Measuring labour supply and demand shocks during COVID-19 in Canada

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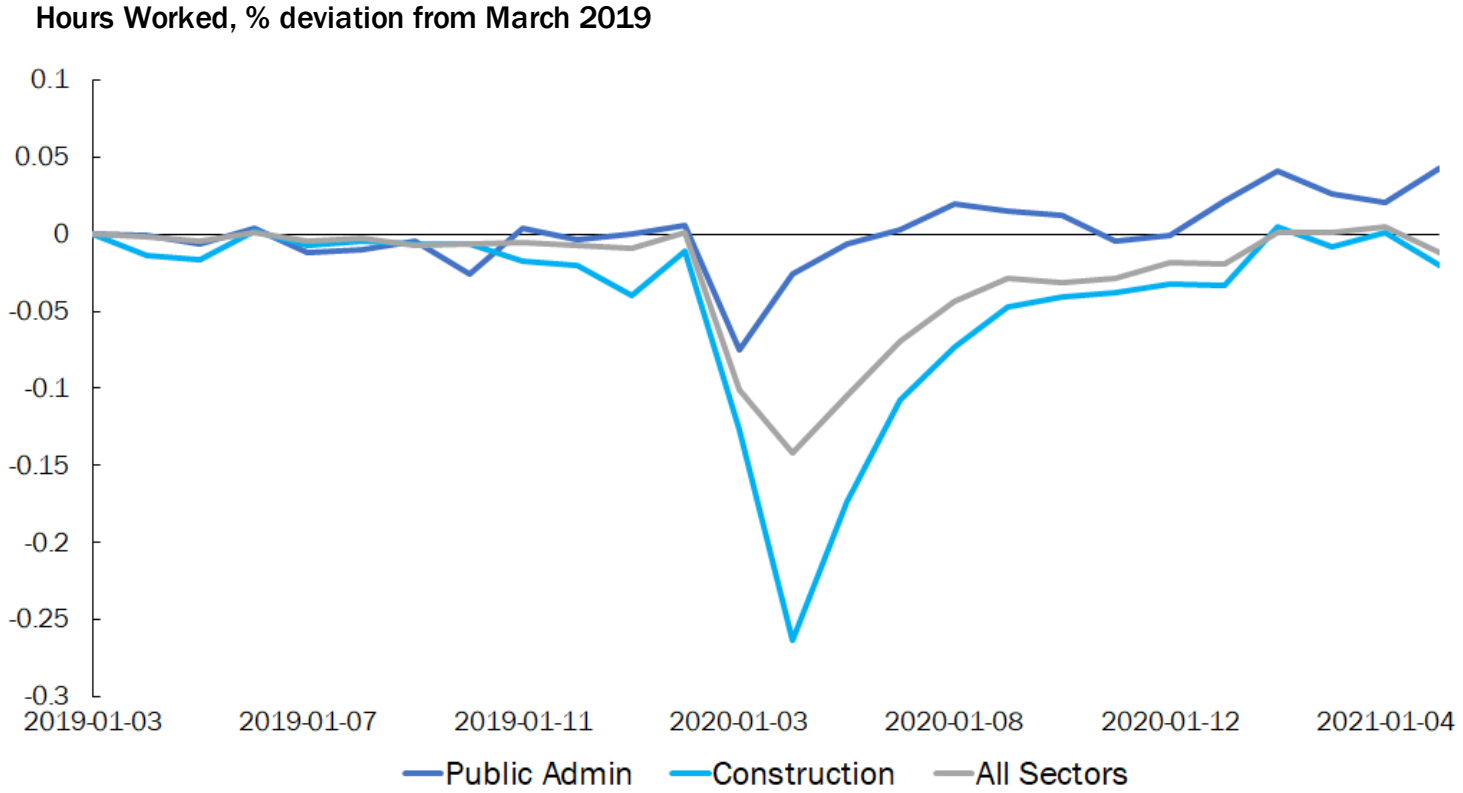
COVID-19 has led to simultaneous supply shocks and demand shocks across all sectors of the Canadian economy

There is a large disparity in the pandemic's impact on different sectors



Sources: Statistics Canada

Our research questions

Are demand shocks or supply shocks dominant?

How do the COVID-19 demand shocks and supply shocks differ among the labour market sectors?

As the pandemic persists, how do the shocks vary?

Our results

Sectors unable to adapt to lockdown measures experienced relatively **larger supply shocks** than demand shocks.

There is **substantial heterogeneity** in the impact among the different sectors.

