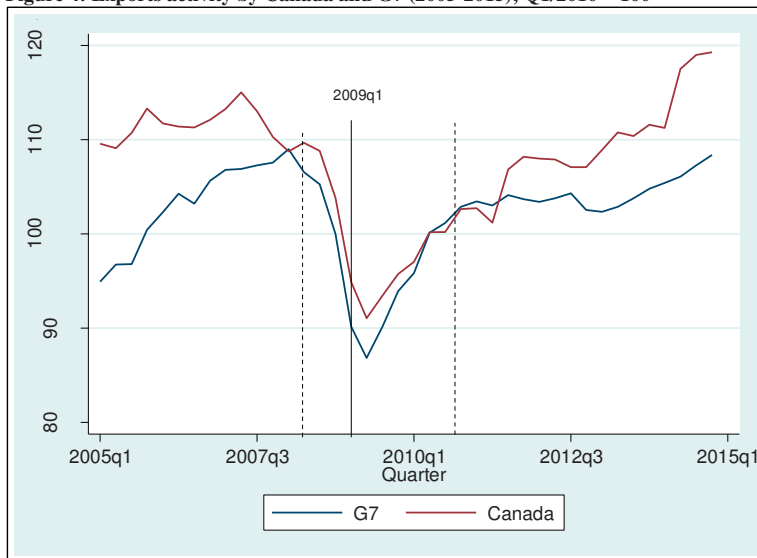
¹⁰ Under full catch-up, export growth will reach its pre-crisis levels, while under partial catch up, exports will only regain a proportion of volumes compared to the pre-crisis era, thus allowing for a secular stagnation.

¹¹ This is calculated by taking the ratio of 0.36% and 4.5%, which is 8%.

Technical Appendix C (Canada)

from *CPB World Trade Monitor*.¹² The solid black line marks the beginning of Canada's UTL reform. The left dotted black vertical line marks the beginning of the Great Trade Collapse/Global Financial Crisis; the right vertical dotted line marks the end of the catch-up period (Q2/2011).¹³

Figure 4: Exports activity by Canada and G7 (2005-2015); Q1/2010 = 100



Source: Statistics Canada, *CPB World Trade Monitor*.

As Figure 4 shows, the G7 economies – where no UTL occurred – did not fully recover from the crisis: export activity leveled out at a significantly lower rate compared to the pre-crisis peak. Using the *CPB World Trade Monitor* data we find that across G7 countries, exports were only able to recover by 76% from the export losses caused by the Great Trade Collapse.¹⁴ In other words, post-crisis exports were down by 24%, as compared to the pre-crisis export levels, which confirms the hypothesis of a secular stagnation in the aftermath of the Global Financial Crisis and the concomitant Great Trade Collapse.

We thus adjust for the crisis keeping in mind that the post-crisis catch-up was only part of the dip during the crisis, the remaining being assigned to UTL. Mathematically, instead of subtracting 100% of the crisis effect from the estimated effect to account for a total

¹² Available at: <https://www.cpb.nl/en/data?datatype=World%20trade%20monitor>.

¹³ It is obvious from the graph that export volumes bounced back after the crisis, but then stagnated after 2011, unable to revert to its pre-crisis peak. This post-crisis catch up ended at around Q2/2011.

¹⁴ We do this by calculating the difference between the pre-crisis peak and crisis trough, and then comparing that difference with the post-crisis recovery achieved by the end of the catch-up period (Q2/2011).

Technical Appendix C (Canada)

catch-up, we only subtract 76%. Under this scenario, UTL increased the export growth rates of Canada by 0.75%,¹⁵ which corresponds to 16.7% in overall export growth over the 2010-2014 period.¹⁶

Since it is econometrically impossible to parse out the catch-up effect from UTL effect, we provide a range for the impact of UTL on employment. The range thus is 0.36%-0.75%

3. Robustness checks

Since Canada mainly applied its UTL mainly to capital goods (industrial manufacturing inputs, machinery and equipment, etc.), we perform a robustness check in which we apply the ARDL model on a subset of exports, namely manufacturing exports.¹⁷

As before, we perform an event study, and the model selection is based on the *auto.arima()* function in R's forecast package. The model results are displayed in Table 2.

Table 2-Selected ARDL model for manufacturing exports

	MA1 (1)	Constant (2)	Export demand growth (3)	Exchange rate growth (4)
Coefficient	0.56***	-0.06***	3.76***	-.57***
Standard Errors	0.10	0.017	.544	.08

Source: Authors. *** indicates significance at 1% level. ** indicates significance at 5% level.

Compared to all exports, we find that manufacturing exports are more price-elastic to demand and exchange rate changes.¹⁸ The coefficient for export demand and exchange rate growth are 3.76% (column (3)) and -0.57% (column (4)), respectively. The results make economic sense, as Canada's total exports mainly include commodities (including petroleum), which tend to be less price and demand elastic. The model also has a significant moving average ("MA") component, which captures how the current period's export growth is related to the

¹⁵ The calculation for this partial catch-up UTL effect is straightforward: (partial effect) = (full effect) + [(1 – partial catch-up effect)*(original UTL effect – full UTL effect), or (0.36%) + [(24%)*(2.0% – 0.36%)] = 0.75%.

¹⁶ Since the overall increase in export in Canada during the same period was 4.5%, UTL was thus responsible for 16.7% (0.75%/4.5%) of the growth in exports.

¹⁷ One of the objectives of Canada's UTL was to help domestic industry access cheaper, better and more variety of intermediate goods. Running a separate analysis on manufacturing exports is therefore a good gauge of whether they were able to fulfil this objective. In 2006, mineral commodities (incl. petroleum) accounted for one-third of Canada's exports. To ensure our results are not driven by sectors unaffected by UTL, we focus on those sectors that UTL was meant for.

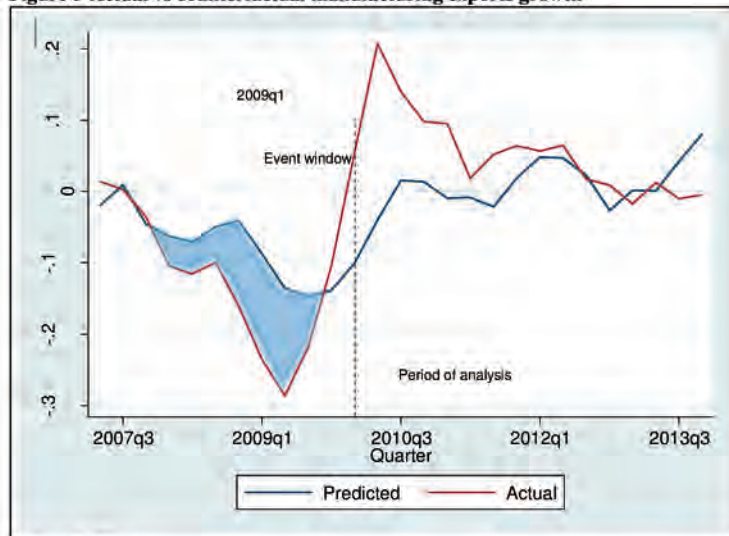
¹⁸ This can be easily seen from the large swings during the crisis in growth rates, which fluctuate between -30% and 20% (Figure 5, below) and are much larger than in total exports (Figure 3).

Technical Appendix C (Canada)

last period's error term. The model for manufacturing also has a significant constant term (column (2)), which was not the case for total exports.

Once we have identified the best-fitting model, we repeat what we did for total exports above: we calculate counterfactual growth rates of manufacturing exports using the model above, and then comparing them with the actual performance. Figure 5 (not reported in the main body of the Canada case study) plots the actual and predicted exports growth for Canada over time.

Figure 5-Actual vs counterfactual manufacturing exports growth



Source: Authors.

As before, the next step was calculating the CAR for the period of analysis. Similar to our event study based on total exports, the CAR was statistically significant. The policy excluding the catch-up effect after the crisis was 4.4%. However, as we did for total exports, we have to control for full and partial catch-up effects. As with total exports, we subtract the unexplained drop during the crisis from our estimated policy effect of 4.4%. Yet, compared to total exports, the trade collapse observed for manufacturing exports was significantly more pronounced. The impact of UTL consequently drops considerably when assuming full catch-up and is similar in magnitude as for total exports, namely 0.78%. Under the alternative assumption of partial catch up, the impact of UTL we calculate is 1.65%. While this results is significantly higher than for all exports, we take confidence in the fact that the results

Technical Appendix C (Canada)

continue to have the same sign, significance and effects that are not orders of magnitude different.¹⁹

C. DID analysis for productivity

1. Data

For analyzing the impact of UTL on productivity, we first need to define a measure of productivity. We opted for *labor* productivity, which is the annual output per employed worker.^{20,21} However, as we discuss below, as a robustness check we also use hourly productivity data, which is available on a year-on-year basis.²²

Our DID analysis is based on two comparator markets for the treatment market Canada: the United States, and, as a robustness check, the G7 countries.²³ The motivation for using the United States as Canada's control market for our comparative analysis is the former's geographical, cultural, socio-economic, and historical similarity to Canada. Apart from these obvious similarities, the strong economic and trade ties between the two countries make the United States the ideal control group for Canada. Most importantly, however, the United States has not experienced the "treatment" (a UTL shock), which is a prerequisite for a valid control market.

Canada is a large, developed country and part of the G7 group (along with the US, UK, Germany, Japan, France, and Italy). G7 countries are tightly interlinked in terms of business cycles, trade linkages, technical innovation, and global finance. It is thus fairly evident to use the average productive rates across G7 countries for robustness checks.

