# The Data on US Policy in Flux Illustrate a Tense Dynamic, and Warning Signs for Canada

Independent Agri-Food Policy Note April, 2025 Al Mussell and Douglas Hedley

Early April presented a flurry of activity involving US tariffs- but this occurred within the context of bold policy shifts, involving deportations, tax policy changes, and government cuts in addition to tariffs. Canadian agri-food has multiple serious vulnerabilities to these abrupt changes, and as such the implications of the whole package- not just the tariffs- need to be understood.

On April 2<sup>nd</sup>, President Trump unveiled reciprocal tariffs for a wide swath of countries at higher than expected levels, and with a minimum 10 percent tariff. Canada and Mexico were exempted; however, for US imports from Canada non-compliant with CUSMA/USMCA origin rules, 25 percent duties were left in place. In relation to US fentanyl and northern border emergencies, it was announced that if these orders were suspended, non-compliant CUSMA/USMCA imports would be assessed a 12 percent tariff.

Shortly after April 2<sup>nd</sup>, other countries initiated development of retaliatory measures. China announced and quickly implemented a 34 percent retaliatory tariff against imports from the US, including a 25 percent duty on US soybeans. The EU published its retaliation list in response to the tariff assessed by the US (20 percent), which included a 25 percent tariff on US soybeans. The UK also readied a retaliatory list. Many countries appear to have sought meetings and conciliation with the US regarding reciprocal tariffs.

The US responded to Chinese retaliation by increasing its tariff on imports from China an additional 50 percent- over and above the 20 percent tariffs levied in February and March, and the 34 percent April 2<sup>nd</sup> tariff. In turn, China responded by adding a 50 percent duty on its imports from the US. The US subsequently increased its total tariff on imports from China up to 125 percent, and China responded in kind to raise a total tariff against the US of 125 percent.

On April 9th, the US paused its retaliatory tariffs for 90 days, but maintained the minimum 10 percent tariff. In response the EU paused its retaliation. The US also raised the tariff on imports from China to 145 percent, and China promptly replied in kind to raise its tariff against the US to 125 percent.<sup>1</sup>

President Trump's April 9th announcement suggests that the action and drama on US tariffs would quiet down for at least the next 90 days (until July 9th). Mr. Trump also said that there were many countries wishing to negotiate with the US on tariffs. This could generate new, bilateral trade agreements with the US on an exclusive country-by-country basis.

Canadian agri-food has much at risk in this environment, even if it is not an immediate target. The importance of US policy actions and the US market to Canada requires that a broad knowledge and understanding of the many complex components is necessary for Canada.

This policy note provides a conceptual and empirical overview of this dynamic in the US and explores the implications for Canada and Canadian agri-food.

<sup>&</sup>lt;sup>1</sup> For a more detailed timeline of the trade war, see Trump's Trade War Timeline 2.0 <a href="https://www.piie.com/blogs/realtime-economics/2025/trumps-trade-war-timeline-20-date-guide">https://www.piie.com/blogs/realtime-economics/2025/trumps-trade-war-timeline-20-date-guide</a>



# Central Elements of the New US Policy Agenda

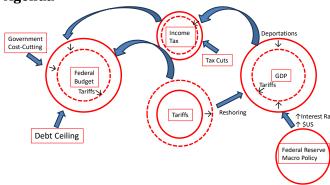
Distilled to its essence, the core elements of the Trump administration agenda are

- Mass deportations of unauthorized immigrants in the US
- Renewal of tax cuts expiring in 2025 and reform to provide further tax cuts
- Reductions in the federal budget
- Tariffs on US imports

These policy initiatives are bold and profound taken individually- however, they should be viewed as linked package. The apparent relationships are illustrated in Figure 1, first presented in a February, 2025 policy note<sup>2</sup>. It made the following observations:

- Mass deportations will reduce the US workforce, and act to reduce US GDP.
- The resulting reduction in GDP will reduce taxable income. Reduction in income tax rates will further reduce revenue to the US Treasury.
- This, combined with a commitment to deficit reduction, will force a reduction in the federal budget, complemented by directed government cost cutting.
- Another critical constraint is the federal debt accumulated from past deficit financing, and both the interest cost of the federal debt and a ceiling on the level of federal debt.
- Tariffs will raise public revenue, which will act to counteract the reduction in income tax collected and support the reduction in the

Figure 1 Core Elements of the US Policy Agenda



deficit. If the tariffs are successful at inducing re-shoring of industries, it will eventually increase GDP.