The **magnitude of the shocks diminish with every outbreak.**

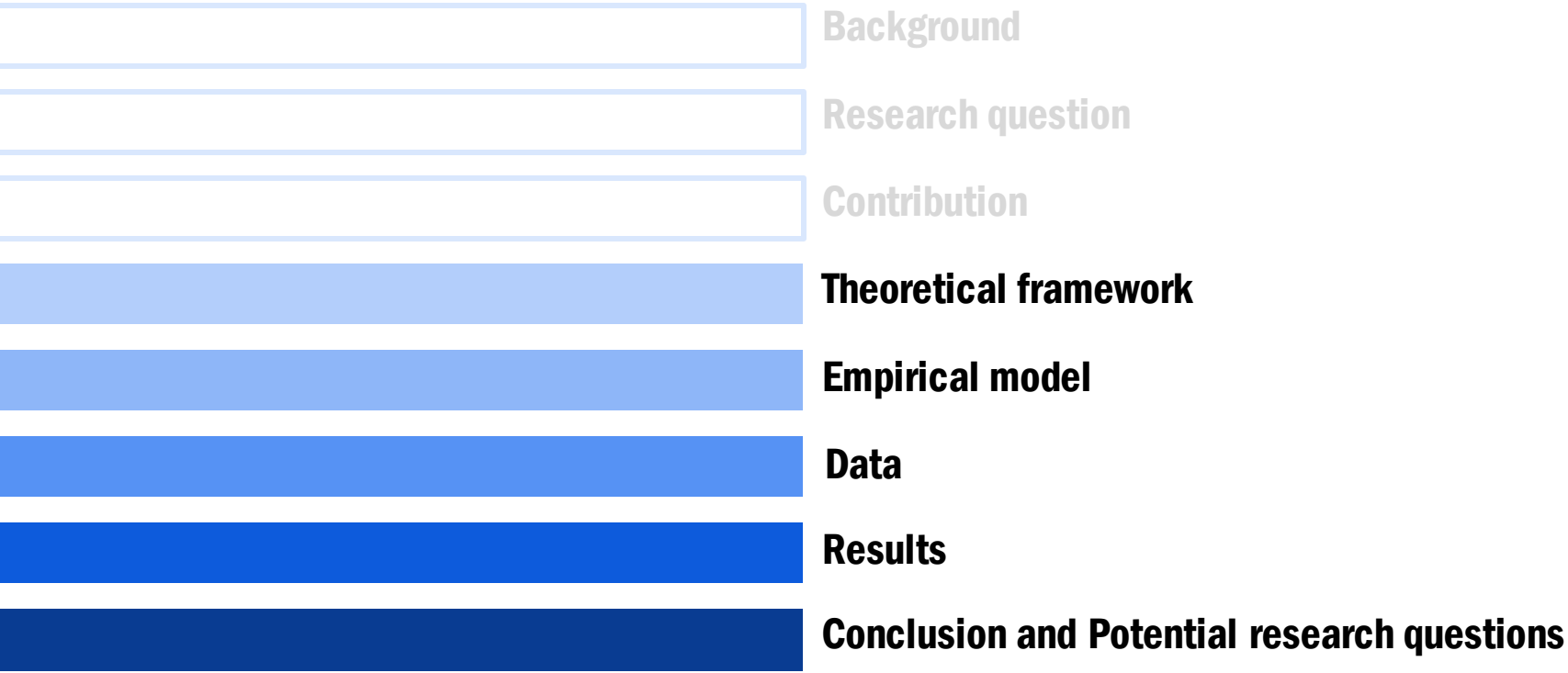
We help understand the effects of COVID-19 in Canada

We help gain a better understanding of the economic effects of COVID-19, especially related to the **nature of the shocks affecting multi-sector economies**, in a Canadian context.

We have **analyzed a longer timeframe than previous literature**, allowing us to view the evolution of the shocks during the pandemic.

Disentangling these shocks is **important for the design of monetary and fiscal policy** in a context such as COVID-19.

Outline


Background
Research question
Contribution
Theoretical framework
Empirical model
Data
Results
Conclusion and Potential research questions

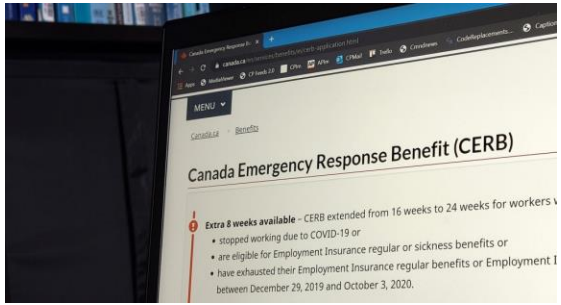
Do supply or demand effects dominate in the pandemic's impact on labour markets?

This is a central question in our paper.

Labour supply effects

Lockdowns & Health risk

Income support

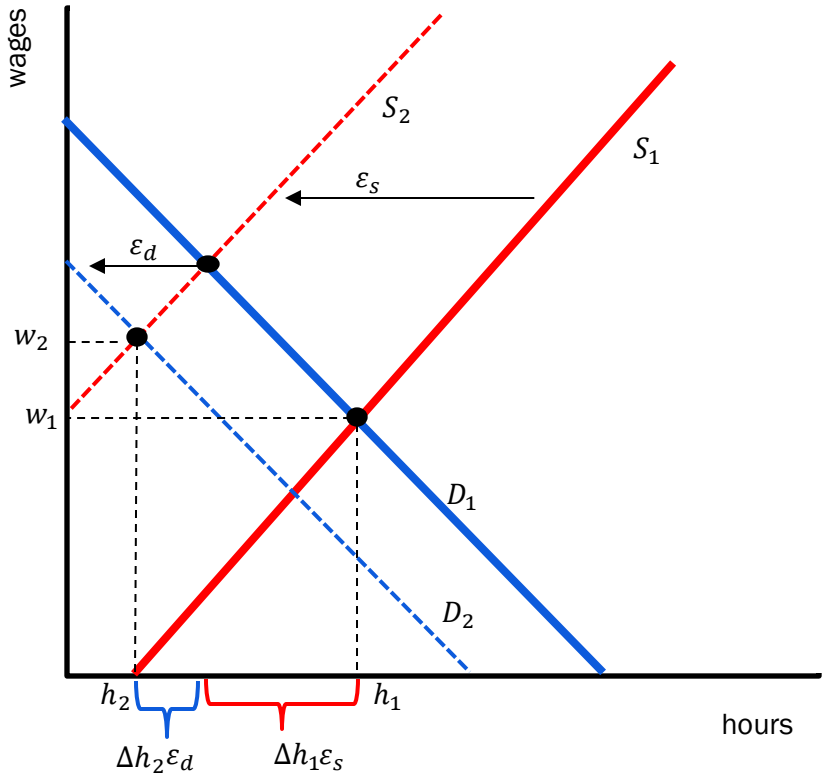


Labour demand effects

Monetary & Fiscal policies

Uncertainty

The intuition behind the empirical model



Negative supply shock: Lockdown

Labour supply decreases ⇩

Hours worked decreases ⇩

Hourly wage increases ⇧

Negative demand shock: Uncertainty

Labour demand decreases ⇩

Hours worked decreases ⇩

Hourly wage decreases ⇩

How do we identify a supply shock and a demand shock?