2. DID analysis for productivity

As a first step we perform a graphical DID analysis against the US as the control market. Figure 6 reports on the indexed productivity levels in the pre and post-UTL period. The chart

¹⁹ The higher magnitude may be explained by the fact that Canada's reform package targeted specifically the manufacturing sector.

²⁰ In **Technical Appendix A**, we explain our preference for labor productivity over hourly productivity.

²¹ Data for GDP and total employment sourced from Statistics Canada; available at

<http://www.statcan.gc.ca/eng/cder/data>.

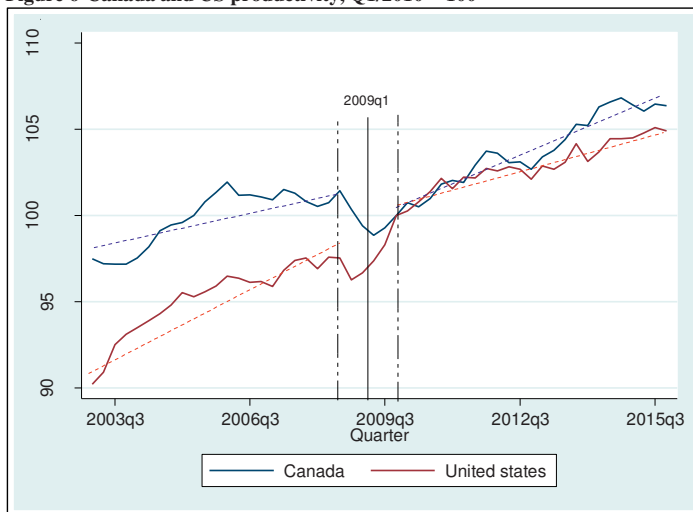
²² Hourly productivity data from OECD database; available at <https://data.oecd.org/lprdy/gdp-per-hour-worked.htm>.

²³ Data for US and G7 to calculate labor productivity was sourced from OECD database; available at <https://data.oecd.org/>.

Technical Appendix C (Canada)

plots the trend in labor productivity levels (vertical axis) in Canada (blue line) and the United States (red line) between Q1/2003 and Q4/2015 (horizontal axis). The productivity level has been indexed to Q1/2010 = 100, and as such does not represent absolute levels.²⁴ The dotted blue lines represent trends in Canadian productivity growth, while the red dotted lines depict trends in US productivity growth. The solid black vertical line depicts the introduction of UTL in Canada in 2009. The dotted black vertical lines mark beginning and end of the Global Financial Crisis.

Figure 6-Canada and US productivity, Q1/2010 = 100



Source: Authors based on data by *Statistics Canada* and *OECD*.

Looking at the pre-crisis trends in productivity, Figure 6 reports that US productivity growth was more robust than Canada's before the implementation of UTL, as can be judged by the steeper slope of the trend line for US. However, after the implementation of UTL (and ignoring the crisis period²⁵), we witness a marked reversal of trends: Canada's productivity started growing faster, as compared to both the US and its own historical trend. In the six years between Q1/2010 and Q4/2015, Canadian productivity growth outperformed US growth: the former increased by around 6.4%, while the latter only grew by around 4.9% over the same six-year window. This amounts to an annualized productivity growth of 0.8%

²⁴ Using Q1/2010 as the index enables us to minimize the impact of any catch-up effect that may occur post-crisis.

²⁵ To avoid false attribution of impact of crisis to the UTL, we eliminate the period from Q3/2008 to Q4/2009 (the year of the Global Financial Crisis) from consideration.

Technical Appendix C (Canada)

for the US and 1.0% for Canada.²⁶ Hence, the average annual contribution of UTL to Canada's productivity growth is equal 0.2 percentage points for the period from 2010 to 2015.

Converting this difference in productivity growth post-Financial Crisis between Canada and the United States into an effect size, we find that UTL contributed to at least 23% of Canadian productivity gains in the 2010-2015 period.²⁷

3. Robustness checks

We perform two robustness checks: *first*, we replace the United States as control market with the G7 average. *Second*, we replace labor productivity with hourly productivity.

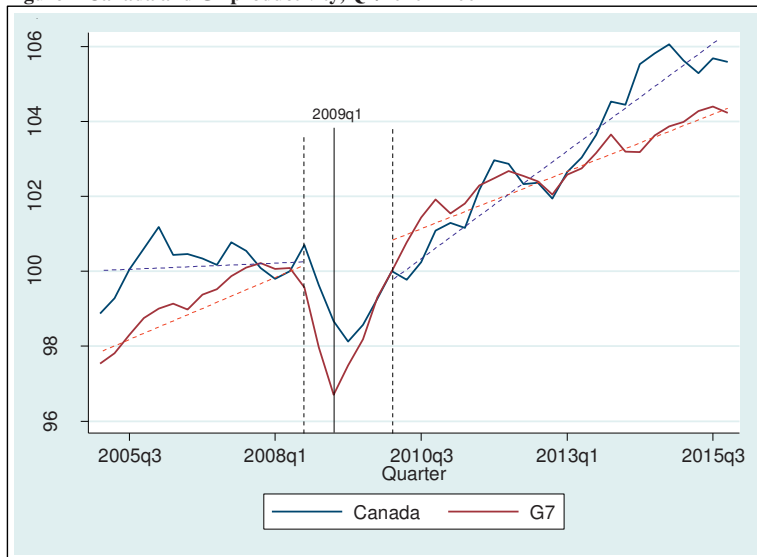
Since we used the United States as the control market in our graphical DID analysis for Canadian productivity, we check for the reliability of those results by using the G7 countries as the control market. Figure 7 depicts the productivity level of Canada compared to that of G7 countries. The solid black line represents the implementation of UTL, while the two dotted lines mark the crisis period and the post-crisis catch up (which has been excluded from our analysis).

²⁶ We obtain the annualized growth rate by using the compounded annual growth rate formula for each country for the 2010-15 period. The exact formula is $(1+r)^6=1.064$ for Canada and $(1+r)^6=1.049$ for US, where r is the annualized growth rate and 6 is the number of years.

²⁷ We obtain this result by calculating the ratio of (i) Canada's productivity gain minus the productivity gain of US during the 2010-15 period and (ii) the productivity gain in Canada: $(6.4\% - 4.9\%)/6.4\% = 23\%$. This gives us the share of productivity growth attributable to UTL. In a normal DID analysis, the pre-policy trends are similar, which means that we can arrive at an accurate figure for policy impact. In this case however, the pre-crisis trend were different. Without adjusting for the difference in pre-policy trends, the figure attributable to UTL is 23%. If we were to take into account of the difference in pre-policy trends, the effect would be significantly greater than 23%. Hence, our conclusion that UTL increased productivity of Canada by at least 23% is conservative.

Technical Appendix C (Canada)

Figure 7-Canada and G7 productivity, Q1/2010 = 100



Source: Authors based on data by *Statistics Canada* and *OECD*.

Canada's productivity growth prior to UTL was considerably slower than G7 (as can be judged by the slope of dotted trend lines). However, after the UTL, starting 2010, Canada's productivity growth was faster than the average across G7 countries. Not so post-UTL: in the 6-year period between 2010 and 2015, Canada's productivity grew by 6.4%, while the G7's productivity grew by 4.96%. This amounts to an annualized rate of 1% for Canada and 0.8% for G7 countries. The annual UTL contribution to Canada's productivity amounts then to 0.2 percentage points for the period from 2010 to 2015. In relative terms, Canada's UTL thus again contributed at least 23% to Canada's productivity growth (a figure that is nearly identical to what we get with US as the control market).

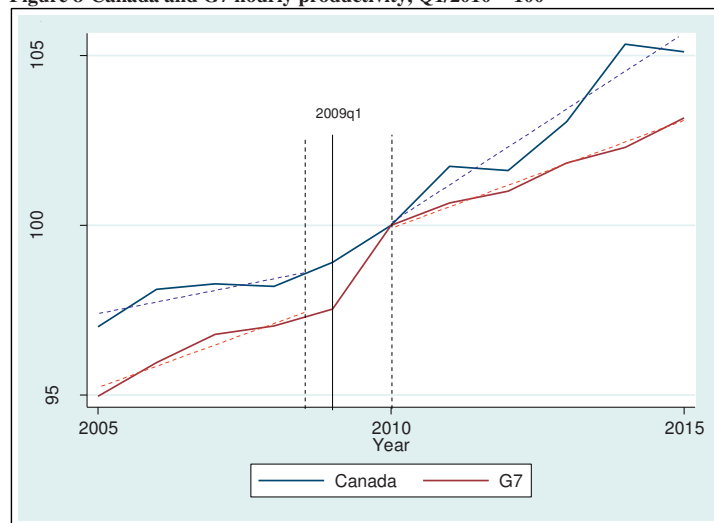
With an estimate for G7 that is near-identical to our DID analysis with the US as the control market, our overarching conclusion also stays the same: Canada's productivity in its post-UTL phase outperformed that of its peers.

As a second robustness check for our productivity analysis, we look at *hourly* productivity, rather than *labor* productivity. We again perform the same DID analysis, but this time look at GDP per hour worked. Figure 8 plots the yearly productivity level for Canada and G7

Technical Appendix C (Canada)

countries.²⁸ The solid black line indicates the implementation of UTL while the black dotted lines again represent the period of the crisis, which again has been ignored in the analysis.

Figure 8-Canada and G7 hourly productivity, Q1/2010 = 100



Source: OECD data on GDP per hour worked.

