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“Free Trade and Economic Policies:
A Critique of Empirical Reason”

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**Free Trade and Economic Policies:
A Critique of Empirical Reason
(The Working Paper version)**

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Introduction

The debate on Canada's dependence on the United States, both in terms of imports and exports, was recently revived by the renegotiation of NAFTA that led to CUSMA, the health crisis in COVID-19 and the associated economic crisis, and the imposition of new tariffs on Canadian aluminum.

When US President Donald Trump, together perhaps with his advisers, invoked national security to justify imposing tariffs on steel and aluminum from Canada and other countries (May 2018 - May 2019), and more recently again on Canadian aluminum (August 2020, canceled in September) in the wake of a series of tariffs on imports of wines, whiskeys, cheeses and planes from the European Union, he affirmed that Canada like Europe and China exploited as always the United States and that the latter will be richer, more prosperous and secure if they limit their trade with foreign countries by producing at home the products currently imported from Canada, Europe and Asia. Several American and foreign observers denounced this reasoning.

We heard Canadian Prime Minister Justin Trudeau and his Deputy Prime Minister in charge of Free Trade Christina Alexandra 'Chrystia' Freeland affirm the principles and benefits of international trade. They claimed that the US President's decision was not only ludicrous, but would generate unnecessary and unjustified costs on both sides of the border to the detriment of the national security of both countries, their workers and their citizens. But they also added that they would defend, as they always have in the past, the interests of Canadian workers in the aluminum industry as well as those in other industries. In doing so, they echoed and repeated Donald Trump's words almost verbatim, just as government officials in Europe and Asia did.

We are also likely to hear political and economic leaders call for preferential treatment for "made locally" over "made abroad," and to put their words into action by showing themselves very generous to certain chosen businesses and industries that they deem meritorious or essential. This is essentially a populist pitch—representative of what is commonly referred to as crony capitalism.

Rather than focussing on the true determinants of economic and social success and contributing to a better understanding of how the economy works, they prefer to play the role of big spender—dispensing other people’s money and banking on the ignorance and self-interested credulity of a non-negligible subgroup of the population and its elites.

Or, from another perspective, some might want to use free trade and its expected benefits as leverage to persuade or incentivize potential trading partners to change their economic, social, or environmental policies. Thus, we might oppose free trade with potential partners because of their policies, or lack of policies, on matters such as working conditions and worker safety, child labour, pollution, deforestation, laws protecting physical and intellectual property, laws governing competition (antitrust), etc. This use of free-trade agreements, while not wholly unreasonable and unjustified, too often conceals the goal of shielding economic, social, labour-union, cultural, or environmental (green) vested interests.¹

Too often the specificities of the partners are ignored under the cover of lofty posturing. Development takes time, and we cannot reasonably expect a poorer partner to immediately adopt policies and lifestyle adjustments that wealthier partners defined, adopted, and delivered over a period of fifty years or more. An operational free-trade agreement may well be the best way to nudge a poorer country along and help it develop harmoniously while allowing the developed country to benefit from its comparative advantages.

The globalization of markets and the internationalization of cultures are often held responsible for destroying jobs in developed countries owing to outsourcing, off-shoring, and imports; for

¹ See, for example, the negative reaction of the French government to the draft free trade agreement between the European Union and Mercosur (Argentina, Brazil, Paraguay, Uruguay) in the wake of the Ambec Report, *Dispositions et effets potentiels de la partie commerciale de l’Accord d’Association entre l’Union Européenne et le Mercosur en matière de développement durable* (https://www.tse-fr.eu/sites/default/files/TSE/documents/rapport_complet.pdf) https://www.lemonde.fr/economie/article/2020/09/19/la-france-s-oppose-a-l-accord-entre-l-union-europeenne-et-le-mercotur_6052835_3234.html. Reacting to comments made by France and Germany, the Brazilian president is said to have retorted “These countries criticizing us don’t have a problem with fires because they already burned all of their forests.” France’s Fédération nationale des syndicats d’exploitants agricoles (FNSEA, France) (National federation of farmers’ unions) expressed its satisfaction with the government’s opposition! A high European official also stated that he doubted that the members of Mercosur “... would agree to return to the negotiating table without also bringing a new list of demands. If we set out to combat deforestation with a free-trade agreement, then free-trade agreements have lost all connection to trade.”

encouraging the exploitation of workers in developing countries by unscrupulous entrepreneurs in the pay of businesses, investors, and consumers in developed countries; and, finally, for undermining food security with food imports, environmental security through transportation-related GHG emissions and, more generally, national security by the forging of global, and therefore multi-country, supply chains.

Free-trade within a portfolio of government policies

All of these claims are fundamentally false, and they all illustrate ignorance and a total misunderstanding of three of the most important elements of modern economic history: the trustworthiness of prices and their coordinating and incentivizing nature, opportunity costs, and comparative advantage.

These assertions are rooted in confusion between the impacts of free-trade policies and those of other, more or less flawed, economic policies, which can be, and often are, incorrectly attributed to the expansion of free trade. Similarly, the impacts of phenomena not explicitly accounted for, such as technological change and evolving competitive pressures, are too quickly laid at the feet of free trade. In other words, it is easy to blame free trade for “negative” outcomes that are not due to trade policy but rather to other policies or phenomena, the unfavourable effects of which parallel and often predate it. These parallel effects reduce, overshadow, and sometimes reverse the changes brought about by free trade. Sometimes, these preexisting harms to the economy can be exacerbated by free trade. The counterfactual, or what would have happened in the absence of changes to the conditions or parameters of free trade, is often poorly modelled, setting the stage for free trade to be the scapegoat for damages that are actually attributable to ill-advised crony capitalism.

While empirical studies are currently all the rage in economics, we must never forget that an empirical study is only as good as its theoretical underpinnings. The theoretical model must be rigorous and appropriate—including a transparent counterfactual modelling in which causality is

explicitly defined.² We might even coin the term “empiriness” to mirror the “mathiness” described by Paul Romer (2015).³

Confounding the impacts of various phenomena and policies is a common error, frequently agenda driven and intentional. This is a sophisticated variant on the *post hoc ergo propter hoc* error, a fallacy or cognitive bias that consists of treating as a cause that which only precedes. We encounter this error under various guises in a number of academic contributions, in which a change in the conditions of free trade—typically a new agreement or a significant shift in international trade with a strong emphasis on imports—is identified as the cause of various changes in the economy (transitions in employment and wages, factory closures, changes in some tax revenues, societal transformations, child labour and other calamities, etc.).