- The combination of reduction in workforce and the tariffs will be inflationary. This could force the Fed to increase interest rates, strengthening the US dollar. This will tend to cool GDP.
- Increases in interest rates make the US federal debt more expensive to manage, and interest costs will consume more of the federal budget. A weakening US treasury bill market has a similar effect.
- Retaliation against the US tariffs will counteract the increase in US GDP from reshoring, and a stronger US dollar will exacerbate that effect. The weakening of other currencies with the strength in the US dollar will somewhat counteract the effect of the US tariffs on countries exporting to the US.

With some evidence since January 20<sup>th</sup>, we can now provide more assessment of progress relative to this agenda.

https://www.agrifoodecon.ca/uploads/userfiles/files/agrifood%20tariffs%20feb%202-25%20final(1).pdf

<sup>&</sup>lt;sup>2</sup> Canadian Agri-food is Highly Vulnerable to US Tariffs. The US Should Worry Too. Independent Agri-Food Policy Note, February 2025



## **Workforce and Deportations**

The US unemployment rate in March, 2025 was 4.2 percent.<sup>3</sup> At this rate, the US economy is effectively at full employment. According to the Migration Policy Institute, there are about 13.7 million unauthorized immigrants living in the US<sup>4</sup> and approximately 67 percent are employed.<sup>5</sup> Given the very low overall unemployment rate and high share of unauthorized immigrants employed, material deportations would surely decrease the US workforce and size of the economy.

Figure 2 presents data on removals of unauthorized immigrants. The data show that last year, there were about 270,000 deportations. The data recently updated for first quarter fiscal 2025 (October to December), this continued approximately on pace from FY 2024. New data has not been updated covering the new administration.

Figure 2 Removals of Unauthorized Immigrants by ICE



Source: <a href="https://www.ice.gov/statistics">https://www.ice.gov/statistics</a> Data are as of January 2025. Fiscal year Oct 1-Sep 30

## **US Federal Budget**

The US House and Senate have each passed budget resolutions that ultimately aspire to reduce the federal budget by \$US 1.5 trillion. Meanwhile, according to the Department of Government Efficiency (DOGE) live tracker<sup>6</sup> DOGE has cut approximately \$US 155 billion in savings, out of its initial objective to secure savings of \$US 2 trillion.

Figures 3 and 4 present recent data on the US federal deficit and debt. Figure 3 shows that the federal deficit is down from a high of over \$US 3 trillion during the pandemic to about \$US 1.8 trillion today.

The effect of significant and persistent federal deficits dating back to the early 2000's has been a ballooning US federal debt. Figure 4 shows that the federal debt is currently about \$US 35.5 trillion. The figure also shows an imminent convergence between the federal debt and the current debt ceiling, \$US 36.1 trillion, which could trigger a US government shutdown, absent a mitigating agreement. Media reports indicate that the budget reconciliation process being engaged by the US Congress has an objective of reducing the budget deficit by \$US 1.5 trillion.<sup>7</sup>

Into this situation, the Trump Administration is proposing large tax cuts. One estimate is broken out below from the US Committee for a Responsible Federal Budget. It envisions the cost of tax cuts at between \$US 5 and \$US 11.2 trillion over ten years.

<sup>&</sup>lt;sup>3</sup> See US Bureau of Labour Statistics report https://www.bls.gov/news.release/pdf/empsit.pdf
<sup>4</sup> https://www.migrationpolicy.org/news/unauthorized-immigrant-population-mid-2023

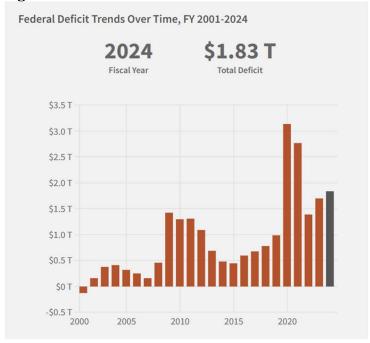
<sup>&</sup>lt;sup>5</sup> https://www.migrationpolicy.org/data/unauthorizedimmigrant-population-preview/state/US

<sup>&</sup>lt;sup>6</sup> https://doge.gov/savings

<sup>&</sup>lt;sup>7</sup> See NPR "House approves budget framework, kick-starting work on Trump's domestic agenda" Apr 10-25 <a href="https://www.npr.org/2025/04/10/g-s1-59354/house-budget-passage-trump-agenda">https://www.npr.org/2025/04/10/g-s1-59354/house-budget-passage-trump-agenda</a>