Canada's superior performance compared to G7 after UTL is obvious in Figure 8. Before UTL, productivity growth in both areas was more or less the same (in fact, slightly higher in G7). Not so post-UTL: between 2010 and 2015 hourly productivity grew in Canada by 5.1%, while the corresponding figure for G7 countries was 3.1%. This equates to annual productivity rate of 0.83% for Canada and 0.51% for G7. Hence, the annual contribution of UTL to Canada's productivity growth is equal 0.32 percentage points for period from 2010 to 2015. Using hourly productivity as the metric of choice, this would suggest that UTL boosted Canada's productivity by at least 41%.²⁹

²⁸ Hourly productivity rates are available on a yearly basis only.

²⁹ We again calculate the impact of UTL by the same formula as described in footnote 27: $(5.1\% - 3.1\%)/5.1\% = 41\%$.

Technical Appendix C (Canada)

D. Employment event analysis

1. Data

For the purpose of employment modelling, we utilized data for employment levels in Canada and the active population levels, which is the number of 15-64 year olds in the country. Both of these datasets are sourced from *Statistics Canada*.³⁰

While as a matter of economic theory we prefer using active population levels,³¹ we perform a robustness check in which we test whether using labor force data would change our results. Data for labor force was again obtained from *Statistics Canada*.

2. ARDL Model for employment

As with our analysis of exports, we apply an ARDL model for employment. Our objective is to identify a model which can track changes in employment levels and employment growth using the pre-UTL period (Q2/1995-Q2/2008), again excluding the crisis period. We then use this model to forecast changes in employment in the post-UTL phase. The difference between actual and predicted values (counterfactuals) of the outcome variable are then empirically compared, attributing the difference to UTL.

We calibrated our model using the actual values of employed workers and active population. This was possible, since the two variables are cointegrated. As before, the time-series model is selected by using the *auto.arima()* function in R's forecast package. Table 3 reports the results.

Table 3-ARDL model for employment

	AR1 (1)	Active population (2)	Constant (3)
Coefficient	0.90***	0.98***	-3081.17***
Standard errors	0.07	0.05	834.72

Source: Authors. *** indicates significance at 1% level.

The model has a significant autoregressive component AR1 (column (1)) and a constant (column (3)). The coefficient for active population (column (2)) is highly statistically

³⁰ Available at <http://www.statcan.gc.ca/eng/start>.

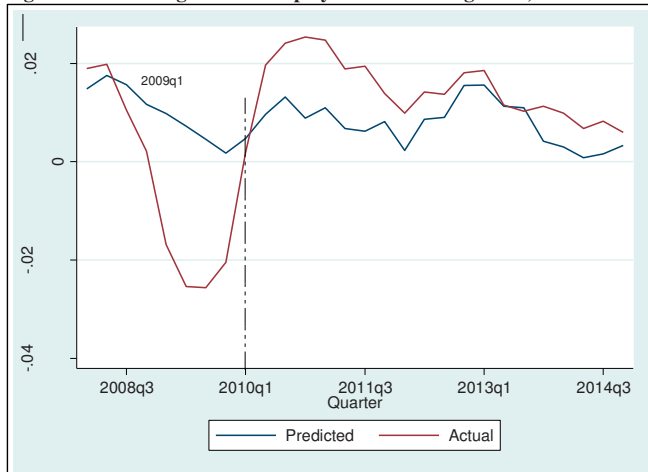
³¹ As we explain in **Technical Appendix A**, labor force and employment tend to exhibit co-movement which may lead to endogeneity problems. Hence our preferred choice of independent variable is active population.

Technical Appendix C (Canada)

significant at the 1% level. The model results also demonstrate that there is almost a one-to-one relationship between active population and employment: a one unit increase in employment leads to a 0.98 unit increase in employment.

As before, we proceed by using this model to produce employment levels after UTL (counterfactuals), and then compare the actual employment to the predicted values. To maintain consistency, we perform the analysis in terms of growth rates. Figure 8 shows the actual and counterfactual employment growth rates based upon the model in Table 3. The solid black vertical line indicates the beginning of UTL, while the dashed vertical line marks the beginning of the period of analysis.

Figure 9-Predicted growth of employment vs actual growth, ARDL model



Source: Authors, based on *Statistics Canada*.

The CAR (Cumulative Average Residual), which calculates the average difference between the actual and predicted employment growth over time, is 0.66% from 2010 to 2014, and statistically significant. However, to preempt the same criticism about possible contamination by a recovery effect from the Global Financial Crisis, we modify our analysis to control for realistic catch-up effect post-Global Financial Crisis. After subtracting the full catch-up effect in employment from our estimated UTL impact of 0.66%, the impact reduces considerably down to 0.08% (assuming, conservatively, a full catch-up). If we assume a

Technical Appendix C (Canada)

partial catch-up like we do for exports, the impact is around 0.22%.³² Since it is econometrically impossible to parse out the catch-up effect from UTL effect, we provide a range for the impact of UTL on employment. The range thus is 0.08%-0.22%.

3. Robustness checks

Above, we opted for total employment as our outcome variable and active population as dependent variable. To check the robustness of our results, instead of using active population as dependent variable, we now use labor force, which is the sum of employed and unemployed persons in the country.³³ The time series of our data remains the same (Q2/1995-Q2/2008). The results of the model are presented in **Fehler! Verweisquelle konnte nicht gefunden werden..**

Table 4-Outcome of ARDL model for log employment

	AR1 (1)	Log of labor force (2)	Constant (3)
Coefficient	0.96***	1.17***	-1.73***
Standard errors	0.04	0.04	0.41

Source: Authors. *** indicates significance at 1% level.

The model has a statistically significant autoregressive component AR1 (column (1)) and constant (column (3)). Labor force is also highly statistically significant on the 1% significance level (column (2)). The coefficient of labor force here represents the elasticity of employment with respect to labor force: a 1% increase in labor force leads to an increase in employment by 1.17%.

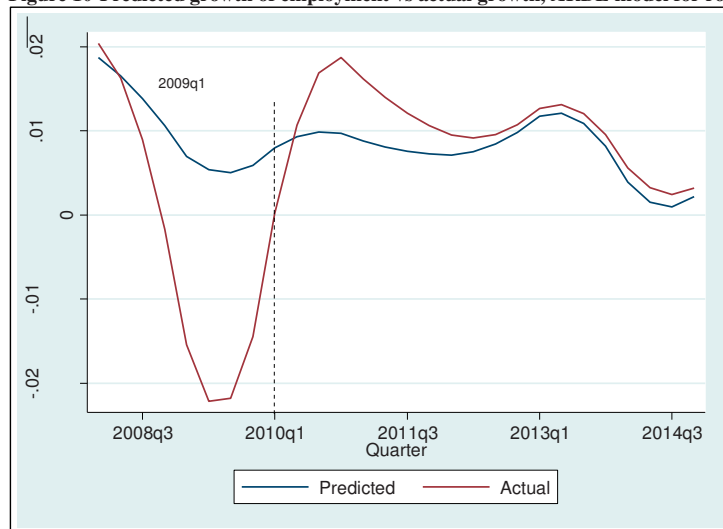
Figure 10 calibrates the predicted growth rate of employment according to this model and compares it with its actual growth rate (we converted all variables into growth rates to maintain consistency across studies). The solid black vertical line represents the implementation of UTL in Canada, while the dotted black vertical line marks the start of the forecasting period.

³²The calculation of impact in case of partial catch-up effect was discussed in footnote 15, above and is $(0.08\%) + [(24\%)*(0.66\% - 0.08\%)] = 0.22\%$.

³³ We also take logs of both variables, which enables us to interpret the results as elasticities. Taking logs is without loss of generality for the purposes of our results.

Technical Appendix C (Canada)

Figure 10-Predicted growth of employment vs actual growth, ARDL model for robustness



Source: Authors, based on data by Statistics Canada.

Figure 10 is strikingly similar to the result of our initial employment model (Figure 9). The CAR for the period between 2010 and 2014 is 0.23% (and statistically significant). However, as we did in the in the original employment model above, we next controlled for the impact the crisis may have had on the employment rate, leading to it being higher after the crisis before reverting to its natural rate. After adjusting for the crisis component assuming full catch-up, the impact comes down to is -0.2%. In case of partial catch-up, the effect is -0.10%. As explained in the **Technical Appendix A**, labor force is not fully exogenous. As labor market conditions improve, people who have previously not been looking for job, enter the labor market again. This correlation results in a downward bias for finding policy impact. This result is also consistent with what we see in Norway. We thus are confident of our results based on active population.

REFERENCES

IMF (1998)	Senhadji, Abdelhak and Claudio Montenegro (1998), "Time Series Analysis of Export: A Cross-Country Analysis". <i>IMF Working paper</i> WP/98/149.
------------	---

TECHNICAL APPENDIX D (NORWAY)

A. Introduction and roadmap

While the main body of the Norway case study provides the results of our empirical exercise of measuring the impact of UTL on the three macroeconomic variables of choice (exports, productivity and employment), it does not discuss the specifications of the models used, their validity, and the robustness of their results. This is what this appendix will deal with.

This appendix discusses our empirical work for each of the macroeconomic variables of interest: Section B deals with the Before/After approach (event study) that we apply to exports. Section C explains our DID approach with which we examine the effect of UTL on labor productivity. Section D, finally explains our event study approach for assessing the effect of UTL on employment. Each of the three sections starts by describing the data sources (subsections B.1, C.1 and D.1), and then moves on to the specifications of our selected model (subsections B.2, C.2 and D.2). Finally, where reasonable, we close with an analysis of how robust our model findings are by applying empirical robustness checks and/or model variations for estimating the impact of UTL (subsections B.3 and D.3).