Popular misconceptions, beliefs, superstitions, and magical thinking commonly arise from this error. A cause-and-effect relationship is inferred without due consideration of the potential impact of other aspects of economic policy, which may be poorly designed or implemented, or mismatched with the socioeconomic challenges that existed prior to the “opening to free trade” event, or even concurrent with it.

² Sound modelling of causality in a situation with correlations and confounding factors is complicated in any area of science. In *The book of Why - The New Science of Cause and Effect* (Basic Books, 2018), Judea Pearl (and Dana Mackenzie) claim that causal analysis, in particular the new revolution in causality studies, makes it possible to go from correlation to causality, thus ending a century of confusion and placing the study of cause and effect on solid scientific footing. But even today, many statistical studies, AI studies, and econometric studies do not go past measuring correlations and lack any credible statements about causality, whatever the claims of their authors.

³ Paul Romer (2015), “Mathiness in the Theory of Economic Growth,” *American Economic Review Papers and Proceedings*: “Mathiness lets academic politics masquerade as science. Like mathematical theory, mathiness uses a mixture of words and symbols, but instead of making tight links, it leaves ample room for slippage between statements in the languages of words as opposed to symbols, and between statements with theoretical as opposed to empirical content. Because it is difficult to distinguish mathiness from mathematical theory, the market for lemons tells us that the market for mathematical theory might collapse, leaving only mathiness as entertainment that is worth little but cheap to produce.” We could paraphrase Romer as follows: “Empiriness lets academic politics masquerade as science. Like econometric theory, empiriness uses a mixture of words and symbols, but instead of making tight links, it leaves ample room for slippage between statements in the languages of words as opposed to symbols, and between statements with theoretical as opposed to empirical content. Because it is difficult to distinguish empiriness from econometric theory, the market for lemons tells us that the market for econometric theory might collapse, leaving only empiriness as entertainment that is worth little but cheap to produce.”

Associating these undesirable, even disastrous, effects with trade policy is clearly indicative of a flawed representation (theoretical model) of reality. Too often, alleged measures of the impact of free trade in fact reflect the combined effects of correlated causal factors with insufficient attention being paid to the appropriateness of the underlying theory. This results in empirical results that, while “statistically significant,” are specious, misleading, and fundamentally of little value.⁴

The following list of academic publications, impressive but by no means comprehensive, all suffer to varying degrees of seriousness from this error: Ricardo Hausmann, Jason Hwang, and Dani Rodrik, 2007. “What you export matters,” *Journal of Economic Growth*, vol. 12(1), 1–25; Svetlana Demidova, 2008. “Productivity Improvements and Falling Trade Costs: Boon or Bane?” *International Economic Review*, vol. 49(4), 1437–1462; Erhan Artuç, Shubham Chaudhuri, and John McLaren, 2010. “Trade Shocks and Labor Adjustment: A Structural Empirical Approach,” *American Economic Review*, vol. 100(3), 1008–1045; David H. Autor, David Dorn, and Gordon H. Hanson, 2013. “The China Syndrome: Local Labor Market Effects of Import Competition in the United States,” *American Economic Review*, vol. 103(6), 2121–2168; Avraham Ebenstein, Ann Harrison, Margaret McMillan, and Shannon Phillips, 2014. “Estimating the Impact of Trade and Offshoring on American Workers using the Current Population Surveys,” *The Review of Economics and Statistics*, vol. 96(4), 581–595; Rafael Dix-Carneiro, 2014. “Trade Liberalization and Labor Market Dynamics,” *Econometrica*, vol. 82(3), 825–885.

In virtually all of these cases, any difficulties or negative effects associated with free trade in a given country can be attributed to some comparative anomaly or unexplained situation in that country. Therefore, these analyses should not be used to detract from free trade, but rather to learn about and identify economic policy recommendations to eliminate, reform, or redefine the existing policies responsible for the undesirable situation.

⁴ To summarize, in order to produce all potential benefits, a free-trade policy may often require changes to some current economic policies that are impeding the country’s ability to profit from it. Not realizing this is a symptom of magical thinking.

In an attempt to understand countries' decisions regarding what to specialize in producing and exporting, Hausmann, Hwang, and Rodrik (2007) develop a "local cost discovery" process that provides a partial explanation. This is complementary to the traditional model that relies on basic inputs, such as endowments in physical and human capital, labour, natural resources, and high-quality socioeconomic institutions, which are the core determinants of relative prices (comparative advantage). This idiosyncratic and highly uncertain cost discovery process requires significant efforts from entrepreneurs and yields results that are partly public. Owing to imitation and competition, the costs of these efforts can only be partially recovered, creating a more or less serious market failure and suboptimal investment levels. Traditional policies, such as easing the terms of credit, improving institutions (battling corruption, affirming property rights, and enforcing contracts) and reducing barriers to entry do not correct this market failure. The authors see a positive and important role for government in configuring the structure of production, naturally assuming that the interventions will be properly targeted on the market failure in question. However, this raises the following question: How can the government obtain knowledge that is unavailable to entrepreneurs in the sector? One of the key characteristics of free trade is that it provides an incentive for entrepreneurs to provide the appropriate efforts.

Demidova (2008) suggests that countries have a differentiated but unexplained access to the portfolio of technologies. This is a key determinant of her results that a country may suffer from opening to international trade. She concludes that countries have an interest in investing in their infrastructures in order to better profit from international productivity gains and trade-related reductions in transactions costs. However, increased access to available technologies and improvements to infrastructure are precisely what makes opening its borders to free trade desirable for a given country.