We use a Bayesian structural vector autoregression to model the joint dynamics of monthly real wages and hours in a given sector $l \in L$ using **sign restriction** and **priors** on labour demand and supply elasticities.

$$A^l y_t^l = B_0^l + B^l(L) y_{t-1}^l + \varepsilon_t^l$$

A^l: 2×2 matrix describing the contemporaneous relations

$$A^l = \begin{bmatrix} -\beta^l & 1 \\ -\alpha^l & 1 \end{bmatrix}$$

$y_t^l = (\Delta w_t^l, \Delta h_t^l)$: 2×1 matrix of growth rate of hours and wages

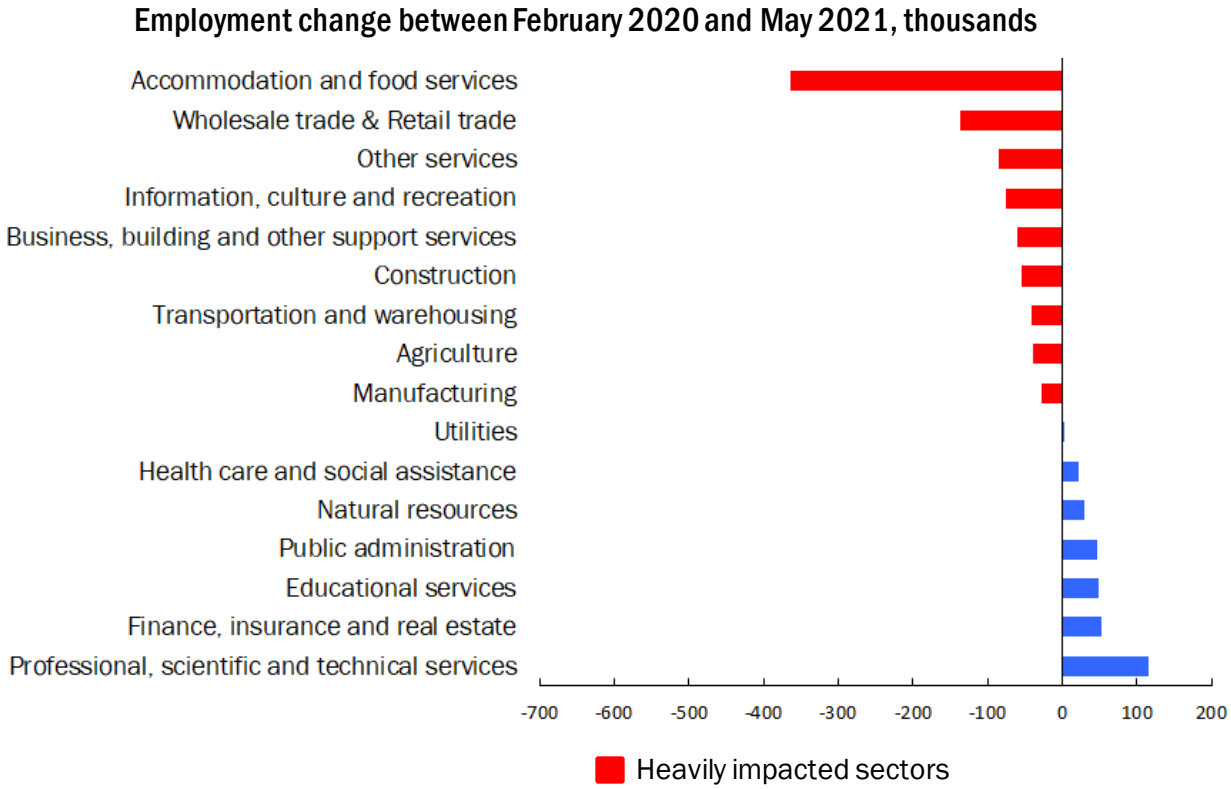
B_0^l: 2×1 matrix of constants

$B^l(L)$: 2×2 matrices associated with each lag of y_{t-1}^l

ε_t^l : 2×1 vector of structural shocks that are assumed to be i.i.d. N(0,D) and mutually uncorrelated