B. Export Event Analysis

1. Data

To implement the approach outlined above, we require time-series data for Norway's exports of goods, a measure for demand, and another one for Norway's external price competitiveness. Data for Norway's exports of goods are readily available on Statistics Norway's website.¹ We use data for the period from 1990 to 2014. For demand, we note that exports depend on a weighted composite of GDP of Norway's main export partners (termed Export Demand Index for Norway). As a proxy for price competitiveness, we use OECD real effective exchange rate index for Norway.²

¹ See <https://www.ssb.no/en/statistikkbanken>.

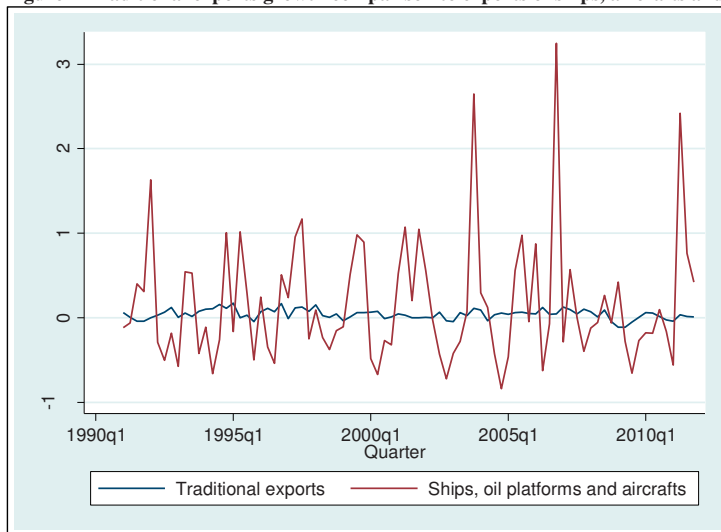
² See <http://stats.oecd.org/Index.aspx?QueryId=51626>.

Technical Appendix D (Norway)

1) Norwegian goods exports

The outcome variable of interest is the performance of Norway's traditional goods exports. We excluded the petroleum sector, along with ships and aircraft manufacturing, since these sectors are highly volatile and preclude us from identifying a good model for predicting exports. The justification for this is also obvious in the data itself. Figure 1 compares the quarterly year-on-year growth rates of traditional exports and exports of ships, aircrafts and oil platforms. As is evident from the graph, the volatility of exports of ships, aircrafts and oil platforms is extraordinary, as compared to traditional exports. In some cases, the year-on-year export growth of ships, aircrafts and oil platforms exceeded 250%.³ Modelling exports based on such data would have led to misleading inferences, apart from the difficulty in incorporating such data into a well-identified economic model.

Figure 1-Traditional exports growth comparison to exports of ships, aircrafts and oil platforms



Source: Statistics Norway.

Our model thus focuses on exports of traditional goods only. Export data used are from the national accounts published by *Statistics Norway*. We used seasonally adjusted data at 2014 prices to arrive at the growth rates.

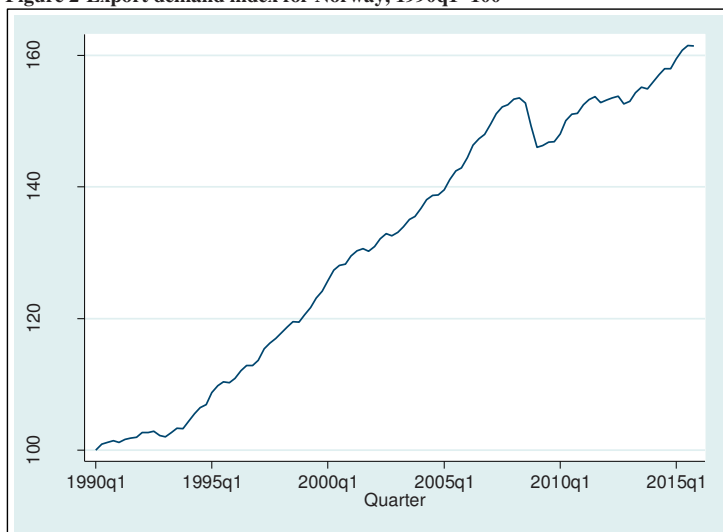
³ The reason lies more in how exports are registered. Even though value added in manufacturing ships and aircrafts occurs over a longer time frame, they are accounted in official export statistics only when the ownership changes, thus leading to massive fluctuations.

Technical Appendix D (Norway)

2) Export Demand Index for Norway

The export demand index, which is a measure of demand for Norwegian exports, is a trade-weighted measure of Norway's main trading partners' GDP.⁴ Each trading partner's GDP is weighted by the share of that country in Norway's exports. Norway exports predominantly to the EU-28 countries, which accounted for approximately 80% of Norwegian exports between 1990 and 2015 (with little variation between those years). We cluster all the other countries shares as "rest of the world". We then take the weighted average of GDP growth of EU-28 countries and rest-of-world GDP by their share in Norway's exports, as described above. The demand index is depicted in Figure 2.

Figure 2-Export demand index for Norway, 1990q1=100



Source: Statistics Norway.

Figure 2 shows that in the seven years prior to Norway's UTL in 2006, the demand index grew by 19.6%, or 2.6% on average per year. During the Global Financial Crisis, the demand index fell by 4.8%. Once the crisis was over, the demand index grew again by 8.8% between 2009 and 2014; this results in an annualized rate of 1.7%.

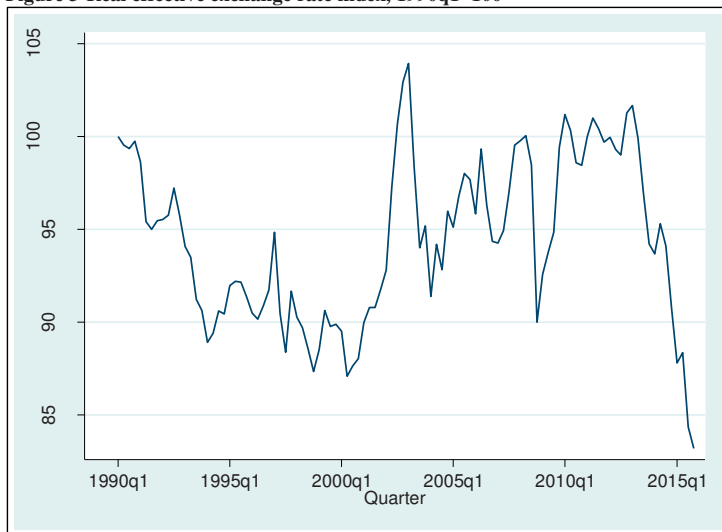
⁴ Data for GDP of partner countries was taken from OECD database. Data for bilateral trade was taken from WITS database.

Technical Appendix D (Norway)

3) Norway real effective exchange rate index

To proxy the price competitiveness of Norwegian exports in the international market, we use Norway's real effective exchange rate, which is a trade-weighted measure of Norway's exchange rate against a basket of currencies based upon bilateral flows. The real effective exchange rate index for most economies is available on the OECD database.⁵ Figure 3 depicts the real effective exchange rate index.

Figure 3-Real effective exchange rate index, 1990q1=100



Source: OECD.

The data used to construe Figure 3 indicates that between 1999 and 2002, the exchange rate appreciated sharply, before falling again and stabilizing by 2005. Compared to Canada and New Zealand, Norway's real exchange movements are relatively minor. After Norway's UTL, the exchange rate was slightly more volatile, with an obvious trough during the period of the Global Financial Crisis. "

2. ARDL Model for exports

We use an event study to identify the impact of UTL on exports of Norway. Economic literature has shown that there exists a strong relationship between a country's export growth

⁵ <https://data.oecd.org/>.

Technical Appendix D (Norway)

on the one hand and GDP growth in its main export markets on the other hand.⁶ This relationship tends to be rather stable. The demand for a country's exports depend on prices. The intuition behind our event analysis is that *without* UTL, the relationship between Norwegian exports and its competitiveness (real exchange rate) on the one hand, and its foreign demand (export demand index) on the other hand, would have continued to hold. Using actual data for Norway's real exchange rate and GDP growth in Norway's main trading partners allows us to construct a counterfactual outcome for Norwegian export activity in traditional. We then compare the counterfactual outcome with the actual and attribute the difference to UTL.

Our model was identified using quarterly data from 1990 to 2005 of three variables: exports, demand index and real exchange rate (effective). To avoid stationarity problems, rather than using the data in level, we use year-on-year growth rates ("PCY") of the respective quarterly time series. Regression coefficients in column 3 and 4 (Table 1) can therefore be read as elasticities. To be as objective as possible, model selection is based on using the *auto.arima()* function in R's *forecast* package.

Table 1 gives the respective coefficients and standard errors of the identified model.

Table 1-Selected ARDL model

	AR1 (1)	SAR1 (2)	Export demand growth (3)	Exchange rate growth (4)
Coefficient	0.33***	-0.32***	1.96***	-0.44**
Standard Errors	0.13	0.12	0.26	0.21

Source: Authors' ***represents significance at 1% level ** represents significance at 5% level

The ARDL model has export demand growth and exchange rate growth as dependent variables, along with two autoregressive ("AR") components and controls for seasonality ("SAR"). The model tells us that an improvement of external demand (as measured by the demand index) by 1% leads to an increase of 1.96% in traditional exports (column (3)). An appreciation of the Norwegian kronor by 1% has a negative impact on Norwegian traditional exports of the order of -0.47% (column (4)). AR1 is an auto regressive component (column

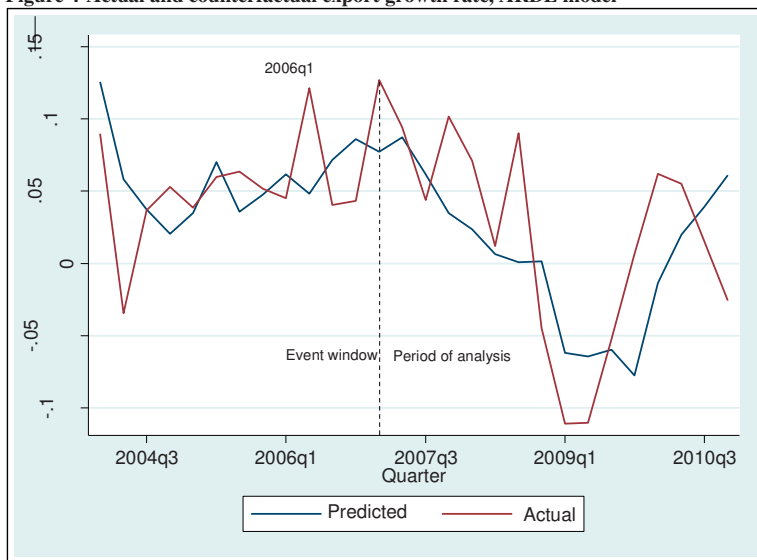
⁶ See IMF (1998).