Artuç, Chaudhuri, and McLaren (2010) raise the following questions: What are the costs borne by workers who want to transfer to a new industry in response to competition created by imports? How long will it take for the labour market to adjust and find its new steady state? Will the impact of this new steady state on workers in the sector affected by imports persist? What are the life-long effects on workers' welfare in the different industries when the costs of change

and the dynamics of transition are accounted for? Clearly, these are vital questions. The authors propose a model for the costs workers incur in moving between sectors that includes option values to account for the long-term effects (benefits) created by free trade. Their results reveal that it may take several years for the economy to adjust to a free trade shock and that the impact on wages in the most affected sectors can be significant. Nonetheless, the most affected workers can benefit from free trade because of increases in real wages in other sectors and the option value generated by labour-market mobility and trade liberalization. According to the authors, gross movements in the labour market exceed net movements by an order of magnitude. To see this, consider this data from BLS-BED:⁵

Period	Gross jobs created / quarter	Gross jobs lost / quarter	Net jobs / quarter.
1992.III – 2007.IV	7.904 M	7.497 M	407 K
2008.I – 2010.I	6.619 M	7.654 M	-1040 K
2010.II – 2011.IV	6.869 M	6.355 M	514 K
2010.II – 2013.IV	6.981 M	6.394 M	586 K
2014.I – 2019.IV	7.480 M	6.957 M	523 K

Thus, each net job created in the period preceding the recession of 2008.I to 2010.I (62 quarters) represented an average of 19.4 jobs created and 18.4 jobs lost in private sector establishments, while each net job created in the intervening expansion from 2010.II to 2013.IV (15 quarters) was the result of an average of 11.9 jobs created and 10.9 jobs lost. During the period from 2014.I to 2019.IV (24 quarters), each net job created was the result of 14.3 jobs created and 13.3 jobs lost. The process of job gains and losses is complex and involves large employment movements throughout the economy. This is creative destruction at work.

⁵ <https://www.bls.gov/bdm/> .

Autor, Dorn, and Hanson (2013)⁶ provide an example of neglecting to account for dynamic changes in labour-market adjustments. Analyzing the impact on U.S. labour markets of increasing competition from Chinese imports between 1990 and 2007, they conclude that growing exposure to Chinese imports increases unemployment, reduces labour-force participation, and lowers wages in local labour markets. They suggest that the negative fallout of free trade may be greater today than in the past and allude to immigration effects. Unfortunately, their study is essentially static and limited to local labour markets (commuting zones). They do not attempt to provide a more global characterization of the effects of free trade, for example on interregional migration or on welfare itself. Their work confirms expectations in terms of the adjustments caused or exacerbated by free trade, in light of preexisting or concurrent government policies that hamper spontaneous adjustments, while failing to provide an overview of the benefits and costs of these adjustments in the medium and long term. Consequently, it is of limited interest.

Ebenstein, Harrison, McMillan, and Phillips (2014) link industrial data on trade and offshoring with personal data from *Current Population Surveys* from 1984 to 2002. Their results suggest that globalization has substantially undermined wages at the level of professions (panels of workers) but not industries. They deserve credit for emphasizing the limits of this type of study. Thus, they observe that a major limitation of their study is the impossibility of completely isolating the impact of trade and offshoring from the impacts of other changes in the labour market. They speak of two principal identification challenges. First, changes to the labour market (competitive pressures, union activities, excessive and costly regulations, etc.) may be the reason for international trade and offshoring. This reversal of causality would invalidate the usual causal interpretation of the results. Next, technological change may be correlated with international trade. Again, this would invalidate the causal interpretation of the estimated coefficients. For example, if the most routine tasks are those most easily performed abroad or automated, it would be difficult to exactly model the counterfactual of the evolution of wages in the absence of globalization, as workers would simultaneously face competitive pressures from

⁶ Also see David H. Autor, David Dorn, and Gordon H. Hanson & Jae Song, 2014. "Trade Adjustment: Worker-Level Evidence," *Quarterly Journal of Economics*, vol. 129(4), pages 1799–1860.

workers in low-wage countries and from automation. This is a recurring problem with econometric studies based on a poorly articulated theoretical model.

Dix-Carneiro (2014) proposes a study resembling that of Artuç, Chaudhuri, and McLaren (2010) for the case of Brazil. Its specification of adjustment dynamics is better, as is its modelling of counterfactual wages—though this latter is not totally satisfactory in light of the warnings issued by Ebenstein, Harrison, McMillan, and Phillips (2014). Dix-Carneiro's results basically establish that labour market transitions are complex and costly, and may only be fully realized several years after implementation of a new trade liberalization program. Adjustment costs may offset between 11 and 26 per cent of the value of free trade, depending on the degree of intersectorial mobility of physical capital. However, while calling for more research, Dix-Carneiro remains silent on the portfolio of policies that would have better prepared Brazil, in particular in terms of labour and capital mobility and productivity gains, relaxing the barriers to free trade, and better management of the subsequent labour-market adjustments.

The next two studies address the environment, in particular the frequently articulated claim that the globalization of markets and the internationalization of cultures undermine environmental security owing to GHG emissions generated by transportation: Rikard Forslid, 2020. "Trade, Transportation and the Environment," Research Papers in Economics 2020:2, Stockholm University, Department of Economics; Aaditya Mattoo & Arvind Subramanian, 2013. "Four Changes to Trade Rules to Facilitate Climate Change Action", VoxEU, Center for Economic Policy Research (CEPR), Peterson Institute for International Economics, PB13–10.

Forslid (2020) tells us that transportation was responsible for approximately 29 per cent of total GHG emissions in the United States in 2017, and approximately 41 per cent in California. Reducing GHG emissions in the transportation sector is thus identified as very important for reducing them globally. International trade leads to expanded transportation and the development of global production networks within which production is geographically fragmented, magnifying the need for transportation. Transportation is responsible for 33 per cent of emissions associated with global trade, and the maritime transportation of goods (excluding bulk cargo) to and from Europe generates a level of CO₂ emissions comparable to

those of Italy's fleet of 38 million privately-owned vehicles. This gives rise to calls for consuming local goods and reducing international trade. In general, Forslid's results are that transportation can, in fact, cut emissions when general equilibrium effects are considered, depending on the relative emissions rates of transportation and production in the various exporting and importing regions. Even if exporters and importers are comparable in terms of emissions, interregional trade and transportation can result in globally lower emissions than transportation-free local production if that sector is more polluting than transportation. Assuming full -employment of resources at equilibrium, less trade implies a shift of resources from transportation services to the production of goods, which will increase emissions if producing the goods in question generates more pollution than transportation. In reality, the linkage between international trade, transportation, and CO₂ emissions fundamentally depends on the structure of pollution prices.

We might add that, if environmental protection is properly ensured, for example by means of a competitive price on carbon, both the siting of production and transportation can be expected to gravitate toward their respective social optima.

