Maternal Child Care: Some Macroeconomic Implications in the Time of COVID-19

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ABSTRACT

In this paper, I make an attempt to understand the efficacy of some of the current fiscal stimuli being implemented to deal with the ongoing economic disaster precipitated by COVID-19. The focus is on pecuniary externalities working through the demand side, for they seem crucial for recovery. I use a well-known model of the Big Push of the economic development literature for this purpose because it lays bare the essential multiplier process involved. This enables an examination of the role that traditional maternal child care plays in the efficacy of the fiscal policies intended to support the economy and to facilitate recovery. This works through the maternal contribution to human capital during the childhood of the current labor force. Based on the reasoning developed here in the context of COVID-19, I argue for universal and subsidized child care under normal times in view of its long-term macroeconomic consequences. This argument is independent of whether the subsidy elicits greater maternal labor supply.

Key Words: COVID-19, recession, pecuniary externalities, heath, maternal child care, human capital

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"…think of love as a state of grace: not the means to anything but the alpha and omega, an end in itself."
— Gabriel Garcia Marquez, *Love in the Time of Cholera*

1. Introduction

COVID-19 has simultaneously devastated the demand and the supply sides of economies around the world in a manner and on a scale that was previously unimagined by contemporary economists. On the supply side, because the virus is extremely contagious it is infecting huge swathes of people, and because it is extremely lethal it is swiftly killing off a significant proportion of them. Furthermore, the fact that a person may not show any symptoms of infection or even be infected and yet be a carrier of the virus has essentially all but ruled out work that entails contact or close proximity with others, making even healthy workers reluctant to work. The fear of contagion has dried up demand for a lot of the products and services offered over the market. The simultaneous collapse of supply and demand has forced a retreat from specialization by comparative advantage to self-sufficiency.

If it were only a matter of a dramatic shortfall on the demand side, we have learned from Keynes on the Great Depression of the wisdom of having the government step in and provide the needed stimulus—which governments are strenuously doing now. However, even people who are healthy enough to work but have children need to find care workers for them. Because the virus makes even child care workers potential communicators of the disease, this option, too, has dried up. In this case, the job of child care is taken over by parents, most often the mother. Unpaid care is substituting for paid care in these twin crises that are interrelated, one of a nonfunctioning economy and another of seriously compromised health.

Taking my cue from the above observation, in this essay I explore the role played by maternal child care in normal times—for what is routinely done for nonmonetary considerations in normal times is invariably taken for granted. So perhaps the dire straits we find ourselves in at present may bring into sharper focus what usually stays in the background without attracting attention. I try to bring out how the efficacy of government policies currently being implemented is enhanced by parental—especially maternal—care during the childhood of what is the labor force

today. What is true of maternal care could certainly also be equally true of paternal care where it is forthcoming, as it increasingly is in recent decades. But since child care has been traditionally deemed to fall in the domain of women and because the available evidence, too, focuses on maternal care, so do I.

The role of the family in determining adult outcomes is very well established and documented (see Heckman (2008) for an overview). The importance of parental input is seen by comparing children who are advantaged with those who are disadvantaged in terms of the quality of parenting. The difference is seen to be crucial for raising future productivity. The resources available to the family, it turns out, are not as important for this outcome as the quality of parenting. Educated mothers, for example, devote more time to rearing their children than mothers who are less educated. In the absence of quality parental input, children's cognitive and non-cognitive abilities are compromised and this lowers their future productivity. "Skills beget skills and capabilities foster future capabilities," as Heckman (2008, p. 309) puts it. This feature underlines the importance of maternal care and of early interventions when it is inadequate. In the light of these findings, maternal (and paternal) care should be seen as hugely important in determining the future productivity of the economy's labor force through their contribution to human capital. And yet, though it is supplied routinely, it is not noticed and its role in macroeconomics is underappreciated.

The economic devastation that the COVID-19 pandemic is wreaking has been compared to that of the Great Depression (1929-1938) and the Second War (1939-1945). At present, the auto industry, transportation, mining and oil, airlines, tourism, construction, retail, hospitality, sports, theaters, restaurants, and countless others have all but shut down. Recovery is going to entail the restoration—'resurrection' may be a more appropriate term—of a whole slew of industries.[1] But even that has now to be done with the additional constraint of warily restoring activities in industries so as not promote the transmission of COVID-19.

Crucial to the process of rebuilding the economy are pecuniary externalities on the demand

[1] As a point of comparison, in the Marshall Plan that was implemented by America during 1948-1952 to rebuild the European economy after it was devastated by the Second War, the United States spent $135 billion in current dollars. On the COVID-19 stimulus package to date, the United States has already spent $2 trillion on its economy.

side—much more so now than during more usual recessions because the scale is so much greater now. When an industry successfully resumes and makes profits, the spending of its firms' owners will boost the demand of the products of other industries and make them profitable, which in turn can benefit other industries and so on in a virtuous circle. This, of course, is the well-known 'Big Push' idea of Rosentein-Rodan (1943) in the context of the industrialization of poor countries.