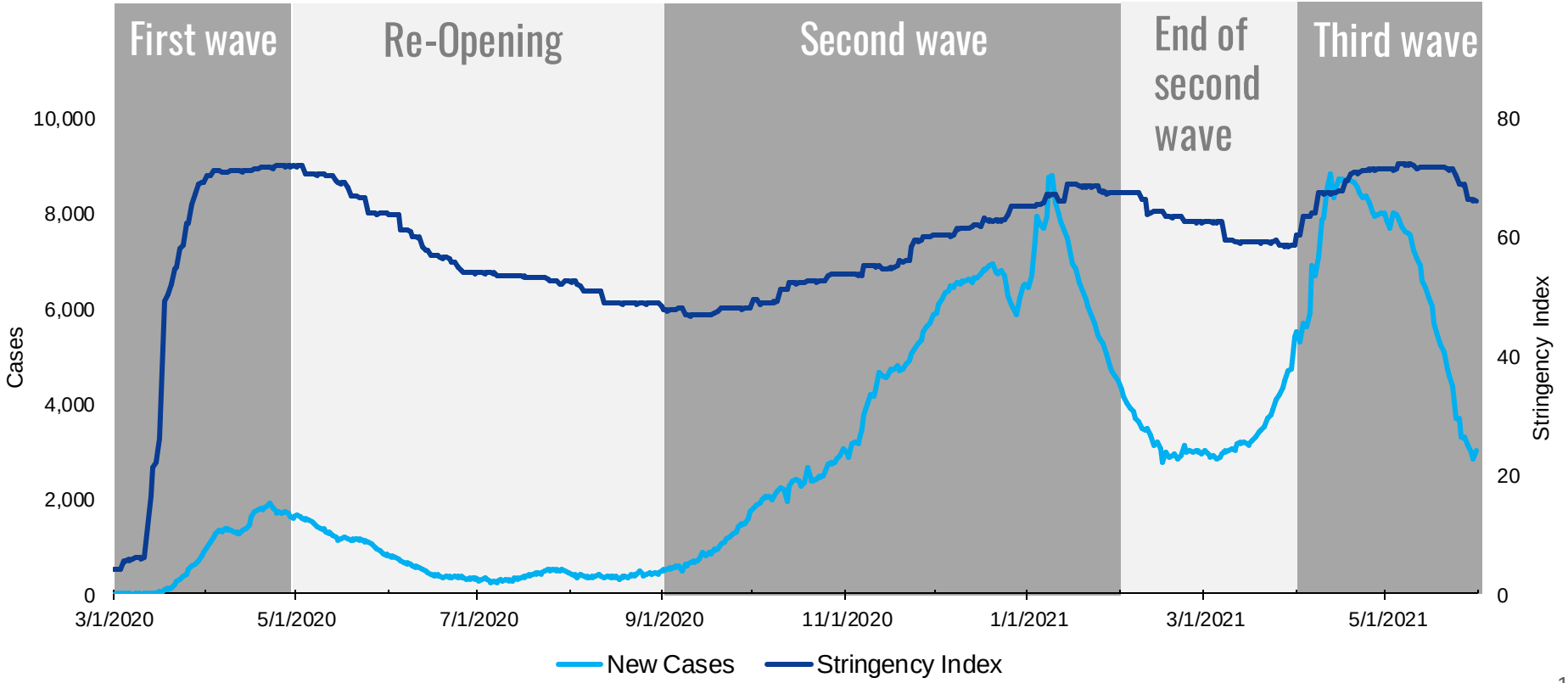
We use Statistics Canada's Labour Force Survey to obtain our data

We use seasonally adjusted monthly data for wages and hours worked for the sectors listed, as well as all sectors combined. Our sample spans from January 2001 to May 2021.



Source: Statistics Canada

The progression of the pandemic in Canada

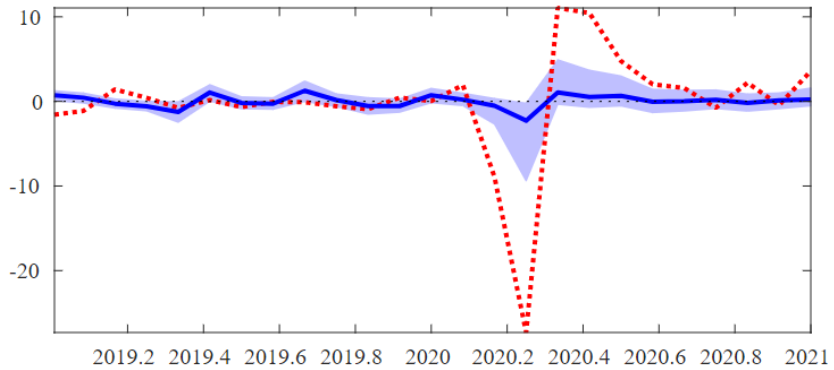


Sources: Bank of Canada & Our World In Data

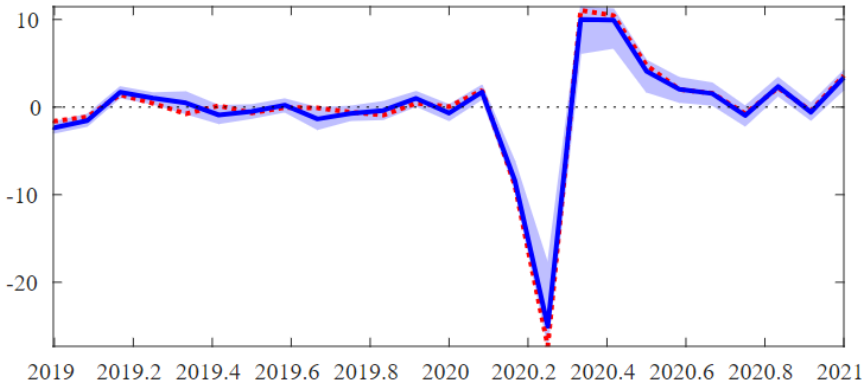
The initial drop in hours worked is primarily the result of an adverse supply shock

These charts represent the historical decomposition of the growth rate of hours for all sectors.