Mattoo and Subramanian (2013) recognize that the objectives of trading and fighting climate change are often perceived as irreconcilable. Moreover, at this time, implementing a strategy to combat climate change is proving to be "fiendishly" elusive, as evinced by the failures of the Conferences of the Parties (COP) in Paris (2015), Marrakesh (2016), Bonn (2017), Katowice (2018), and Madrid (2019).

The authors present four free trade policies that could, in the absence of a global agreement on implementing the resolutions of these COP, contribute to a rapprochement between the proponents of freer trade and those who prioritize dealing with climate change. Mattoo and Subramanian begin by emphasizing that only dramatic technological innovation can reconcile the goals of climate change action and satisfying humanity's energy aspirations. This technological progress requires deployment of a comprehensive array of policy instruments to establish a competitive carbon price and provide incentives for research and development in green technologies.

They suggest four examples of changes to the WTO trade rules that would make it easier to account for climate change objectives. They all have an economic policy rationale. First, penalizing imports of products that are harmful to the environment by allowing them to be taxed at the border; next, promoting products and technologies that are environmentally friendly by relaxing restrictions on production and export subsidies and by enforcing the protection of intellectual property rights on green technologies; and, finally, prohibiting penalties on products that are relatively good for the environment—for example, restrictions on the export of natural gas, which is considered a clean alternative to coal and oil.

In light of the dynamics of the negotiations underway between China (and other countries, such as India) on one side and the United States and the European Union on the other, these proposals represent an attractive compromise. China would be prevailed on to clarify existing rules to allow the United States to implement bilateral trade agreements and to strengthen intellectual property protections, and the United States and European Union to agree to rule changes allowing China to subsidize green technologies and products. A balance of concessions between the main trading blocs, rich and poor, would facilitate a technological revolution thanks to increased international cooperation on climate change while also fostering the harmonious expansion of free trade.

The goals of food security or sovereignty

In developed countries particularly, the goal of food security or sovereignty translates into various supply management programmes and / or generous farm subsidies to the detriment of consumers and taxpayers. To bolster their arguments, ostensibly aimed at promoting collective wellbeing, proponents of food sovereignty argue that it kills two birds with one stone by also reducing greenhouse gas emissions!

The economists Marcel Boyer and Sylvain Charlebois estimate that, in 2007, supply management cost Quebecers \$575 million per year, or \$300 per family of four.⁷ The argument for food sovereignty has a certain appeal, but it is nonetheless fallacious and dangerous.

If individuals wish to buy local, that's fine. It's their right. It's a matter of taste. And there's nothing wrong with producers, whether collectively or individually, promoting their products by playing up their home-grown character. It's a matter of marketing and competition. But it gets dicey when it becomes economic policy. This is especially true in that the reactions of trading partners could be very the reactions of trade partners could be very unfavorable to supporters of food sovereignty: international trade (exports plus imports) represents some 60% of global GDP today⁸.

Proponents of buying local trumpet their desire to support the local economy and claim they are willing to pay more for some locally produced goods, even if similar products are available cheaper. Would it not rather make more sense for them to choose the cheaper alternatives and allocate their savings to purchasing other local goods, such as cultural products, for example, or even to supporting local charities? These unrealized expenditures represent the opportunity costs of buying local at a higher price than necessary.

Every economic production activity or consumption decision carries an opportunity cost that must be properly evaluated: The opportunity cost of buying "local" must always be compared with the value of an alternative purchase, including the social and economic value of the alternative and the potential savings.

⁷ Marcel Boyer and Sylvain Charlebois, "La gestion de l'offre des produits agricoles : un système coûteux pour les consommateurs," Note Économique, Institut économique de Montréal, August 2007. https://www.iedm.org/sites/default/files/pub_files/agri0807_fr.pdf.

⁸ World Bank and OECD: <https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS>. For Québec, a specific but not atypical case, remember that nearly 40% of jobs depend on external markets and nearly 50% of its GDP is exported (https://www.economie.gouv.qc.ca/fileadmin/contenu/documents_soutien/strategies/strategie_exportation/oser_exporter_strategie.pdf; Marcel Boyer, "La performance et le développement économiques à long terme du Québec: les douze travaux d'Hercule-Québec (mis à jour, revus et corrigés – 7e édition)", CIRANO 2019s-02, 143 pages. <http://www.cirano.qc.ca/files/publications/2019s-02.pdf>)

The goal of environmental security

This type of fallacy also besets the goal of environmental security. We have known the solution to environmental destruction for a long time: Define and impose an appropriate competitive price on pollution and eliminate all regulations and other micro policies or control measures (pet projects) that pop up left and right and are systematically designed to impose the bulk of their cost on others.⁹

We often hear that our lifestyle depends on perpetual growth while the planet's resources are limited. This is false. This belief has popped up repeatedly throughout history, only to be repudiated each time. In 1865 the economist William Stanley Jevons, one of the best thinkers of his time, expressed his concern about the disappearance of forests—and later about the depletion of England's coal reserves.¹⁰ This was also the discredited position taken by the Club of Rome during the 1970s.¹¹ Innovation, markets, and competitive prices have successfully dealt with all the threats of natural resource depletion confronting humanity in the past. Growth is driven by humanity's capacity for invention and innovation, scientific and technological progress, and improvements to old and new products and services—our scope for action is immense and continues to expand.

We saw above, in our discussion of the Mattoo and Subramanian paper, how free-trade policies and climate change policies can be not only reconciled, but mutually reinforcing. There is still a need for rigorous analyses to identify barriers erected by cronyism and private vested interests so we can deliver sound policies free of excess costs attributable to “pet projects.”

⁹ See the interesting interview with Christian Gollier (TSE) on Rendez-vous des entrepreneurs français (REF) in 2019. <https://www.youtube.com/watch?v=ZS9Xx7hhw3>

¹⁰ William Stanley Jevons (1865) *The Coal Question: An Inquiry Concerning the Progress of the Nation, and the Probable Exhaustion of Our Coal Mines*, Macmillan, London.

¹¹ Donella Meadows, Dennis Meadows, Jørgen Randers, William W. Behrens III (Massachusetts Institute of Technology), *The Limits to Growth*, Report of the Club of Rome, 1972.