Figure 3 US Federal Deficit



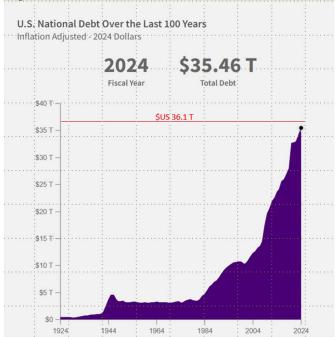
Source: US Department of the Treasury <a href="https://fiscaldata.treasury.gov/americas-finance-guide/national-deficit/#the-difference-between-the-national-deficit-and-the-national-debt">https://fiscaldata.treasury.gov/americas-finance-guide/national-deficit/#the-difference-between-the-national-deficit-and-the-national-debt</a>

#### **Tariffs**

The tariffs announced on April 2<sup>nd</sup>, and since paused and set at 10 percent, were discriminatory based on countries' historical goods trade deficits relative to US import levels. Figure 5 presents a partial summary, with some emphasis on eastern and southeast Asian countries. The map shows very material tariffs on US trading partners, some of whom are allies- Japan- 24 percent; South Korea- 25 percent; Taiwan-32 percent; Philippines 17 percent; Thailand 36 percent; and Indonesia 32 percent.

This has triggered complaints from countries subject to the US tariffs, and many have engaged the US to negotiate lower tariff levels. Whatever the US objectives behind these tariffs, their significance in terms of contributing to the US federal government

Figure 4 US Federal Debt



Source: US Department of the Treasury <a href="https://fiscaldata.treasury.gov/americas-finance-guide/national-debt/">https://fiscaldata.treasury.gov/americas-finance-guide/national-debt/</a>

Table 1
Fiscal Impact of Trump's Reported Tax Priorities (2026-2035)

Policy	Low Est.	High Est.
Extend the Tax Cuts and Jobs Act	\$3.9 trillion	\$4.8 trillion
Provide SALT Relief	\$200 billion	\$1.2 trillion
Cut Taxes on Tips	\$100 billion	\$550 billion
Cut Taxes on Overtime Pay	\$250 billion*	\$3.0 trillion
Cut Taxes on Social Security	\$550 billion'	\$1.5 trillion
Cut Taxes for Domestic Production	\$100 billion	\$200 billion
Close Carried Interest Loophole, Reduce Tax Benefits for Stadium Owners	-\$100 billion	#
Total	\$5.0 trillion	\$11.2 trillion

# Less than \$25 billion of savings.

\*Assumes 20 hours a month of overtime are exempt from income (but not payroll) taxes, and additional overtime pay remains taxable.

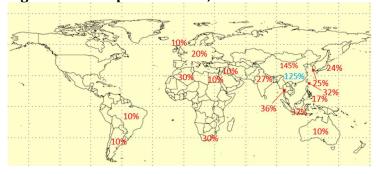
\*Assumes policymakers and taxation of the 35 percent of some benefits that goes to Medicare, but retain taxation of the 50 percent of some benefits that goes to Social Security.

#### SALT- State And Local Tax

Source: Committee for a Responsible Federal Budget <a href="https://www.crfb.org/blogs/trump-tax-priorities-total-5-11-trillion">https://www.crfb.org/blogs/trump-tax-priorities-total-5-11-trillion</a>



Figure 5 US Reciprocal Tariffs, Selected Countries



financial situation appears, at best, questionable. The first reason for this is that tariffs have a type of elasticity of demand and also elasticity of supply/substitution response associated with higher prices due to the tariff, which we have no experience with at the proposed levels.

Small tariffs may be absorbed with little impact on demand and supply response. But as tariffs increase, eventually these price effects assume a magnitude that is prohibitive and effectively cuts off trade- with no tariff revenue collected.

Given the magnitude of national tariffs on US imports announced on April  $2^{nd}$ , if lower levels are not established prior to the July  $9^{th}$  expiry of the tariff pause, surely it will cut off some trade, and with it prospective tariff revenue for the US treasury. Moreover, some countries have announced their intent to retaliate (paused for now) and the US has committed to counter-retaliate if this occurs- which would further reduce prospective tariff revenue.