Hours worked if only demand shocks had happened vs observed hours



Hours worked if only supply shocks had happened vs observed hours



Observed fluctuations in hours worked

Fluctuations in hours worked due to a supply shock or a demand shock

Sources: Authors' calculations

HEALTH • COVID-19

World Health Organization Declares COVID-19 a 'Pandemic.' Here's What That Means

The first wave

March 2020 – April 2020

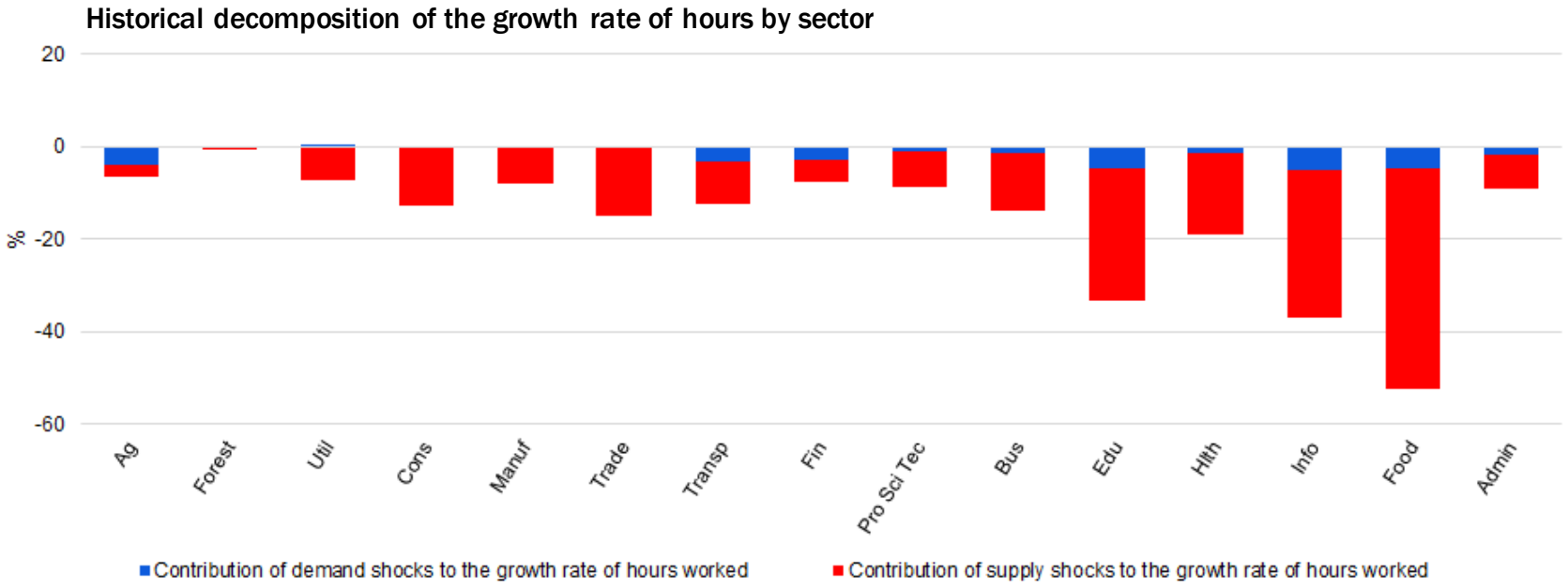
5:04 PM / MARCH 31, 2020

Stocks suffer their worst quarter since 2008

Wall Street suffered its worst quarterly performance since the financial crisis. Inve