The dynamics of free trade: comparative advantage and equilibrium of choices (Nash)

In every defence of a specific industry, whether well-intentioned or not, we always find a fundamental imbalance between the clearly identified and narrowly targeted interests of some, who are able to hire lobbyists to fight for their case, and a greater but more diffuse interest spread across the entire economy and the population—who are at the receiving end of a public bad and where no-one has enough at stake to contest it. Ultimately, we observe the victory of crony capitalism over people's capitalism, of populism over competence.

The aluminum industry in Québec has in the past been the subject of multiple and generous government subsidies that continue to this day. Several economists have denounced these subsidies, sometimes in disguise. Economists Gérard Bélanger and Jean-Thomas Bernard estimated¹² in 2007 that direct and indirect subsidies to the ALCAN aluminum smelter project in Saguenay ("an interest-free loan of \$ 400 million over 30 years; tax benefits worth \$ 112 million; a new 225 MW block supplied by Hydro-Québec at the "large power rate L" from 2010 to 2045; the extension of the sale contract for 342 MW delivered by Hydro-Québec at the large power rate L from 2024 to 2045; the extension of Alcan's rights to the waters of the Péribonka River from 2034 to 2058 for a continuous production of 900 MW") represented in present value some \$2.7 billion while the planned investment of ALCAN was of \$2.0 billion. These grants represented, according to the authors, between \$275,000 and \$370,000 per job per year for 35 years. In return, the Québec government "will be able to receive royalties on the adoption of AP50 technology by aluminum plants elsewhere in the world".

The economists Jean-Thomas Bernard, Marcel Boyer, Mr. Martin Boyer and Pierre Fortin agreed¹³, in their defense of a Québec energy policy resolutely focused on the creation of

¹² See Gérard Bélanger and Jean-Thomas Bernard, « Subsidies for Aluminum Producers : Benefits that don't add up », Economic Note, Montréal Economic Institute, April 2007.

https://www.iedm.org/sites/default/files/pub_files/avril07_en.pdf

¹³ See Jean-Thomas Bernard, Marcel Boyer, Martin Boyer, Pierre Fortin, « Cessons le bradage ! Le développement énergétique du Québec doit servir à une véritable création de richesse », *La Presse*, p. A-19, 12 avril 2007.

<https://www.iedm.org/fr/2814-cessons-le-bradage-le-developpement-energetique-du-quebec-doit-servir-a-une-veritable-creation-de-richeesse/>

wealth, rather than on the sale of Québec energy at a discount to unprofitable sectors and businesses, thus selling off and squandering the potential social wealth of Quebecers.

After having courageously fought during the negotiations of the Free Trade Agreement (CUSMA) the will of Donald Trump to encourage American companies to "buy American", it is not the time to promote a local version "Québec first" or "Canada first". Individuals may want to do it, it is their choice. But the governments of Québec and Canada must not make it an article of economic policy. The US government is behaving irresponsibly internationally, this is no reason to follow suit.

There is a difference between promoting a free-trade policy while providing individuals and firms with incentives and means to prepare for and benefit from this policy by taking steps to adapt to the expected changes and upheavals within a reasonable time-frame, on one hand, and protecting firms and jobs that need to adapt and adjust with a policy of comprehensive and ongoing protections, using trade barriers and generous and costly direct and indirect subsidies, whether open or hidden, on the other.

A serious effort must be made to consolidate domestic markets—as they are often splintered by intranational barriers to the mobility of goods, services, and labour—and to open up as much as possible to the vast international market and profit from opportunities created by free-trade agreements. To do this, it needs to be said over and over again that international trade at competitive prices, just like intranational and interregional trade, can and must be developed for the good of all. And at the same time, it is necessary to promote intra- and international trade that is more competitive, more secure, more resilient, and more shielded against unilateral protectionist actions of governments.

It is not the interests of firms and workers in a specific industry that should be defended, but rather the principles and mechanisms of healthy competition that must underlie international trade—again, just as in the case of intranational and interregional trade. Targeted and protectionist defences of the interests of businesses and workers in a particular industry is always at the expense of companies and workers in other industries.

Stand on a street corner and ask 100 passers-by to explain the difference between nuclear fusion and nuclear fission. You'll be lucky if two passers-by understand the question. You might be right to conclude that 98% of the passers-by know nothing about nuclear energy. The case of international trade is similar. Ask 100 passers-by to explain the link between trade deficit, foreign investment, and the exchange rate. If even one can, then run, don't walk, to buy a lottery ticket—this is your lucky day.

To understand the link, you must first understand comparative (or relative) advantage, the role of the exchange rate, and the concepts of trade deficit or surplus and foreign (or cross-border) investment deficit or surplus.

Comparative advantage

It is too often forgotten that international trade is simply a logical extension of interregional trade and interpersonal exchanges. We all have an interest in specializing in the production of goods for which we have a comparative advantage and in trading with others for the rest.

For two centuries, the understanding of comparative advantage, as formulated by the English economist David Ricardo in 1817,¹⁴ has been at the heart of trade liberalization, phenomenal wealth creation, exceptional and inclusive economic and social growth, striking improvements in human welfare, and sweeping poverty eradication. It is the most compelling and powerful argument against the private interests of anti-trade groups at the regional, inter-regional, and international levels, no matter how eloquent their arguments.

Let us briefly present this key element of modern economic thought: the theory of comparative advantage. Suppose that in the current state of their economies, two countries A and B face the following choices.

Country A could increase its food production by 1 unit (however measured) by allocating more resources (labour, raw materials, capital) to it. These resources are removed, in the most efficient manner possible, from the production of cars, thereby reducing its production of cars

¹⁴ D. Ricardo (1817), *On the Principles of Political Economy and Taxation*, London.

by 2 units. In the jargon of economists, country A can transform food into vehicles and *vice versa*: +1 unit of food into -2 units of cars (or, equivalently, -1 unit of food into +2 units of cars).

As to Country B, it could increase food production by two units by shifting resources (labour, raw materials, capital) to it. These resources are removed, in the most efficient manner possible, from the production of cars—reducing that output by three units. Country B's food-vehicle transformation rate would then be +2 food units versus -3 vehicle units (or, equivalently, -2 food units versus +3 vehicle units).

