The Impact of COVID on Potential Output

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Overview

Question How will COVID affect the level and growth rate of U.S. potential output?

Motivation Important for assessing slack and inflationary pressures

This paper
- provide a simple growth-accounting framework to think through the short-, medium-, and longer-run channels

- gauge plausible magnitude/sign of effects where possible

Growth-accounting framework

Definition of potential output: the level of output y given actual capital k and technology tfp, if capital and labor input (hours h and labor quality lq) were utilized at "normal" levels.
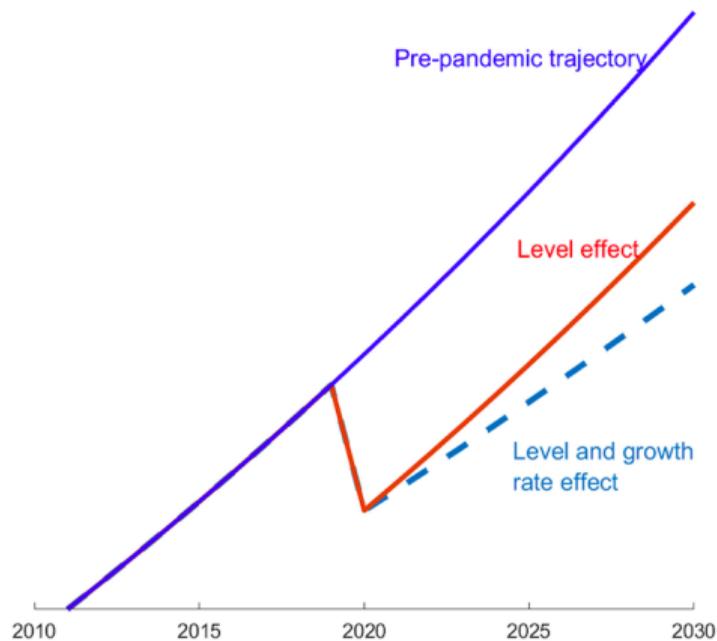
Shorter run

$$dy = \alpha \, dk + (1 - \alpha)(dh + dlq) + dtfp \qquad (1)$$

Longer run

$$dy = \frac{dtfp}{1 - \alpha} + dh + dlq \qquad (2)$$

Illustration of level and growth rate effects on potential output

Pre-pandemic growth of real GDP, hours, and productivity

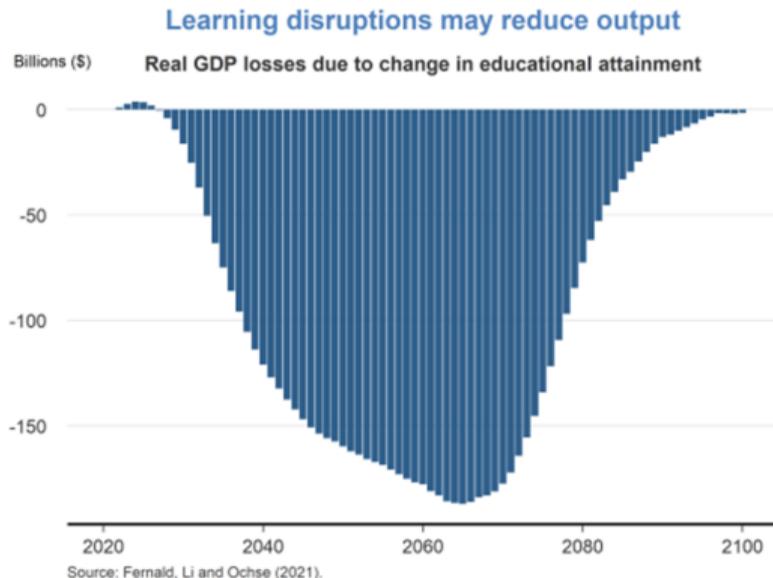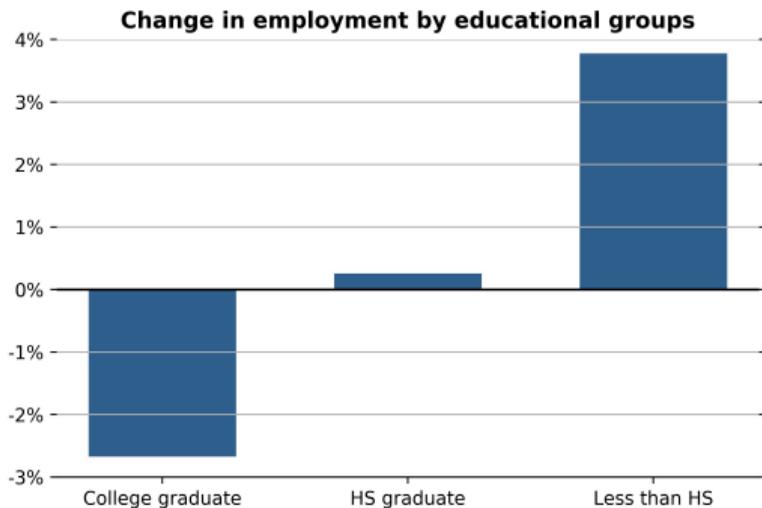|	GDP	hours	GDP per hour
	(1)	(2)	(3)
1. 1948 – 1973	3.95	1.19	2.76
2. 1973 – 1995	2.84	1.56	1.29
3. 1995 – 2004	3.38	0.86	2.52
4. 2004 – 2019	1.54	0.31	**1.23**
5. Slow prod. regime (1973–95, 2004–19)	2.34	1.07	1.27
6. Fast prod. regime (1948–73, 1995–04)	3.80	1.10	2.70
7. Benchmark $g^\star$ projection (2004–18)	**1.55**	0.32	**1.23**