The first lockdown caused the largest negative supply shocks among the sectors

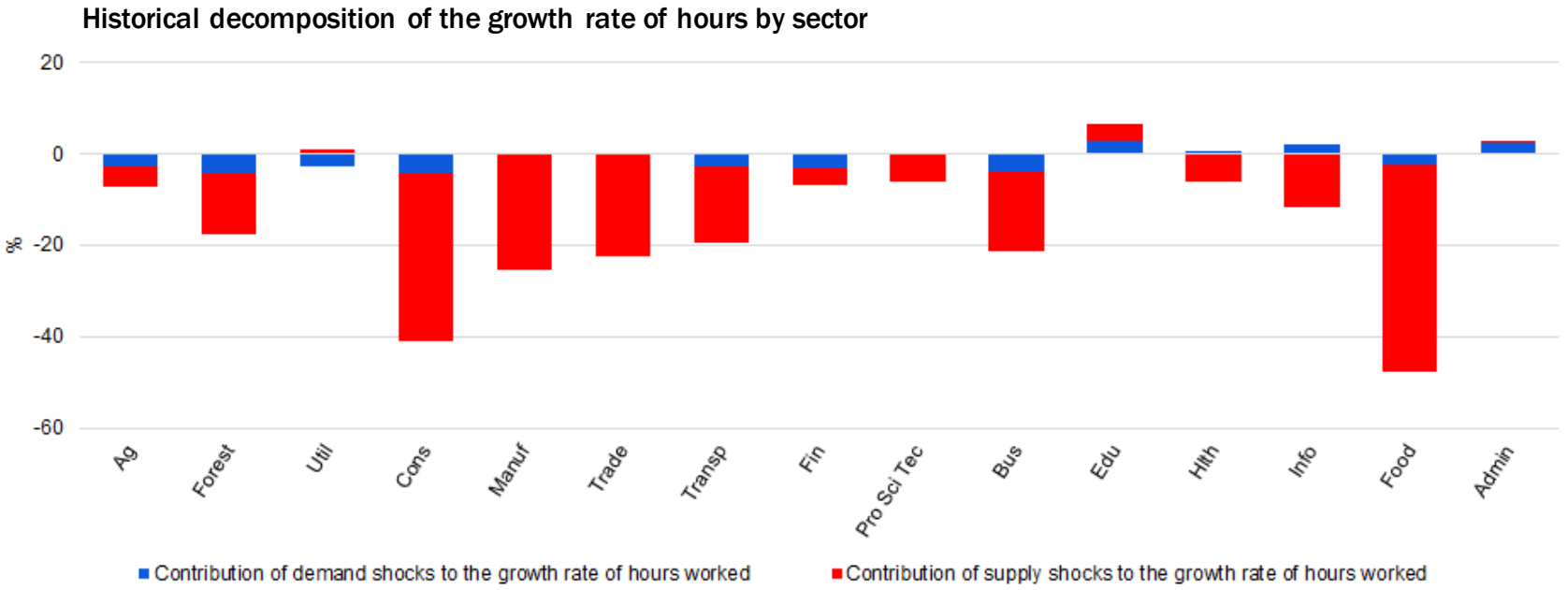
March 2020



Accommodation and food services and educational services experienced large negative supply shocks to hours worked.

The negative shocks are predominantly supply shocks

April 2020



Sectors unable to quickly adapt to social distancing experienced adverse negative shocks.

LIFE & WORK | HEALTH & WELLNESS

Can You Catch Covid-19 Twice?

Most scientists say patients gain some immunity to the virus after the first infection

Re-opening

May 2020 – August 2020

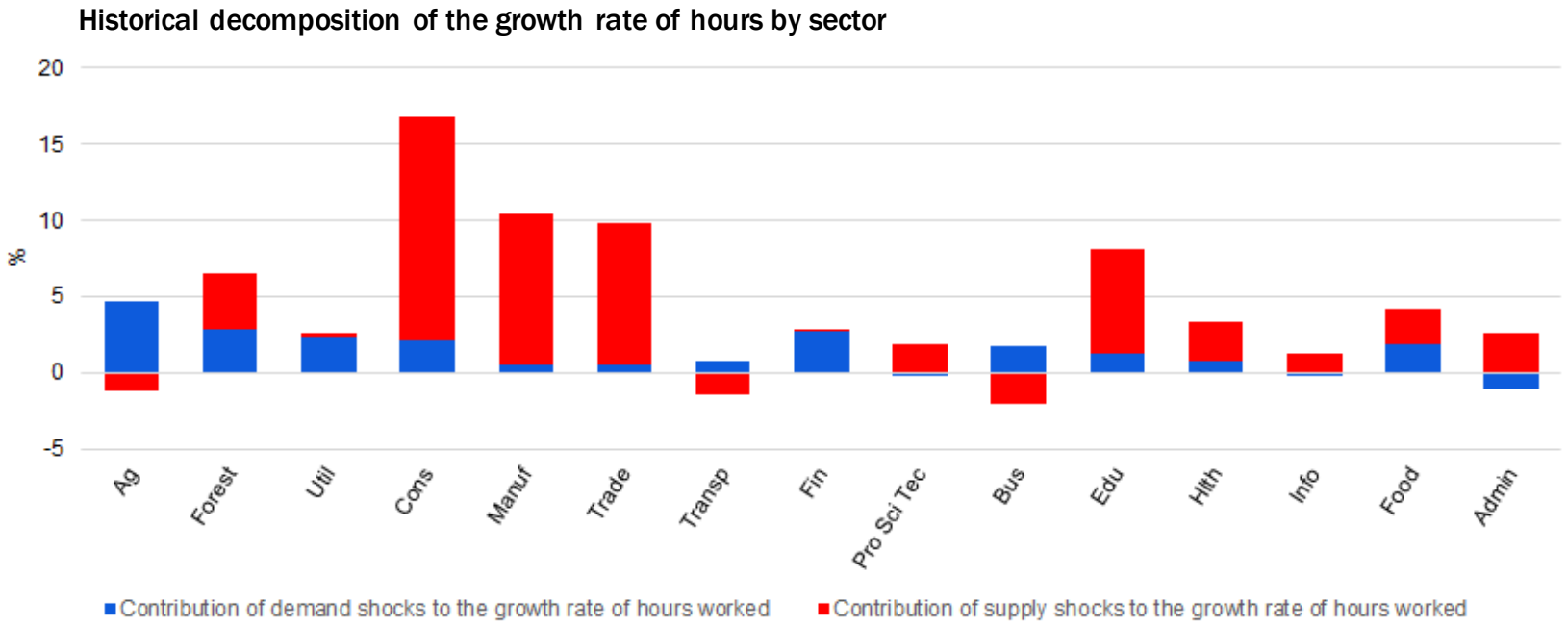
The most popular outing of pandemic summer 2020: Getting a COVID-19 test