Because these two countries have different transformation rates between food and cars in the current state of their economies, it is possible to increase the welfare of both countries by reallocating production between them. First, assume that country A reduces its food production by 1 unit, thus increasing its car production by 2 units and, second, that country B reduces its car production by 1.5 units, thus increasing its food production by 1 unit.

Owing to the transformation rates observed in the two countries, not only is this reallocation possible, but it also results in food production remaining constant ($-1 + 1 = 0$) while the production of cars increases ($+2 - 1.5 = +0.5$). Sharing this increase in output allows both countries to augment their wellbeing. This very simple example shows that, to the extent that (marginal) transformation rates differ from one country to the next, it is possible to increase the welfare of both countries by reallocating production.

But how can this type of reallocation, resulting in an increase in wellbeing in both countries, be effected? The answer is simple: through international trade with exchanges occurring at competitive prices. This argument, which is a fundamental result of modern economic analysis, is valid at all levels of competitiveness (or absolute advantage) in both countries. Again, even if one country were more efficient than the other in producing both goods, both countries would benefit from opening their domestic markets to international trade and allowing their respective economies to adjust to international prices. The implications of this theory are immediate, but relatively counterintuitive. It is not the absolute advantages of each country that

matter, but rather its comparative (or relative) advantages. It is important to emphasize that all countries benefit from this trade, regardless of their absolute levels of competitiveness.

These same countries will also benefit from opening their domestic markets to trade and allowing their respective economies to adjust to internationally competitive prices.

The argument that a trade deficit in one product, or basket of products, will generate net payments that leave the country to primarily benefit foreigners reflects a serious misunderstanding of how international trade works. It is a flawed argument.

Some people generally fear the application of competitive processes to the production and distribution of public and social, as well as private, goods and services, not only at the domestic, but also at the international, level.

However, the significant growth in international trade in recent decades has been a major factor in improving both collective economic wellbeing and cultural and social development. As mentioned by Amartya Sen (“If It’s Fair, It’s Good: 10 Truths About Globalization,” *International Herald Tribune*, July 14, 2001): “Pervasive poverty and lives that were ‘nasty, brutish and short,’ as Thomas Hobbes put it, dominated the world not many centuries ago, with only a few pockets of rare affluence. In overcoming that penury, modern technology as well as economic interrelations have been influential. The predicament of the poor across the world cannot be reversed by withholding from them the great advantages of contemporary technology, the well-established efficiency of international trade and exchange, and the social as well as economic merits of living in open, rather than closed, societies. What is needed is a fairer distribution of the fruits of globalization.”

The same reasoning applies to intranational trade between regions. Consider two large economic sectors, such as food processing and manufacturing, and two large independent regions, such as Gaspésie (the Gaspé Peninsula) and Montreal. We could say with no great fear of contradiction that Montreal can produce all the goods and services (or nearly) from both sectors more efficiently than Gaspésie. Assume now that Gaspésie has a comparative advantage in food processing and Montreal in manufacturing. Confronted with this “foreign” competition

from Montreal, should Gaspésie promote “buy local,” erect barriers to trade, and subsidize its own manufacturing companies? Clearly not.

In response to the mathematician Stanislaw Ulam, who challenged him to “name a proposition, from the social sciences, that would be both true and non-trivial,” Paul A. Samuelson, winner of the 1970 Nobel Prize in economics, countered with comparative advantage: “That [comparative advantage] is logically true does not need to be demonstrated to a mathematician; that it is not trivial is attested to by the thousands of important and intelligent men who have never been able to understand the doctrine for themselves or to believe it after it has been explained to them.”¹⁵

(Nash) equilibrium of choices

It is not easy to detect the comparative advantages of countries, regions, or individuals *a priori*. Furthermore, these advantages may change over time as countries and regions develop and individuals acquire new skills. In more technical terms, comparative advantages are expressed using national or regional production possibility curves that represent the potential for reallocating resources between the production of different products and services and that depend on the characteristics of a country’s available natural, institutional, and human resources at a given point in time. Clearly, these resources evolve over time: Human resources can migrate from one region to another, institutional resources can be imitated, and endowments in natural resources can change as a function of past and present prospecting efforts.

All things considered, comparative advantages depend on dynamic and adaptive prospecting efforts (investment), institutional developments (rule of law, property rights, contract law, human rights, social and physical infrastructure¹⁶) and the acquisition and transferability of skills

¹⁵ *Understanding the WTO*, World Trade Organization (2007).
https://www.wto.org/english/thewto_e/whatis_e/tif_e/utw_chap1_e.pdf.

¹⁶ Infrastructures of good quality and of all kinds, a premier responsibility of governments, allow a better and more efficient integration of internal markets between themselves and with international markets, thereby playing an essential role in shaping comparative advantages and fostering gains from international trade. See Taylor Jaworski, Carl Kitchens et Sergey Nigai, “Highways and Globalization”, NBER Working Paper 27938, October 2020: “Our

(education). Who (country, region, individual) decides to do what, given what others are doing (countries, regions, individuals)? This question has a complex answer. We can well imagine that these decisions could yield a Nash equilibrium in which each country, region, or individual optimizes its development, given its perception of its partners' and competitors' development and of the resources available to it.

One thing is certain: Rationality in a country's, region's, or individual's decision making requires a comparative evaluation of how to allocate scarce resources to the many potential consumption, training, and investment options available to it on the basis of their actual and potential comparative advantage. These actual and potential comparative advantages ultimately determine the comparative advantages of tomorrow. China's comparative advantages today are not the same as they were in 1950 (Mao Zedong) or 1980 (Deng Xiaoping). This is true for all countries and all regions. Economic plates shift slowly but surely, responding to physical forces and individual and social decisions—accompanied by inevitable jolts, tremors, and clashes.