The notion of demand externalities working through profits requires the industrial sectors to be uncompetitive, for profits are dissipated under the usual assumption of perfect competition. The logic of Rosenstein-Rodan's idea was clarified and elegantly modeled more than four decades later in a simple general equilibrium framework set out by Murphy, Shleifer, and Vishny (1989), hereafter MSV for brevity. At the heart of the process of the Big-Push is the multiplier stemming from demand externalities, and it is very likely that the multiplier is going to be crucial in the recovery of our economies after the COVID-19 pandemic is done with us.[2]

COVID-19 has also reduced the productivity of the healthcare sector of the economy in at least two ways. It is making healthcare workers sick, and so some of them cannot even do their jobs when they are most needed. Also, it makes people more reluctant to go to healthcare centers if they can put it off. Through its simultaneous attack on the public at large and on the healthcare system—the usual refuge in the time of medical emergencies—COVID-19 has dramatically reduced labor productivity in almost every economy.

One effect of maternal care of children is in enhancing, over time, the human capital of the labor force. As Currie (2020) has recently reminded us, child health *is* human capital—it is not just education that constitutes the latter—and her review of the extensive empirical literature to date shows the importance of early interventions. In fact, we may argue that between health and education, the former is more primitive and, therefore, more fundamental. Maternal care bestowed on children raises their human capital and, therefore, the future productivity of the labor force. I show with the help of the MSV model, suitably adapted for the purpose here, that

[2] In his empirical assessment of the Big Push hypothesis for developing countries, Easterly (2006) claimed that there is little evidence in support of the theory. Ironically, Rosenstein-Rodan's influential idea may be more relevant to the present COVID-19 context of developed countries than to the original intended context of developing countries.

maternal care's unrecognized contribution to health can dampen the adverse impact of recessions and also hasten recovery. Apart from potentially making recovery easier by increasing demand for firms' outputs, I show that the maternal contribution to human capital has another important effect. It magnifies the effect of the multiplier on the government's fiscal policies of placing income in consumers' hands and in thwarting unwarranted bankruptcies.

In this essay, I also use the context of the COVID-19 pandemic to make a case for subsidized universal and high quality child care as means for making the economy more resilient in the future. This argument for universal child care is independent of whether such a subsidy elicits greater maternal labor supply, an empirical issue on which there is mixed evidence.

I conclude with some general thoughts on how our accepted definition of what economics is supposed to do and how its exclusive focus on the allocation of scarce resources blinds us to what else is inconspicuously contributing to our wellbeing—in particular, maternal child care.

2. The Model

To anchor the observations that follow, I invoke the MSV model alluded to in the Introduction because it offers a particularly useful conceptual vehicle to analyze the recovery from the COVID-19 induced recession. The model makes transparent the mechanisms through which consumer spending and firm profitability or bankruptcy will function in the recovery, so that the effects of government policies can be conceptually assessed with some clarity and ease.

Suppose the population in a closed economy comprises L men and L women, each person endowed with 1 unit of labor in efficiency units. Labor is the only resource used for production. Men devote all of their time endowment to market work. Women, say traditionally, divide their endowment in the exogenous ratio γ: $1-\gamma$ in maternal care activity and market work, respectively, with $\gamma > 0$. Historically, it has certainly been the case that, on average, γ is larger

for women than for men.[3] This parameter γ plays an important role in what follows because it is used as an exogenous theoretical measure of the maternal care children receive that subsequently enhances their labor productivity as adults and is a source of the economy-wide externality stemming from the (free) input of mothers.

Assume for the purpose of this model that COVID-19 can be contracted equally by men and women, in which event they subsequently cannot work in the absence of intervention. Suppose a proportion of the population (labor force) that does not contract fall ill is $q_0(< 1)$. Maternal care during the current adult labor force's childhood increases human capital (which includes health). This is consistent with the evidence that is reviewed briefly in the next section. Here, past maternal child care is posited to increase the size of the labor force available for work in the event of a pandemic and also to raise the efficiency of that labor. Since women devote time to care (which includes self-care), the actual proportion of the labor force for women and men that is healthy enough to work is denoted by $q(\gamma)$, with $q(0) = q_0$ and $q'(\gamma) > 0$. In normal times, we might normalize q_0 to be higher, but it would still be the case that $q'(\gamma) > 0$. COVID-19 reduces a worker's productivity in inverse relation to the maternal care the worker received in childhood. Let $l(\gamma)$ denote the productivity of labor in efficiency units during the COVID crisis, with $0 < l(\gamma) < 1$, $l(0) \equiv l_0$(say), and $l'(\gamma) > 0$. In normal times, we would expect l_0 to be higher but, of course, it would still be the case that $l'(\gamma) > 0$.