IAN BROWN >
PUBLISHED AUGUST 14, 2020

TRENDING

There is significant heterogeneity in sector recovery

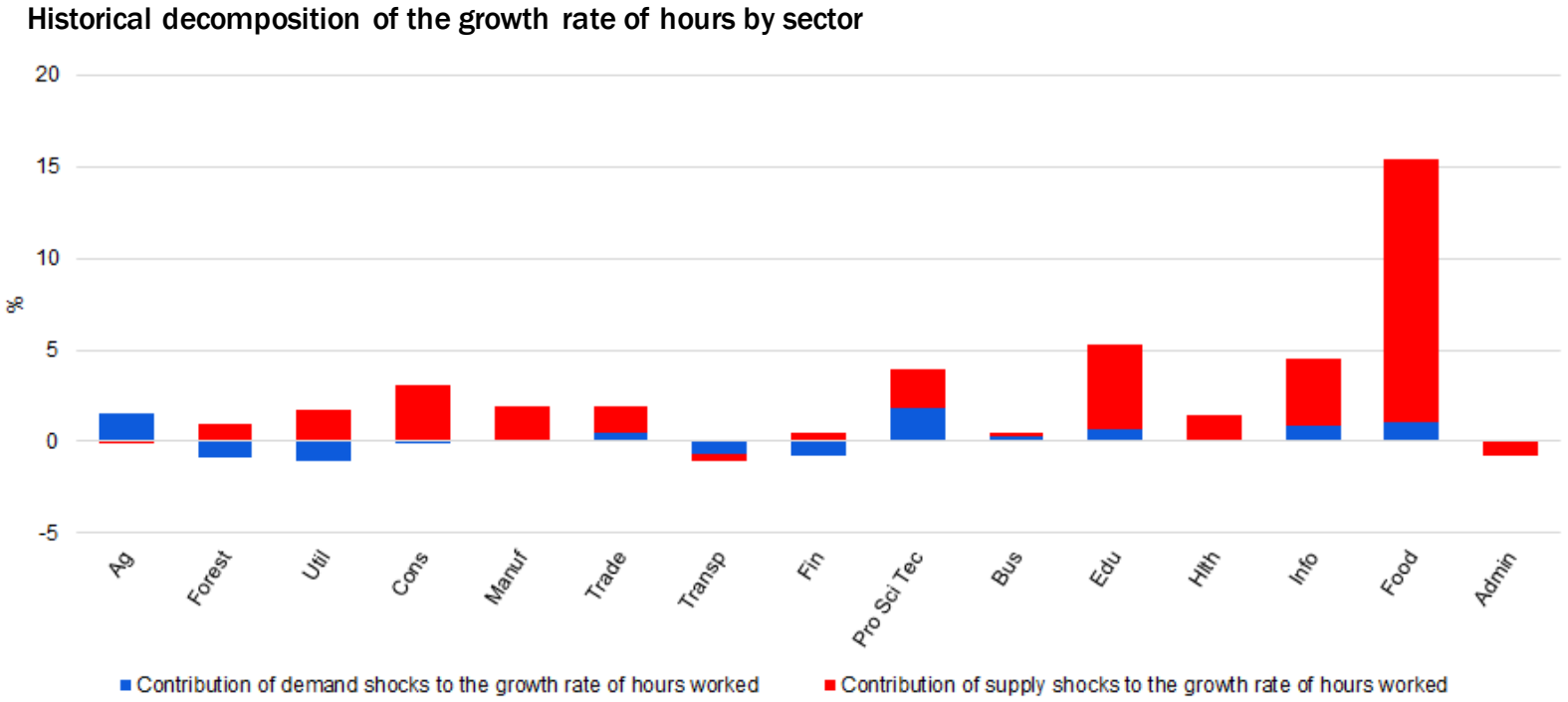
May 2020



The initial easing of restrictions helped restore some of the labour force for the sectors that had to shut down, such as retail trade and construction.

The restaurant industry saw the largest positive shock

August 2020



The size of the shocks had diminished for most sectors after the restrictions were eased for a while.

'Hunker down': The fall Covid-19 surge is here

By Christina Maxouris and Holly Yan, CNN

Updated 9:24 PM ET, Tue October 13, 2020

The second wave

September 2020 – January 2021

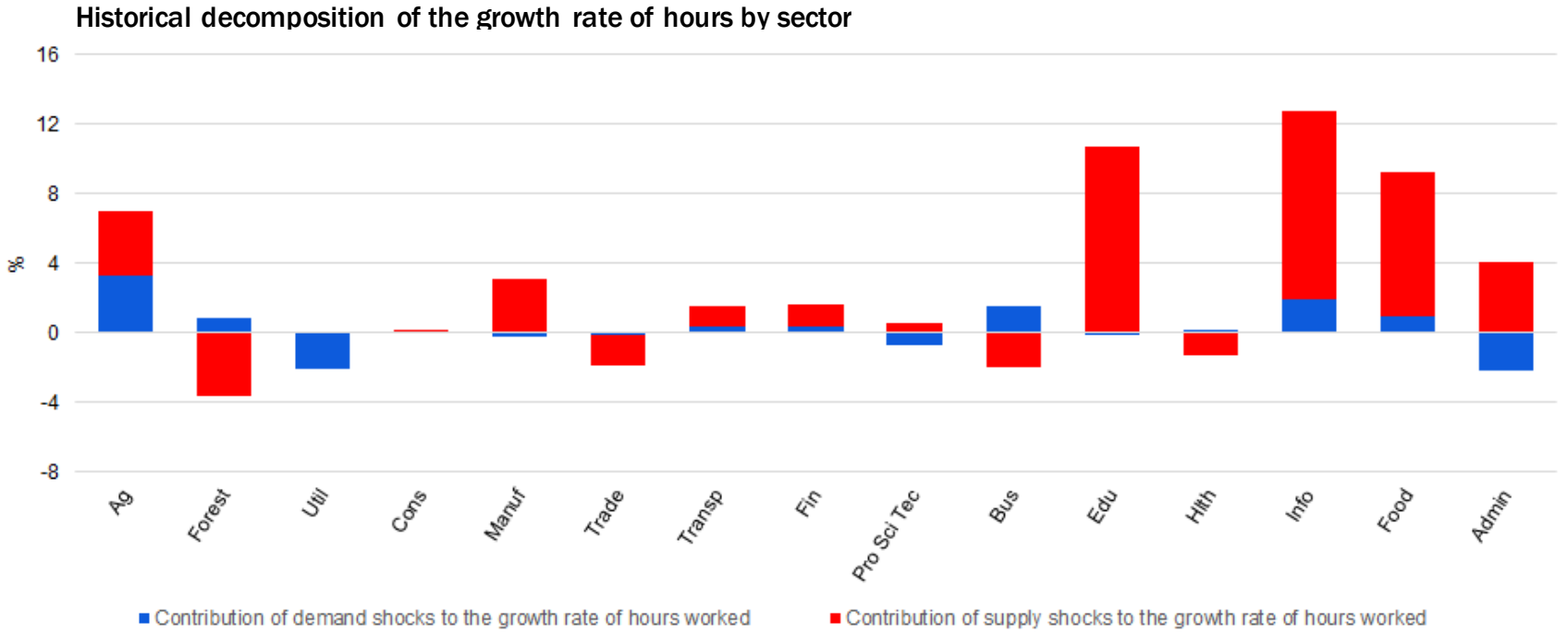
Toronto gym owners feel the burn of the second pandemic shut down