With this acknowledged, to what degree could tariffs contribute as a partial replacement for income taxes in the US? An analysis by Lovely and Clausing<sup>8</sup> looked at a sustained 10 percent universal tariff with a 50

percent tariff on China in a model with the tariff elasticity effects- which bears similarity to the current situation. Their results showed that in 2023 such a policy would have raised \$US 227 billion, or \$US 2.75 trillion 2026-35. They observed that

"Even ignoring growth effects, the consequences of increasing trade elasticities over time, the likely need to subsidize those hurt by retaliation, and the costs of rent seeking, tariff revenues would fall far short of the revenue needed to pay for a full extension of expiring provisions in the TCJA [2017 Tax Cuts and Jobs Act] and to reverse built-in business revenue raisers that are a feature of the law. Together, these TCJA extensions would cost \$4 trillion over the coming budget window, or \$5 trillion if the interest costs associated with the increased debt are included, assuming legislation in 2025 would extend these provisions over 2026–35.

Elsewhere, the Committee for a Responsible Federal Budget has estimated that the April 2<sup>nd</sup> tariffs would raise \$US 300 billion in 2025, and between \$US 2.7 and \$3 trillion for 2025-2034<sup>9</sup>

In other words, the revenue raised from tariffs are expected to fall far short of generating funding for the tax cuts estimates in Table 1.

# **New Developments**

Reducing regulatory burden was an important theme in the Heritage Foundation *Project 2025* document. Consistent with this, in January, the White House announced that for any agency to introduce a new regulation, 10 regulations would need to be removed.

The US administration appears to be preparing to implement broader deregulation activities soon. In February a White House Executive Order<sup>10</sup> the

<sup>&</sup>lt;sup>8</sup> "Why Trump's Tariff Proposals Would Harm Working Americans", by Kimberley A Clausing and Mary E Lovely. Peterson Institute for International Economics Policy Brief 24-1 May, 2024 <a href="https://www.piie.com/sites/default/files/2024-05/pb24-1.pdf">https://www.piie.com/sites/default/files/2024-05/pb24-1.pdf</a>

<sup>&</sup>lt;sup>9</sup> <u>https://www.crfb.org/blogs/how-much-will-trumps-new-tariffs-raise</u>

<sup>&</sup>lt;sup>10</sup> https://www.whitehouse.gov/presidential-actions/2025/02/ensuring-lawful-governance-and-



Department of Government Efficiency (DOGE) was authorized to coordinate with federal agency heads in a sweeping review of regulation. An April 9th White House Executive Order<sup>11</sup> directs agencies to conduct a broad regulatory review within 70 days. The scope of the review includes regulations that are anticompetitive, limit the manner in which companies compete, and distort markets.

Elsewhere, media reports indicate that the Food and Drug Administration plans to end its role in food inspection in the US, with this role taken up by state and local authorities<sup>12</sup>. In an April 15<sup>th</sup> article, the New York Times reported<sup>13</sup> that the administration has prepared lists of regulations it plans to kill, under an expedited process that avoids the usual public consultation process. In other cases, there is an intent to cease enforcement of regulations viewed as costly or not in line with US administration priorities. According to the reporting, the scope of this deregulation will be broad, encompassing everything from workplace safety, to consumer protection, to environment, to agriculture and food.

Separately, the US has undertaken a Section 301 (national security) case against Chinese shipping and Chinese made vessels, dating from 2024. It is consistent with an April 9th, 2025 Executive Order aimed at restoring US maritime dominance<sup>14</sup>.

The Section 301 investigation has culminated in a Notice of Action and Proposed Action recently published by the Office of the US Trade Representative<sup>15</sup>. It outlines the intent to charge service fees on Chinese owned and operated vessels calling at US ports. Initially, the service fee would be zero, rising to \$US 50/net tonne after 180 days and then increasing on a schedule up to \$US 140/net

tonne by April 17, 2028. For Chinese manufactured vessels, the port call service fee would initially be zero, rising to \$US 18/net tonne after 180 days and then increasing on a schedule up to \$US 33/net tonne by April 17, 2028. A separate schedule applies to container ships. Public consultation on these measures will occur is forthcoming.

Some aspects of adjustment to these measures are addressed in the April 9th, 2025 Executive Order, including the prospect that affected ships with US-bound cargo could choose to call at Canadian or Mexican ports to circumvent the US port call fee. In particular, the Order directs US agencies to "engage treaty allies, partners, and other like-minded countries around the world with respect to their potential imposition of any actions taken pursuant to sections 5 and 6 of this order."- Sections 5 and 6 relate to collection of the port call service fee on US ships.

As of mid-April, President Trump has made critical statements on Federal Reserve Bank Chair Jerome Powell, imploring the Fed not to increase interest rates. The Fed has a role that is independent of the US administration, with a mandate for oversight of inflation and unemployment, using short term interest rates and the money supply to counter increases in inflation and unemployment in excess of target levels.