Technical Appendix D (Norway)

(1)), which measures how past values impact the current period export growth. SAR1 (column (2)) controls for any seasonality in the data.

With the above model identified, we then use it to predict growth of exports after the implementation of UTL. These predictions (counterfactual growth rates) are based on what the trajectory of exports would have been in the absence of UTL. We then compare the counterfactual with the actual exports growth in the post-UTL phase. Figure 4 (which is also reported in the main body of the Norway case study) plots the actual and predicted exports growth for Norway.

Figure 4-Actual and counterfactual export growth rate, ARDL model



Source: Authors.

The next step was to quantify the impact of policy change in the post UTL phase. Since exports react to favorable macroeconomic environment with a lag, we start our period of analysis one year after UTL was implemented. The graphical analysis in Figure 4 shows that for much of the analysis period before the Global Financial Crisis and the concomitant Great Trade Collapse (Q1/2007-Q3/2008) the blue line, *i.e.*, the predicted export growth (which represents the a world *without* UTL), is below the red line that depicts the actual export growth dynamics (*with* UTL). This suggests that UTL has had a sizeable effect on Canadian export volumes.

Technical Appendix D (Norway)

The Cumulative Average Residual (“CAR”), which is the average difference between actual and predicted outcomes, quantifies the impact of policy changes on the variable under study.⁷ In the case of no policy change, the CAR would be a noisy zero. For a shorter forecasting period (Q1/2007-Q3/2008), the CAR is 3.5% and statistically significant,⁸ meaning that actual exports, on average, were 3.5% higher than predicted by the model over the two years following UTL.

This result, encouraging as it is, has to be treated with caution, since we stopped the ARDL model just before the Great Trade Collapse (to avoid contamination of the results). This means that the CAR was calculated for a forecasting period of only seven quarters, which does not cover a full business cycle.⁹ To cover an entire business cycle in the forecasting period, we thus extend the forecasting period from Q1/2007 to Q4/2010. Calculating the CAR over this extended period reduces the effect of UTL to 1.2% and no longer statistically significant.¹⁰

3. Robustness check

For robustness check of our previous result, we estimate the same ARDL model, but based on a shorter time period. This time, our time series for the data starts in 1998, not in 1990. The reason for using this truncated time series is that during the 1990-97 period, Norway’s exports of traditional goods went through a period of high volatility. This can be seen in Figure 5.

⁷ For the exact theoretical formulation of CAR, please see **Technical Appendix A**.

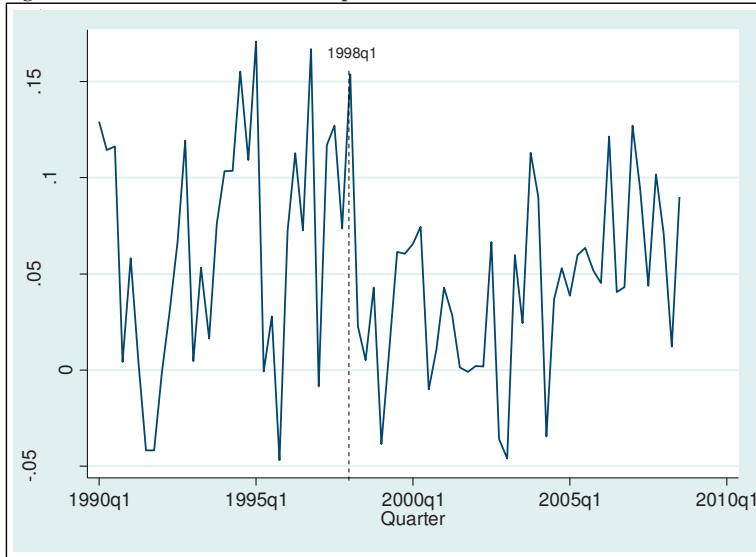
⁸ To find whether the calculated CAR is significant or not, we regress the difference between actual and predicted values of the variable on a constant. The magnitude of the constant determines the significance of the CAR. For all the CARs, we determine significance at the 5% level using a t-test on the constant.

⁹ We recall that the period of analysis for both New Zealand and Canada was 16 quarters, or four years. This is standard in forecasting because a business cycle is typically 4-5 years. One the one hand, the CAR for a shorter period (seven quarters here) is more susceptible to outliers in the data.

¹⁰ Note that in contrast to the Canada case study, we do not need to control for a catch-up effect. This is because for Canada, its UTL straddled the time before and after the Global Financial Crisis, while in the case of Norway, both crisis and post-crisis fall into the post-UTL period, and thus any catch-up effect will cancel itself out naturally.

Technical Appendix D (Norway)

Figure 5-Growth rate of traditional exports



Source: Statistics Norway.

While the whole time series for Norway is volatile, it was especially volatile in the 1990-1997 period. Including this data to estimate the model may lead to misleading inferences. We thus estimate the model now using the data from 1998 to 2005. The model results are shown in Table 2.

Table 2-ARDL model for robustness check

	SAR1 (1)	Export demand growth (2)	Exchange rate growth (3)
Coefficient	-0.43**	1.30***	-0.25**
Standard Errors	0.19	0.19	0.11

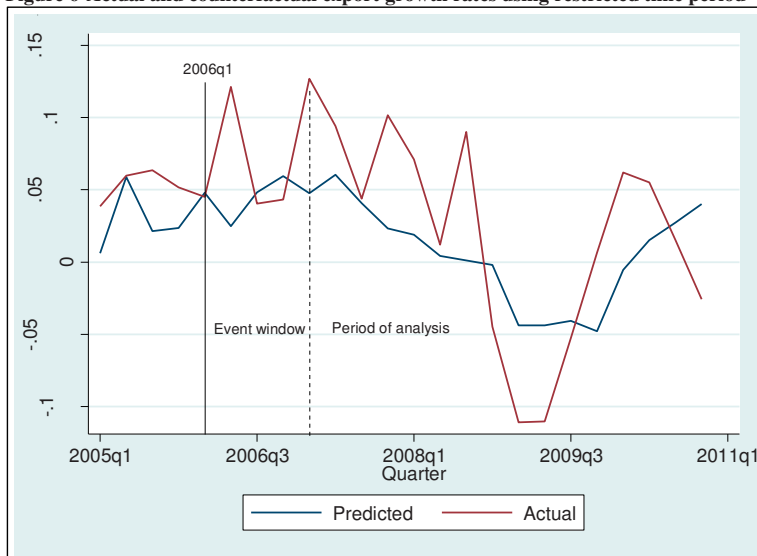
Source: Authors. ***represents significance at 1% level. ** represents significance at 5% level.

Compared to our main model in Table 1, the specifications under robustness are quite different. The demand elasticity of exports is 1.30 and smaller compared to our model covering the whole time period (column (2)), price elasticity as judged by real effective exchange rate index is -0.25 (column (3)). Hence both elasticities are lower in magnitude than in the model estimated in Table 1.

Technical Appendix D (Norway)

Once we have identified the best-fitting model, we repeat what we did for Table 1 above: we calculate counterfactual growth rates of exports using the model above, and then comparing them with the actual performance. Figure 6 illustrates the actual and counterfactual export growth for Norway. We see the model tracking Norwegian exports quite well prior to the UTL. After UTL we see actual growth being consistently higher than predicted exports until the outbreak of the crisis.

Figure 6-Actual and counterfactual export growth rates using restricted time period



Source: Authors.

The CAR for the shorter forecasting period from Q1/2007 to Q3/2008 is 4.9% and statistically significant. As before, for a longer forecasting period (2007-2010) the estimated effect is 1.49%, but not significant. These results are marginally higher than for the model in Table 1. Our robustness check thus suggests that the gains from UTL on exports were similar in magnitude (or perhaps marginally higher) to the model that has been calibrated based on the entire 1990-2005 time period.

C. DID analysis for productivity

1. Data

For analyzing the impact of UTL on productivity, we first need to define a measure of productivity. We opted for *labor* productivity, which is the annual output per employed

Technical Appendix D (Norway)

worker.^{11,12} We limit ourselves to productivity measured for *mainland* Norway.¹³

Unfortunately, we are unable to use *hourly* productivity data as a robustness check (like we did in the case of New Zealand and Canada), because these data are unavailable for mainland Norway.

Our DID analysis is based on the G7 as comparator market for the treatment market Norway. The choice of using country groups rather than specific countries (like we use US as control market in case of Canada) boils down to the nature of Norwegian economy. Dominated by oil with government control in key sectors of the economy, it was difficult to find control markets with similar characteristics. We thus use aggregate measures like the G7 productivity which are a combination of other developed economies.