As of Saturday, all indoor fitness centres in Toronto, Peel Region and Ottawa are closed for the next 28 days.

HEALTH | OCT 10, 2020

As cases rise, the positive shocks diminish

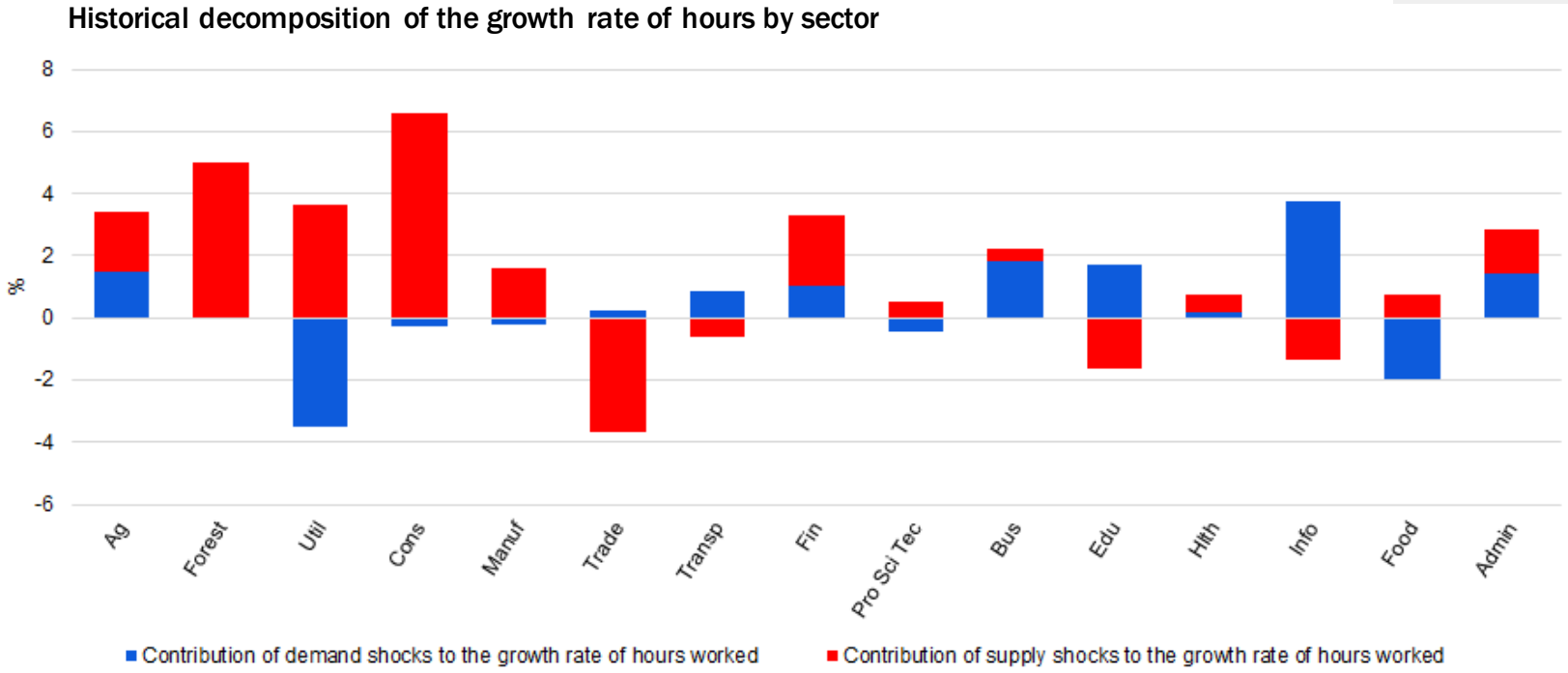
September 2020



Uncertainty surrounding the impending restrictions resulted in mixed effects.

Effects of the second wave differed from the first wave

January 2021



The shocks to the growth rate of hours don't seem to tell the same clear negative supply shock story they tell in the first wave.

Conclusion

The initial decrease in hours worked was **primarily due to an adverse supply shock.**

New waves of infection showed muted effects, **with overall shocks to hours worked getting smaller.**

There is **heterogeneity in the measured impact** among the different sectors.

Future potential research questions

Have the persistent COVID-19 effects to the economy caused labour market scarring? How can we measure these effects?

Were monetary and fiscal policies effective in reducing the impact of the COVID-19 effects on the labour market?

Thank you International Atlantic Economic Society!