#### **Observations**

The essential elements of US policy outline in Figure 1, when populated with data characterizing the current situation, suggests the following:

https://ustr.gov/sites/default/files/files/Press/Releases/2025/301%20Ships%20-%20Action%20FRN%204-17.pdf

implementing-the-presidents-department-of-government-efficiency-regulatory-initiative/

<sup>11</sup> https://www.whitehouse.gov/presidential-actions/2025/04/reducing-anti-competitive-regulatory-barriers/

<sup>12</sup> https://www.cbsnews.com/news/fda-food-safety-inspections-plans/?ftag=CNM-00-10aab7e&linkId=800710274

<sup>&</sup>lt;sup>13</sup> https://www.nytimes.com/2025/04/15/us/politics/trumpdoge-regulations.html

<sup>14</sup> https://www.whitehouse.gov/presidential-actions/2025/04/restoring-americas-maritime-dominance/



- The information on deportations does not suggest an explosion in deportations by the new US administration thus far. Media reports<sup>16</sup> suggest that deportations are lagging relative to last year, and this is validated by late March data published by TRAC at Syracuse University<sup>17</sup>. The implication is that the anticipated effect of deportations on reducing the US workforce and GDP has probably not materialized yet.
- The tax cuts that the Trump administration appears committed to will be expensivevalued at about \$US 500 billion to \$US 1 trillion per year, beginning in the year 2026.
   The Committee for a Responsible Federal Budgets observes that this will "explode debt".
- Meanwhile, the US federal debt is increasing and approaching the federal debt ceiling; it would appear that the two will converge (or collide) in the coming months.
- The attempts by DOGE to trim federal government costs are lagging well behind expectations- with about \$US 155 billion in savings claimed so far relative to a target of \$US 1 trillion. It is also unclear that the savings claimed are permanent savings, as there have been several instances of agency positions eliminated with associated cost savings, only to be rehired. In other cases, mass public service firings and position eliminations are matters before the courts and could result in re-hirings.
- The research on the prospective role for tariffs to generate public revenue to finance tax cuts suggests that tariffs would fall well

- short- perhaps generating 50 percent of the low estimate of the value of a tax cut, or less than 25 percent of the high estimate. Increasing tariff rates at some level will reduce the revenue generated from the tariffs
- While there have been announcements of new investments in US manufacturing, it is unclear that the tariffs could have played much of a role- indeed the constant flux of tariffs, tariff rates, and tariff pauses are just as likely to have forestalled US manufacturing investments due to the associated uncertainty. Moreover, material investment decisions would usually occur over a much longer time horizon than the time the new administration has been in office, or even a single Presidential term.
- It is evident why President Trump is concerned about potential actions taken by the Fed. The prospect of a shrinking workforce due to deportations and significant tariffs on imports are each inflationary factors, and if these caused inflation to move outside of the target range the Fed would presumably increase interest rates. But this would make the existing financial situation of persistent federal deficits and burdensome federal debt all the more acute, perhaps rendering the President's tax cut infeasible and/or requiring major cuts to government programs, which the American public could find unacceptable.
- The dynamic of US tariffs, federal government finance, workforce, inflation, employment, and response by the Fed feeds into currency exchange rates. The effect of losses on stock

<sup>16 &</sup>lt;a href="https://www.nbcnews.com/politics/national-security/trump-admin-pushing-immigrants-self-deport-deportation-numbers-lag-rcna201099">https://www.nbcnews.com/politics/national-security/trump-admin-pushing-immigrants-self-deport-deportation-numbers-lag-rcna201099</a>

<sup>17</sup> https://tracreports.org/reports/756/



- markets in response to US tariffs has been to weaken the US dollar. Movement by the Fed to stem inflation would have the effect of strengthening the US dollar.
- The US seems poised to seek increases in efficiency through deregulation. The prospects for this from fiscal perspective are unknown- either directly in savings to government, or indirectly through savings to the private sector and increased GDP and tax revenue. There are reasonable worries that deregulation could be carried out in an indiscriminate manner filled with missteps, overreach, and unforeseen effects.
- Deregulation presents some specific concerns. If the FDA steps back from its role in food inspection, there are legitimate concerns about the expertise and resources of state and local agencies to effectively manage food inspection at a consistent level nationwide. It also raises the issue of how the US manages its obligations of like treatment of imported products, which must meet federal standards, versus what actually occurs on the ground under state and local administration of food inspection. And to the degree that state/local inspection could be lower cost than US federal inspection, it raises the worry that the US may come to view federal inspection requirements of other countries, and associated costs, as a barrier to trade.
- The port fees on Chinese ships apparently forthcoming could prove highly disruptive to trade, similar in impact to the Covid pandemic disruptions at ports. It could also stand to impact the operation of farm product markets in the US, as the costs of organizing ships increases and becomes a source of risk to agribusinesses.