Analysis of these shifts in economic plates, which are partly exogenous and partly endogenous, can and must also account for concerted policy interventions from governments at the group level (countries and regions). However, international, interregional or intranational, and inter-individual free trade is consistently a positive element of this analysis. We would not want to be obligated to cut ties with others in order to acquire one or several specific skills given the constraints we are under. Quite the opposite: this kind of isolation would simply impose more constraints. By the same token, we would not want to have to cut ourselves off regionally or nationally in order to develop our comparative advantage given the constraints we are under. Again, quite the opposite is true.

results highlight the role of domestic transportation infrastructure in shaping regional comparative advantage and gains from international trade.” <http://www.nber.org/papers/w27938>. See also Marcel Boyer and Ping Huang, “Un fonds de la francophonie pour les infrastructures en Afrique”, CIRANO 2019s-25, 33 pages <http://www.cirano.qc.ca/files/publications/2019s-25.pdf>, an abridged version of which appeared in *Options Politiques*, IRPP, Montréal, march 2020 <https://policyoptions.irpp.org/fr/magazines/march-2020/un-fonds-de-la-francophonie-pour-les-infrastructures-en-afrique/>

The dynamic development of a country's or region's comparative advantage, as in the case of individuals, can and should be grounded in an explicit and unreserved participation in the world of free trade. Ultimately, this type of development, which is simultaneously modern and ambitious, is attainable at the national, regional, and individual level, and trans-nationally as well (international free trade), provided we have the intelligence and courage of our ambitions, an understanding of the objectives and their interconnectedness allowing us to choose programs, policies, modalities, and mechanisms—to wit, the means to achieve our ambitions and accomplish our developmental ideals, whether collective or individual, and the courage to implement these means.

Trade deficit, foreign investment, and the exchange rate

Examining any country's international trade data always reveals that there are some sectors or goods and services with a negative trade balance and others with a positive balance. No country has a positive trade balance for all goods and services, and no country should strive for that. In addition, the sectorial goods and services trade balance (positive or negative) must be considered jointly with the overall trade balance and the balance of financial transactions (loans) and foreign direct investment—the balance of direct investment abroad (by nationals) and direct investment at home (by foreigners). Their sum constitutes the balance of payments, for which “equilibrium pressures” both determine and are determined by the exchange rate. In other words, the trade balance for a product or basket of products cannot be considered in isolation.

The argument that a trade deficit in one product, or basket of products, will generate net payments that leave the country to primarily benefit foreigners reflects a serious misunderstanding of how international trade works. It is a flawed argument. Here's why.

Consider a trade deficit (imports higher than exports of goods and services, including tourism), on the one hand, and a foreign investment surplus (total inbound investment from abroad higher than total outbound investment), on the other. These two taken together form the heads and tails of a coin. They are glued together with a special adhesive: the exchange rate. The

exchange rate is the amount of \$US, for example, that you can buy with one \$C; it is also expressed as the amount of \$C that an American can buy with one \$US. Obviously, each rate is the reciprocal of the other: $\$US / \$C = 1 / (\$C / \$US)$.

The trade deficit and investment surplus are, in fact, two sides of the same coin glued together by the exchange rate: These three elements are intimately interrelated and cannot be analyzed independently. In other words, any one of them cannot be explained in isolation without reference to the other two. The trade balance, foreign investment equilibrium, and exchange rate are continuously and systematically in equilibrium and their respective values are determined jointly. Here is how.

Let us assume for simplicity that there are only two countries, the United States and Canada. When Canadians visit the United States, they must “buy” U.S. dollars and “sell” Canadian dollars. Similarly, the importer of U.S. goods and services (exported from the United States) must buy U.S. dollars by selling Canadian dollars. When Canadians invest in the United States (buying a condo, factory, treasury bills, or stock), they must buy U.S. dollars by selling Canadian dollars.

When Americans come to visit Canada, they must buy Canadian dollars by selling U.S. dollars. Similarly, when Americans want to import Canadian goods and services (aluminium or works of art exported from Canada) or invest in Canada, they must buy Canadian dollars, paying with (selling) their U.S. dollars.

Thus, there is a supply and demand for Canadian and U.S. dollars that determines the equilibrium exchange rate, which is nothing more than the relative equilibrium price of the currencies: If the supply of U.S. dollars increases (Americans want to sell more of their U.S. dollars to buy Canadian dollars in order to visit Canada, buy Canadian goods and services, or invest in Canada), there is downward pressure on the price of the U.S. dollar and the amount of U.S. dollars you can buy with one Canadian dollar increases, while the amount of Canadian dollars you can buy with one U.S. dollar decreases.

It's very similar to the tomato market: Too many tomatoes supplied for sale relative to demand drives the price of tomatoes down and *vice versa*, too few tomatoes supplied for sale relative to demand drives the price up.

One simply has to remember that the supply of US\$ (and therefore the demand for C\$) comes from Americans who want to buy Canadian goods and services (including tourism) or invest in Canada, while the demand for US\$ (and therefore the supply of C\$) comes from Canadians who want to buy American goods and services or invest in the United States.

The observed exchange rate is the result of demand and supply pressures in the currency market. The total demand for US\$ consists of the expenditures incurred in US\$ by Canadians for their purchases of U.S. goods and services ($G\&S_{CA}$) and investments in the United States (INV_{CA}). The supply of US\$ is composed of the expenditures incurred in US\$ by Americans for their purchases of Canadian goods and services ($G\&S_{US}$) and their investments in Canada (INV_{US}), and similarly for the demand and supply of C\$.

At the observed, and thus competitive, equilibrium exchange rate (supply = demand), the total quantity of US\$ demanded by Canadians ($G\&S_{CA} + INV_{CA}$) is necessarily equal to the total quantity of US\$ supplied by Americans ($G\&S_{US} + INV_{US}$). Therefore, $(G\&S_{CA} + INV_{CA}) = (G\&S_{US} + INV_{US})$ which can be rewritten as follows $(G\&S_{US} - G\&S_{CA}) = (INV_{CA} - INV_{US})$, where all values are expressed in US\$. The left-hand-side (LHS) term in the last equation is the trade deficit / surplus, and the RHS term is the investment surplus / deficit. At the observed, and thus equilibrium, exchange rate, the above equalities necessarily hold true.

The above equations do not require that $G\&S_{CA} = G\&S_{US}$ (trade equilibrium) or that $INV_{CA} = INV_{US}$ (foreign investment equilibrium). If, at the observed (and thus equilibrium) exchange rate, the United States has a trade deficit with Canada ($G\&S_{US} > G\&S_{CA}$), it necessarily follows that it has a foreign investment surplus of the same magnitude ($INV_{CA} > INV_{US}$).

Thus, the exchange rate, the trade deficit and the foreign investment surplus are all determined simultaneously: At the observed exchange rate, the trade deficit (surplus) is necessarily associated with a foreign investment surplus (deficit) of the same magnitude. If $(G\&S_{CA} + INV_{CA})$

$\neq (G\&S_{US} + INV_{US})$, there is an imbalance and the exchange rate will adjust to reestablish equality between the supply of, and demand for, C\$ and US\$.