Level effects: channels for which we can gauge plausible magnitudes

Plausibly 1 ppt decline in potential output in the near and medium term

Channel	Horizon	$dy^\star$	dk	$dh^\star + dlq^\star$	$dtfp^\star$
Uncertainty/recession reduce investment	Near, medium	-0.1	-0.5		
Duplication of capital from WFH ($\rightarrow$ less "true" prod. capacity K; higher measured K reduces TFP)	Near	-0.2			-0.2
Childcare needs reduce LF participation	Near	-0.2		-0.3	
Permanent business closures $\rightarrow$ LT unempl.	Near	-0.3		-0.5	
Early retirements	Near, medium	-0.15		-0.2	
School closures reduce future human capital	Very long	-0.5	-0.5	-0.5	

Example, level effects of school closures/learning disruptions

Use micro estimates from Fuchs-Schudeln et al (2020) to gauge the % change in employment by education group. Use Bosler, Daly, Fernald and Hobijn (2017) to convert to % decline in effective labor input.

Change in employment by educational groups

Learning disruptions may reduce output

Real GDP losses due to change in educational attainment

Source: Fernald, Li and Ochse (2021).

Level effects: channels for which we can plausibly sign

Mostly negative effects in the near term, potential positive effects in the medium term

Channel	Horizon	$dy^\star$	dk	$dh^\star + dlq^\star$	$dtfp^\star$
Increased labor-market frictions	Near, medium	−		−	
Adjustment costs from shift to WFH	Near	−			−
Firms learn new ways of doing business remotely	Medium, long	+			+
Belief scarring increases risk aversion	Medium, long	?	+	+	?
Automation	Medium, long	+	+	−	
Government debt crowds out investment	Long	−	−		

Level effects for which we cannot sign and longer run growth effects

Channel	Potential effects
Allocative efficiency	Probably lowers Y in the near and medium term
Shift to widespread telecommuting	Ambiguous effects on idea creation and diffusion in the long run
Change in research efforts	Redirecting research to vaccines may raise or lower innovation, depending on the relative marginal values of vaccine research versus other. Accelerated adoption of some COVID-robust technologies (e.g., automation, AI) may boost growth.

Longer run growth effects:

- Our pre-pandemic modal projection: 1.55 percent
- We do not see a strong reason for COVID to substantially change this trajectory

Conclusion: this paper...

- provides a simple accounting framework for understanding the channels through which COVID may affect potential output

- gauges plausible magnitudes and direction of effects for the U.S. economy

- finds <u>modest decline</u> in the level of potential output in the next few years
  $\rightarrow$ the large near term output decline reflects slack $\rightarrow$ moderate inflation risk

- do not find compelling reasons for substantial effects on long-run growth of potential