 The Executive Order dealing with Chinese ships also presents a troubling provision arising from the concern that ships might circumvent the US port fees by calling at Canadian or Mexican ports instead. It suggests that Canada and Mexico could be coerced into aligning with the US on its policy against Chinese vessels- a worrisome precedent.

#### Conclusion

The view that emerges as we build empirical metrics around the conceptual framework for the new US administration is a wrenching struggle to deliver on promised tax cuts in the face of already burdensome federal deficits and debt and an economy operating at full employment. The cuts to government budgets and tariffs play heavily into this, even as they have roles as independent policy priorities. Because deportations will weigh heavily on the US workforce and GDP, they have a pervasive effect on the federal finance dynamic, and it is possible that this recognition explains the apparent slow progress of deportations. The tension placed on the US economic and financial system to implement major tax cuts in this environment is thus palpable.

Why should Canada, and Canadian agri-food, worry about these largely domestic policy matters in the US? There are multiple reasons for concern.

First, tariffs are apparently being enlisted to help balance US federal government finances, and Canadian agri-food faces the prospect of shouldering these tariffs on exports to the US (and in some cases, already is). It is possible that in trying to implement the tax cuts, the US administration will double down further on tariffs.

Secondly, Canada could be impacted from the blowback or disruption on the intense pressure on US domestic policy. There are many possibilities- one is that the combination of tariffs and deportations become highly inflationary, and that the US Fed raises



interest rates, which could significantly weaken the Canadian dollar. Conversely, if the Fed does not increase interest rates in response to inflation as per its mandate, it could have the effect of strengthening the Canadian dollar- and provoke a crisis in the US economy.

The prospect of the April 2<sup>nd</sup> tariffs and pause to allow negotiation on a country-by-country basis should be a concern for Canada. It is a flagrant violation of the equal treatment and most favored nation enshrined in GATT/WTO, and further weakens the multilateral rules-based trade system more generally. It also seems likely that country-by-country agreements could be exclusive agreements to reduce tariffs in return for commitment to import US goods- almost like a purchase order. This was the precedent established in the US-China agreement in the earlier Trump administration, and it is clearly prejudicial in favour of the US.

An intense US deregulation campaign also poses risks. If this takes the form of sweeping deregulation without the requisite process for due diligence, public consultation, cost-benefit analyses, etc.- which has not been the hallmark of the new US administration- it could result in risks with collateral damage to Canada.

Food inspection is a case in point. If this is being delegated by the FDA to the state and local level (acknowledging that some of this already occurs) it could result in changes in cost/efficacy that present risks to the public not currently present. How these risks are interpreted for imports vs domestic product in the US is unknown. It could also put US imports at a cost disadvantage, if they must bear the costs to meet stringent federal standards, but domestic US product inspected at the state/local level meets these standards at lower cost. This is also tied in with some form of Country of Origin Labeling, apparently being resurrected in the US.

Whatever deregulation occurs in the US, it is likely to form the regulatory baseline that the US brings to international trade discussions, in the sense that variances from US regulations become viewed as additional or discriminatory costs placed on exports of US product.

In turn, it suggests that pressure will be brought on US trading partners to harmonize regulatory standards with the US. The provisions of the Executive Order dealing with service fees on Chinese vessels and the direction given to agencies to work with their foreign counterparts (Canada and Mexico) to align policies could be signaling this.

It can be anticipated that discussions regarding renewal of trade relations among the US, Canada, and Mexico will reoccur- perhaps as per CUSMA/USMCA, or under some other auspices. The issues raised in this policy note suggest that it is unlikely that the starting point for these discussions will be the current situation. Quite apart from the existing trade irritants that the US has observed, including several in agrifood, in practice US policy and economy are in flux and it should influence our expectations of what Canada's future relationship with the US could look like.

Finally, it is evident that the situation in the US is entirely dynamic, and will be steadily and unpredictably changing going forward. Canada will necessarily be drawn into both responding to the US evolving demands, as well as Canada maintaining a relationship with the rest of the world independently from the arrangements with the US. This may prove not an easy task.