A foreign investment surplus in the United States (meaning that Canada is investing more in the United States than Americans are investing in Canada) contributes to the growth of the U.S. economy. This foreign investment surplus, which offsets the trade deficit, creates jobs in the United States, increases the productivity of the U.S. economy, and contributes to U.S. economic growth. Similarly, a trade surplus offsets a foreign investment deficit.

Any attempt by the United States to reduce its trade deficit (through the imposition of tariffs, for example) can only have some combination of the following potential impacts: a shift in the trade deficit from protected industries (by the imposition of tariffs) to unprotected industries with no significant reduction in the total trade deficit, a reduction in its foreign investment surplus, or an appreciation of the US\$/C\$ exchange rate.

On July 20, 2019, the New York Times reported the following (reminder: Larry Kudlow is Donald J. Trump's chief economic adviser):

Larry Kudlow, the chairman of the White House's National Economic Council, said in an interview that the president strongly believed that his policies would increase investment and draw workers into the labor force.

"The United States is the hottest economy and investment destination in the world right now, thanks largely to Mr. Trump's policies. Money is flowing in from everywhere and that's terrific."

Larry Kudlow (and his president) should understand that the foreign investment surplus necessarily correlates with the trade deficit and therefore naturally mirrors it. He seems not to know this, or at least pretends as much! In fact, the second part of his assertion is completely synonymous with the following statement:

“The United States is the hottest economy and ‘trade’ destination in the world right now, thanks largely to Mr. Trump’s policies. We incur a large trade deficit with everyone and that’s terrific.”

Anne O. Krueger (2020)¹⁷ demonstrates how the ill-informed drive to reduce the trade deficit that has been pursued since the election of Donald Trump has hurt the U.S. economy. She states that international trade increased from approximately 20 per cent of global output in the immediate post-war to 39 per cent in 1990, and then to 58 per cent in 2018. American consumers now pay more for many products from China. Also, the United States had to pay out some \$28 billion in compensation to U.S. farmers.

She adds that many U.S. companies have had to pay more for their inputs, and have consequently lost market share to foreign competitors who benefited from a cost advantage. By pulling the United States out of the Trans Pacific Partnership Agreement (TPP) the President succeeded in raising tariffs on U.S. exports almost everywhere. Under the TPP, U.S. wheat producers would have been spared the 38 per cent tariff that Japan imposes on all wheat imports. Now that the TPP has been replaced by the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP - a free trade agreement between 11 countries: Canada, Australia, Brunei, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam), Canadians and Australians exporting wheat to Japan are subject to lower tariffs than their U.S. counterparts.

According to Krueger, high customs duties on U.S. imports of steel and aluminium (that initially included those of its trading partners in CUSMA) have only hurt American industries that use aluminium and steel and employment in those industries has declined in the past two years.¹⁸

¹⁷ Anne O. Krueger (2020), “Trump’s Spectacular Trade Failure,” *Project Syndicate*, September 22, 2020. <https://www.project-syndicate.org/commentary/trump-trade-policy-is-a-failure-by-anne-krueger-2020-09>

¹⁸ Similarly, in the case of farming, which will end up (as is usually the case for all industries and all countries) suffering from the trade war being waged by the U.S. administration despite temporarily benefiting from compensation paid out by that same administration, generating a massive risk of “moral hazard” and, over time, a serious loss of competitiveness. See <https://www.npr.org/sections/thesalt/2019/12/31/790261705/farmers-got-billions-from-taxpayers-in-2019-and-hardly-anyone-objeced>

Conclusion

But why and how do countries benefit from international trade? It is for the same reason that regions benefit from interregional trade (Québec-Ontario, Pennsylvania-Ohio) and individuals benefit from exchanges amongst themselves. The answer lies in the specialization of labour and production that trade allows—a key contributor to productivity. This specialization reflects the comparative (or relative) advantages of each and increases the wellbeing of all, regardless of their absolute advantages or disadvantages.

Dynamic or intertemporal analysis applied to a multilateral world (with each country having its own monetary policy), certainly renders the analysis more complex, but the basic principles are the same. Three complementary factors have allowed international trade to expand to the benefit of all: a decline in transportation and travel costs, greater efficiency of financial markets, and the development of the important social capital of trust between trading partners through open and transparent treaties and the rule of law. These three factors work together to reduce transaction costs for the good of all.

These are the same reasons that led Anne Krueger to assert that the Trump administration would have had greater success if it has addressed trade irritants through the agency of the World Trade Organization (WTO) and created multilateral trade alliances rather than independently pursuing narrow and fragmented goals. Trump’s bilateralism and rejection of the WTO undermines the entire international trading system and imposes great harm on U.S. businesses and households, offering illusory or temporary benefits to a handful of groups deemed “meritorious, essential, or strategic.”

It should be reemphasized, however, that a more efficient, productive, or competitive economy will be able to export and import more and invest more abroad and receive more foreign direct investment, irrespective of the trade and foreign investment deficit or surplus and exchange rate fluctuations, and thus benefit from a higher welfare level.

Rising productivity owing to a workforce that is more skilled, better trained, and highly motivated; public and private technological and organizational investments that have

undergone more rigorous scrutiny, selection, and implementation processes; and public and private institutions that are more effective and efficient, are all important contributors to a country's or region's welfare gains, especially against the backdrop of an economy that is more open to international trade.

We can only regret the electoral populism, not to say the ignorance and incompetence, on display by too many political leaders, including the president of the United States.

Unfortunately, he is not alone.

The current crisis requires a more informed, stronger, and resilient spirit of international cooperation able to stand up to anti-globalization trends. Focussing on local or domestic food and healthcare clusters, for example, would negatively impact developing countries, among others, and thus increase the risk of pandemics in developed countries. More than ever, we humans are all in the same boat—but it's a big boat, which some just cannot seem to grasp.

Let us hope that the march toward more cooperation, more globalization, more international treaties, and more competition, i.e. the march toward a more integrated, inclusive, and civilized world, will survive the current COVID-19 crisis and the associated recession and the protectionist, erratic, and ill-advised policies of the current U.S. government and several others.