2. DID analysis for productivity

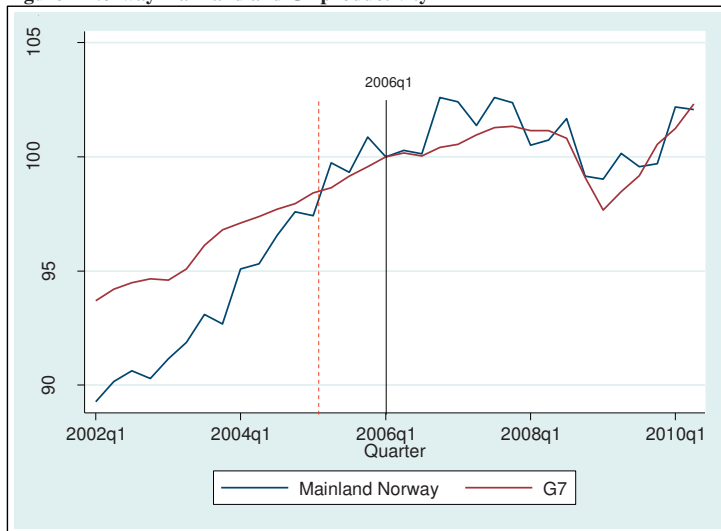
Figure 7 plots the indexed productivity levels in the pre and post-UTL period. The productivity level has been indexed to $Q1/2006 = 100$. The solid black vertical line depicts the introduction of UTL in Norway in 2006.

¹¹ In **Technical Appendix A**, we explain our preference for labor productivity over hourly productivity.

¹² Data for GDP and total employment sourced from Statistics Norway; available at <http://www.ssb.no/en>.

¹³ UTL has little to do with the dynamics of the petroleum sector. Including it in the analysis might contaminate our results, as any change in that sector would be independent to UTL.

Figure 7-Norway mainland and G7 productivity



Source: Statistics Norway and OECD.

As can be seen in Figure 7, productivity growth in Norway was much faster than in G7 countries before Q4/2004 (marked by the red dotted line), as can be judged by the steeper slope of the Norwegian productivity. Then productivity in both regions evolves more or less in lockstep (the differences between the two lines are between fractions of a percent and one or two percentage points). This suggests that there is no difference in productivity performance after Q4/2004. This period notably *includes* the implementation of UTL in the treatment market of mainland Norway. We thus conclude that UTL has not resulted in a positive impact on productivity growth in mainland Norway.

D. Employment event analysis

1. Data

For the purpose of employment modelling, we used data for employment levels in Norway and the active population levels, which is the number of 15-64 year olds in the country. Both of these datasets were sourced from *Statistics Norway*.¹⁴ Again, in an effort to exclude the

¹⁴ See Statistics Norway, Labor Force Survey, available at: <https://www.ssb.no/statistikkbanken/selecttable/hovedtabellHjem.asp?KortNavnWeb=aku&CMSSubjectArea=a&rbeid-og-lonn&PLanguage=1&checked=true>.

Technical Appendix D (Norway)

petroleum sector from our analysis, we utilized employment in mainland Norway only, which notably excludes workers employed in the offshore sector.

While as a matter of economic theory we prefer using active population levels,¹⁵ we perform a robustness check in which we test whether using labor force data would change our results. Data for labor force was again obtained from *Statistics Norway*.¹⁶

2. ARDL Model for employment

As with our analysis of exports, we apply an ARDL model for employment. Our objective is to identify a model which can track changes in employment levels and employment growth using the pre-UTL period (Q1/1995 - Q4/2005).¹⁷ We then use this model to forecast changes in employment in the post UTL phase. The difference between actual and predicted values (counterfactuals) of our variable of variable of interest are then compared, attributing the difference to UTL.

A graphical inspection of Figure 8 shows that the trajectory of the active population is inherently linked to the one of employment. Cointegration between the two time series variables allows us to work in levels.

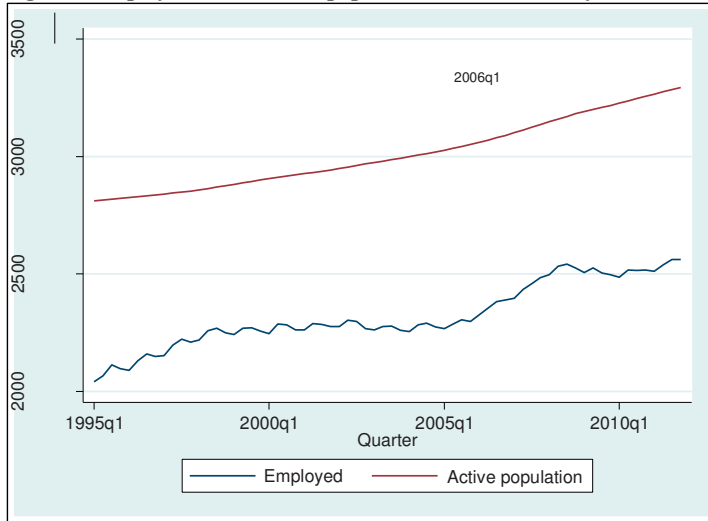
¹⁵ As we explain in **Technical Appendix A**, labor force and employment tend to exhibit co-movement which may lead to endogeneity problems. Hence our preferred choice of independent variable is active population.

¹⁶ See *Statistics Norway*, Labor Force Survey, available at:

<https://www.ssb.no/statistikkbanken/selecttable/hovedtabellHjem.asp?KortNavnWeb=aku&CMSSubjectArea=arbeid-og-lonn&PLanguage=1&checked=true>.

¹⁷ Data for mainland employment was available only from 1995q1 onwards.

Figure 8-Employment and active population levels in Norway



Source: Statistics Norway.

We calibrated our model using the actual values of employed workers and active population. This was possible, since the two variables are cointegrated. As before, the time-series model is selected by using the *auto.arima()* function in R's forecast package. Table 3 depicts the estimated model for Norwegian employment.

Table 3-ARDL model for employment

	AR1 (1)	MA1 (2)	Active population (3)
Coefficient	0.97***	0.46***	0.75***
Standard errors	0.04	0.16	0.29

Source: Authors. ***represents significance at 1% level. ** represents significance at 5% level.

The model shows that there is almost a one unit increase in active population leads to a 0.75 unit increase in employment (column (3)).¹⁸ This coefficient is highly statistically significant at the 1% level. The model also has an autoregressive component AR1 (column (1)) and moving average component MA1 (column (2)).

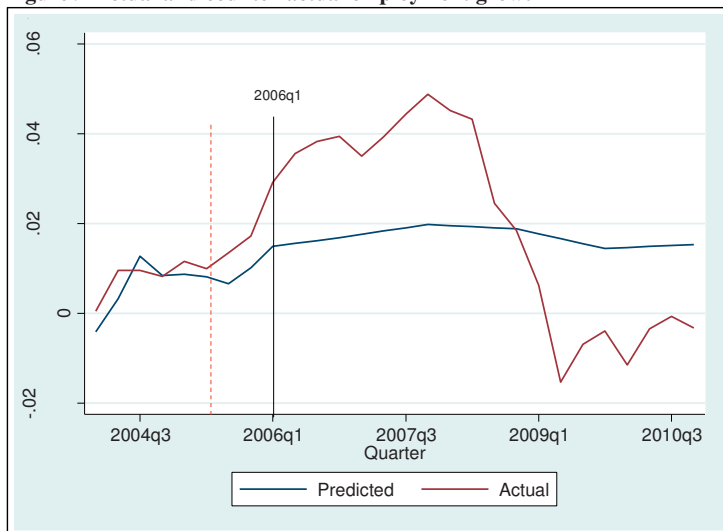
Having selected our optimal model, we use its structure to simulate counterfactual employment levels in the post-UTL phase using actual active population data. The next step

¹⁸ This makes economic sense, since not every working age individual chooses to participate in the labor market.

Technical Appendix D (Norway)

consists in converting both the predicted and actual employment levels into year-on-year quarterly growth rates and compare them. Figure 9 shows the actual and counterfactual employment growth rates based upon the model in Table 3.

Figure 9-Actual and counterfactual employment growth



Source: Authors.

The Cumulative Average Residual (CAR) for 11 quarters following the UTL (Q1/2006 - Q3/2008) is 2.06% and is statistically significant. This means that on average, actual employment growth was higher than the predicted by 2.06%. However, as we discuss in the main text of the Norway case study, this estimate represents the combined impact of labor-market reforms and UTL, with the reforms playing a more significant role than UTL.

3. Robustness check

Above, we opted for total employment as our outcome variable and active population as dependent variable. To check the robustness of our results, instead of using active population as dependent variable, we use labor force, which is the sum of employed and unemployed persons in the country. The time series of our data remains the same (Q1/1995 - Q4/2005).¹⁹ The results of the model are presented in Table 4.

¹⁹ We also take logs of both variables, which enables us to interpret the results as elasticities. Taking logs is without loss of generality for the purposes of our analysis.

Technical Appendix D (Norway)

Table 4-Outcome of the ARDL model for employment using labor force

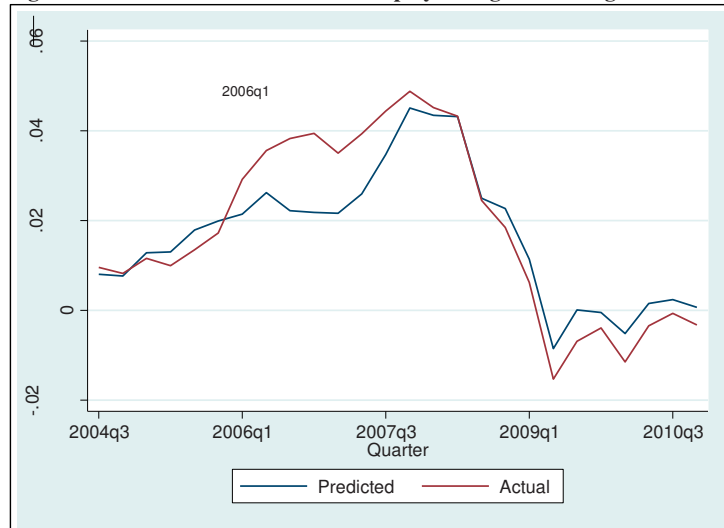
	AR1 (1)	MA1 (2)	Labor force (3)
Coefficient	0.92***	-0.38**	0.95***
Standard errors	0.07	0.15	0.004

Source: Authors. ***represents significance at 1% level. ** represents significance at 5% level.

The model has a statistically significant autoregressive component AR1 (column (1)) and a moving average component MA1 as well (column (2)). The coefficient on labor force is 0.95, which tells us that for every 1 unit increase in labor force, employment increases by 95%, a coefficient which makes economic sense (column (3)). This coefficient is highly statistically significant on the 1% level.

We then used the above identified model (in Table 3) to predict employment after the UTL, and then converted both actual and predicted employment in growth rates. Figure 10 shows the actual and counterfactual employment growth rates in the post-UTL phase.

Figure 10-Actual and counterfactual employment growth using labor force



Source: Authors.

While the CAR for Figure 9 for the period Q1/2006 to Q3/2008 was 2.06%, the CAR for the model which uses labor force has a CAR of 0.83%, and is statistically significant. This predicted the policy effect based on labor force is significantly lower than that based on

Technical Appendix D (Norway)

active population. As discussed in the **Technical Appendix A**, while labor force tracks employment very well, using this metric as explanatory variable has its issues. Labor force is by no means exogenous to employment dynamics. This is the reason why we expect a downward bias in the policy result based on labor force (effectively because the model already incorporates part of the positive impact on employment). This is not the case with active population, which tends to be more stable, at least in the short run.

We would thus expect the model in Table 4, which is based on labor force, to predict a lower CAR than the model in Table 3, which is based on active population. However, we get significantly positive results for the period Q1/2006 to Q3/2008 using both models. We are thus confident in our results of statistically significant employment effects. To what extent this can be attributed to UTL or the background changes in labor market policy has been discussed in the main text.

TABLE OF REFERENCES

IMF (1998)	Senhadji, Abdelhak and Claudio Montenegro (1998), "Time Series Analysis of Export: A Cross-Country Analysis". <i>IMF Working paper</i> WP/98/149.
------------	---

In der Reihe „Strukturberichterstattung“ des Staatssekretariats für Wirtschaft sind seit 2000 erschienen:

1	Arvanitis, S. u.a. (2000) Die preisliche Wettbewerbsfähigkeit der schweizerischen Wirtschaftszweige	22.
2	Arvanitis, S. u.a. (2001) Untersuchung der internationalen Wettbewerbsfähigkeit der schweizerischen Wirtschaftszweige anhand einer „Constant Market Shares“-Analyse der Exportanteile	18.
3	Raffelhüschen, B. u.a. (2001) Zur Nachhaltigkeit der schweizerischen Fiskal- und Sozialpolitik: Eine Generationenbilanz (ohne Software GAP)	21.
4	Arvanitis, S. u.a. (2001) Unternehmensgründungen in der schweizerischen Wirtschaft	26.
5	Arvanitis, S. u.a. (2001) Innovationsaktivitäten in der Schweizer Wirtschaft. Eine Analyse der Ergebnisse der Innovationserhebung 1999	34.
6	Crivelli, L. u.a. (2001) Efficienza nel settore delle case per anziani svizzere	26.
7	Hollenstein, H. (2001) Die Wirtschaftsbeziehungen zwischen der Schweiz und Osteuropa	23.
8	Henneberger, F. u.a. (2001) Internationalisierung der Produktion und sektoraler Strukturwandel: Folgen für den Arbeitsmarkt	21.
9	Arvanitis, S. u.a. (2002) Finanzierung von Innovationsaktivitäten. Eine empirische Analyse anhand von Unternehmensdaten	22.
10	Arvanitis, S. u.a. (2002) Qualitätsbezogene und technologische Wettbewerbsfähigkeit der schweizerischen Industriezweige. Beurteilung auf Grund der Export- bzw. Importmittelwerte und der Hochtechnologieexporte	18.
11	Ott, W. u.a. (2002) Globalisierung und Arbeitsmarkt: Chancen und Risiken für die Schweiz	28.
12	Müller, A. u.a. (2002) Globalisierung und die Ursachen der Umverteilung in der Schweiz. Analyse der strukturellen und sozialen Umverteilungen in den 90-er Jahren mit einem Mehrländer-Gewichtsmodell	24.
13	Kellermann, K. (2002) Eine Analyse des Zusammenhangs zwischen fortschreitender Globalisierung und der Besteuerung mobiler Faktoren nach dem Äquivalenzprinzip	18.
14	Infras (2002) Globalisierung, neue Technologien und struktureller Wandel in der Schweiz	28.
15	Fluckiger, Y. u.a. (2002) Inégalité des revenus et ouverture au commerce extérieur	20.
16	Bodmer, F. (2002) Globalisierung und Steuersystem in der Schweiz	22.
17	Arvanitis, S. u.a. (2003) Die Schweiz auf dem Weg zu einer wissensbasierten Ökonomie: eine Bestandesaufnahme	28.
18	Koch, Ph. (2003) Regulierungsdichte: Entwicklung und Messung	23.
19	Iten, R. u.a. (2003) Hohe Preise in der Schweiz: Ursachen und Wirkungen	36.
20	Kuster, J. u.a. (2003) Tourismusdestination Schweiz: Preis- und Kostenunterschiede zwischen der Schweiz und EU	23.
21	Eichler, M. u.a. (2003) Preisunterschiede zwischen der Schweiz und der EU. Eine empirische Untersuchung zum Ausmass, zu Erklärungsansätzen und zu volkswirtschaftlichen Konsequenzen	34.
22	Vaterlaus, St. u.a. (2003) Liberalisierung und Performance in Netzsektoren. Vergleich der Liberalisierungsart von einzelnen Netzsektoren und deren Preis-Leistungs-Entwicklung in ausgewählten Ländern	37.
23	Arvanitis, S. u.a. (2003) Einfluss von Marktmobilität und Marktstruktur auf die Gewinnmargen von Unternehmen – Eine Analyse auf Branchenebene	23.
24	Arvanitis, S. u.a. (2004) Innovationsaktivitäten in der Schweizer Wirtschaft – Eine Analyse der Ergebnisse der Innovationserhebung 2002	28.
25	Borgmann, Ch. u.a. (2004) Zur Entwicklung der Nachhaltigkeit der schweizerischen Fiskal- und Sozialpolitik: Generationenbilanzen 1995-2001	20.
26D	de Chambrier, A. (2004) Die Verwirklichung des Binnenmarktes bei reglementierten Berufen: Grundlagenbericht zur Revision des Bundesgesetzes über den Binnenmarkt	19.
26F	de Chambrier, A. (2004) Les professions réglementées et la construction du marché intérieur: rapport préparatoire à la révision de la loi sur le marché intérieur	19.
27	Eichler, M. u.a. (2005) Strukturbrüche in der Schweiz: Erkennen und Vorhersehen	23.
28	Vaterlaus, St. u.a. (2005) Staatliche sowie private Regeln und Strukturwandel	32.
29	Müller, A. u.a. (2005) Strukturwandel – Ursachen, Wirkungen und Entwicklungen	24.
30	von Stokar Th. u.a. (2005) Strukturwandel in den Regionen erfolgreich bewältigen	22.
31	Kellermann, K. (2005) Wirksamkeit und Effizienz von steuer- und industriepolitischen Instrumenten zur regionalen Strukturanpassung	22.

32	Arvanitis, S. u.a. (2005) Forschungs- und Technologiestandort Schweiz: Stärken-/Schwächenprofil im internationalen Vergleich	25.
33E	Copenhagen Economics, Ecoplan, CPB (2005) Services liberalization in Switzerland	31.
34	Arvanitis, S. u.a. (2007) Innovationsaktivitäten in der Schweizer Wirtschaft - Eine Analyse der Ergebnisse der Innovationsserhebung 2005	34.
35/1	Brunetti, A., und S. Michal (eds.) - 2007 - Services Liberalization in Europe: Case Studies (vol. 1)	37.
35/2	Brunetti, A., und S. Michal (eds.) - 2007 - Services Liberalization in Europe: Case Studies (vol. 2)	26.
36/1	Balastèr, P., et C. Moser (éd.) - 2008 - Sur la voie du bilatéralisme: enjeux et conséquences (vol.1)	38.
36/2	Balastèr, P., et C. Moser (éd.) - 2008 - Sur la voie du bilatéralisme: enjeux et conséquences (vol. 2)	41.
37	Kellermann, K. (2007) Die öffentlichen Ausgaben der Kantone und ihrer Gemeinden im Quervergleich	25.
38	Ecoplan (2008) Benchmarking: Beispiel öffentlicher Regionalverkehr	15.
39	Filippini, M. & M. Farsi (2008) Cost efficiency and scope economies in multi-output utilities in Switzerland	18.
40	Kuster, J., und H.R. Meier (2008) Sammlung von Altpapier durch die Gemeinden - statistische Benchmarking-Methoden im Test	12.
41	Frick, A. (2008) Benchmarking öffentlicher Leistungen anhand des Fallbeispiels "Berufsbildung": Vergleich der kantonalen Ausgaben für die Berufsbildung	14.
42	Schoenenberger, A. e.a. (2009) Efficacité technique des exploitations forestières publiques en Suisse	25.
43	Arvanitis, S. u.a. (2008) Innovation und Marktdynamik als Determinanten des Strukturwandels	14.
44/1	Worm, H. u.a. (2009) Evaluation Kartellgesetz: Volkswirtschaftliche Outcome-Analyse	28.
44/2	Hüschelrath, K. u.a. (2009) Evaluation Kartellgesetz: Fallstudien zu den Wirkungen des Kartellgesetzes	36.
44/3	Baudenbacher, C. (2009) Evaluation Kartellgesetz: Institutionelles Setting Vertikale Abreden Sanktionierung von Einzelpersonen Zivilrechtliche Verfahren – with an English summary	36.
44/4	Heinemann, A. (2009) Evaluation Kartellgesetz: Die privatrechtliche Durchsetzung des Kartellrechts	22.
45	Hulliger, B. u.a. (2009) Erste Auswirkungen der Abschaffung der Buchpreisbindung - Technischer Bericht und Vertiefung	22.
46	Arvanitis, S. u.a. (2010) Innovationsaktivitäten in der Schweizer Wirtschaft - Eine Analyse der Ergebnisse der Innovationsserhebung 2008	33.
47/1	Arvanitis, S. u.a. (2011) Exportpotenziale im Dienstleistungssektor (Band 1)	31.
47/2	Moser, P. u.a. (2011) Exportpotenziale im Dienstleistungssektor (Band 2)	16.
47/3	Delimatsis, P. (2011) Exportpotenziale im Dienstleistungssektor (Band 3)	25.
47/4	Egger, P., und G. Wamser (2011) Exportpotenziale im Dienstleistungssektor (Band 4)	14.
48/1	Vaterlaus, St. u.a. (2011) Produktivität und Finanzierung von Verkehrsinfrastrukturen (Band 1)	20.
48/2	Peter, M. u.a. (2011) Produktivität und Finanzierung von Verkehrsinfrastrukturen (Band 2)	28.
48/3	Suter, St. u.a. (2011) Produktivität und Finanzierung von Verkehrsinfrastrukturen (Band 3)	19.
48/4	Bruns, F. u.a. (2011) Produktivität und Finanzierung von Verkehrsinfrastrukturen (Band 4)	20.
48/5	Müller, U. u.a. (2011) Produktivität und Finanzierung von Verkehrsinfrastrukturen (Band 5)	26.
49	Arvanitis, S. u.a. (2013) Innovationsaktivitäten in der Schweizer Wirtschaft - Eine Analyse der Ergebnisse der Innovationsserhebung 2011	35.
50/1	Eichler, M. u.a. (2013) The Financial Sector and the Economy: A Pillar or a Burden? (Band 1)	34.
50/2	Kellermann, K. und Schlag, C.-H. (2013) Wird die Wertschöpfung der Kreditinstitute zu hoch ausgewiesen? (Band 2)	14.
50/3	Abrahamsen, Y. u.a. (2013) Die Rolle der Banken bei der Transformation von Finanz- in Sachkapital (Band 3)	17.
50/4	Kellermann, K. und Schlag, C.-H. (2013) Wofür und für wen spart die Schweiz? - Der Einfluss der finanziellen Globalisierung auf die Vermögensbildung und -struktur der Schweiz (Band 4)	15.
50/5	Dembinski, P. e.a. (2013) Productivité et rentabilité du capital physique et financier - Analyse statistique exploratoire des données micro-économiques suisses (Band 5)	14.
51	Arvanitis, S. u.a. (2014) Die Entwicklung der Innovationsaktivitäten in der Schweizer Wirtschaft 1997-2012	15.
52	Arvanitis, S. u.a. (2014) Auswirkungen der Finanz- und Wirtschaftskrise von 2008 auf die Schweizer Wirtschaft - Eine Analyse auf der Basis von Unternehmensdaten - nur elektronische Fassung	

53/1	Nathani, C. u.a. (2014) Die Volkswirtschaftliche Bedeutung der globalen Wertschöpfungsketten für die Schweiz – Analysen auf Basis einer neuen Datengrundlage – Schwerpunktthema: Die Schweiz in den globalen Wertschöpfungsketten	20.
53/2	Fauceglia, D. u.a. (2014) Backward Participation in Global Value Chains and Exchange Rate Driven Adjustments of Swiss Exports – Schwerpunktthema: Die Schweiz in den globalen Wertschöpfungsketten	11.
53/3	Arvanitis, S. u.a. (2014) Die Determinanten und Auswirkungen von intra-betrieblichen Leistungsverflechtungen - Schwerpunktthema: Die Schweiz in den globalen Wertschöpfungsketten	13.
53/4	Morlok, M. u.a. (2014) Der Einfluss internationaler Wertschöpfungsketten auf berufliche Tätigkeiten und Qualifikationen in der Schweiz - Schwerpunktthema: Die Schweiz in den globalen Wertschöpfungsketten	20.
53/5	Böhmer, M. und Weiss, J. (2014) Forschungs- und Technologieintensität in der Schweizer Industrie - Schwerpunktthema: Die Schweiz in den globalen Wertschöpfungsketten	14.
54/1	Eberli, A. u.a. (2015) Beitrag branchenspezifischer Effekte zum Wachstum der Schweizer Arbeitsproduktivität - Schwerpunktthema: Wachstum der Schweizer Volkswirtschaft	23.
54/2	Ehrentraut, O. u.a. (2015) Die Bedeutung des Humankapitals für die Entwicklung der Arbeitsproduktivität und das Wirtschaftswachstum – Schwerpunktthema: Wachstum der Schweizer Volkswirtschaft	20.
54/3	Kaiser, B. und Siegenthaler, M. (2015) The Productivity Deficit of the Knowledge-Intensive Business Service Industries in Switzerland – Schwerpunktthema: Wachstum der Schweizer Volkswirtschaft	20.
54/4	Jäger, Ph. u.a. (2015) Der Zusammenhang zwischen dem technischen Fortschritt, der Investitionstätigkeit und der Produktivitätsentwicklung – Schwerpunktthema: Wachstum der Schweizer Volkswirtschaft	12.
54/5	Fuest, A. u.a. (2015) Der Zusammenhang zwischen der Offenheit und der Produktivitätsentwicklung – Schwerpunktthema: Wachstum der Schweizer Volkswirtschaft	12.
54/6	Marti, M. u.a. (2017) Regionale Analyse der Arbeitsproduktivität - nur elektronische Fassung	
55	Arvanitis, S. u.a. (2016) Die Entwicklung der Innovationsaktivitäten in der Schweizer Wirtschaft 1997-2014	17.
56/1	Erhardt, T. u.a. (2017) Frankenaufwertung und Exportstruktur – Schwerpunktthema: Die Schweizer Wirtschaft in einem schwierigen Währungsumfeld	23.
56/2	Fauceglia, D. u.a. (2017) Exchange rate fluctuations and quality composition of exports: Evidence from Swiss product-level data – Schwerpunktthema: Die Schweizer Wirtschaft in einem schwierigen Währungsumfeld	10.
56/3	Bill-Körber, A. und Eichler, M. (2017) Resilienz der Schweizer Volkswirtschaft: Befunde und ursächliche Faktoren anhand modellgestützter Simulationen und ökonometrischer Analysen – Schwerpunktthema: Die Schweizer Wirtschaft in einem schwierigen Währungsumfeld	17.
56/4	Kaufmann, D. und Renkin, T. (2017) Manufacturing prices and employment after the Swiss franc shock – Schwerpunktthema: Die Schweizer Wirtschaft in einem schwierigen Währungsumfeld	23.
56/5	Egger, P. u.a. (2017) Labour market effects of currency appreciation: The case of Switzerland – Schwerpunktthema: Die Schweizer Wirtschaft in einem schwierigen Währungsumfeld	10.
56/6	Kaiser, B. u.a. (2017) The Impact of Real Exchange Rates on Swiss Firms: Innovation, Investment, Productivity and Business Demography – Schwerpunktthema: Die Schweizer Wirtschaft in einem schwierigen Währungsumfeld	23.
57/1	Müller, A. u.a. (2017) Volkswirtschaftliche Auswirkungen unilateraler Importerleichterungen der Schweiz – Schwerpunktthema: Potenzial und volkswirtschaftliche Auswirkungen von unilateralen Importerleichterungen der Schweiz	23.
57/2	Meier, H. und Frey, M. (2017) Administrative Entlastung bei einem unilateralen Zollabbau für Industriegüter – Schwerpunktthema: Potenzial und volkswirtschaftliche Auswirkungen von unilateralen Importerleichterungen der Schweiz	17.
57/3	Berden, K. u.a. (2017) Significance of autonomous tariff dismantling for future negotiations of free trade agreements – Schwerpunktthema: Potenzial und volkswirtschaftliche Auswirkungen von unilateralen Importerleichterungen der Schweiz	23.
57/4	Mahlstein, K. u.a. (2017) Empirical analysis of the potentials and economic impact of the unilateral easing of import restrictions – Schwerpunktthema: Potenzial und volkswirtschaftliche Auswirkungen von unilateralen Importerleichterungen der Schweiz	44.

Federal Department of Economic Affairs,
Education and Research EAER

State Secretariat for Economic Affairs SECO

Economic Policy Directorate

Holzikofenweg 36, 3003 Berne

Distribution: Tel. +41 (0)58 464 08 60, Fax +41 (0)58 463 50 01, 11.2017 100
www.seco.admin.ch, wp-sekretariat@seco.admin.ch

ISBN 978-3-905967-43-2