Preferences

Suppose that in the economy there is a large number, *N*, of industries producing differentiated goods or services, with $N \ll 2L$. All individuals have identical and symmetric Cobb Douglas preferences over these goods. If x_i denotes the consumption of a typical consumer of good/service *i*, *i* = 1,2,…,*N*, we write the utility function, *U*, of a person over these goods as

(1) $$U(x_1, x_2, \ldots x_N) = \prod_{i=1}^{N}(x_i)^{\beta}, \text{ where } \beta = \frac{1}{N}.$$

[3] Needless to say, γ could be endogenous in a more general model, and could depend on a whole host of factors like women's wage rate, culture, the availability of contraception, the availability of household gadgets, etc. For my purposes here, an exogenous γ, historically determined by culture, is a reasonable simplification.

With these preferences, the consumer spends the same share of income on all the goods/services.

Production

As argued in the Introduction, demand externalities are going to be a crucial part of the post COVID-19 recovery process. These pecuniary externalities come from profitable firms, the owners of which spend their profits and benefit the owners of other firms. To capture the latter, as noted, it is necessary to model a non-competitive industrial sector for in a perfectly competitive environment above-normal profits are zero. For this reason, I draw on the Big Push model of the economic development literature by MSV and adapt it for the purpose at hand.

Assume that each good can be produced by a primitive, but freely available, backstop technology that requires 1 unit of labor (independent of its human capital) to produce 1 unit of output. This captures the fact that COVID-19 has forced us to retreat from exploiting scale economies into a more 'primitive' state of self-sufficiency. Each good can also be produced by a more sophisticated proprietary technology that exhibits increasing returns to scale. This technology requires the incurrence of an indivisible upfront cost of F efficiency units of labor but 1 efficiency unit of labor produces α (> 1) units of output, and so the marginal cost is lower than in backstop production. Each proprietary technology is owned by a separate firm in the economy, and so the industrial sector comprises N non-overlapping monopolies.[4] (Given the nature of the preferences assumed, the distribution of profits amongst the population has no consequences for the macroeconomic issues under consideration here.) Whether these monopolies can function after the economy has been shut down by COVID-19 is the question of interest. If they do, it will be identified here as "recovery" from the recession or depression. If they do not, the economy will be caught in a primitive form of subsisting by self-production.

Since COVID-19 undermines the productivity of workers, 1 worker produces only $\alpha l(\gamma)$ units of output in the industrial sector. So the marginal cost of a unit in the industrial sector is $1/\ (\alpha l(\gamma))$,

[4] This assumption does not do too much violence to reality. In the modern economy, large firms that exploit scale economies do produce differentiated products. Even small firms—the corner grocery stores, say—do have some monopoly power due to consumers' transportation costs in terms of distance and time. Rather, it is the typical assumption of perfect competition that seems more problematic.

taking the wage rate as the numeraire. Given the backstop technology, a monopolist is restricted to charging a price no greater than 1. Also given that the demands come from a Cobb Douglas utility, the revenues of a monopolist are independent of the price charged. So the only consideration for the monopolist in choosing the price is the minimization if the variable cost of production. This is minimized when output is virtually zero, which means that the price charged would be infinite, were it not bound by the backstop price of 1. So each monopolist would limit price at 1. Thus the expedient of invoking the backstop technology not only captures the idea of a retreat into self-production, as noted, but also neatly sidesteps the issue of pricing—which is secondary to the main concern here of recovery from the pandemic-induced recession or depression.

Denote the aggregate income of the economy by *Y*. The profit, π, of a single industrial monopoly, were it to produce, is given by

(2) $$\pi = \left(1 - \frac{1}{\alpha l(\gamma)}\right)\frac{Y}{N} - \frac{F}{l(\gamma)}.$$

The term in brackets on the right hand side is the price net of marginal cost and, because the income is spread equally between the *N* goods/services, (*Y/N*) is the number of units demanded of the producer when the price is set at 1. An obvious necessary condition for this profit to be positive is that $\alpha l(\gamma) > 1$, that is, the human capital of a worker is high enough to ensure higher productivity in the industrial technology compared to the backstop. The aggregate profit, Π, in the economy is equal to $N\pi$.

Since we are interested in the post-COVID-19 period, I include government expenditure, *G*, as the fiscal stimulus. However, to focus on what is essential here and to maintain a static model, I eschew considerations of how this expenditure (financed by borrowing) will be ultimately paid for. The income of the economy is the sum of the aggregate profit, government expenditure, and the labor income:

(3) $$Y = \Pi + G + q(\gamma)(2L - L\gamma).$$

Substituting for Π in (3), we get

$$Y = \left(1 - \frac{1}{\alpha l(\gamma)}\right) Y - \frac{NF}{l(\gamma)} + G + q(\gamma)(2L - L\gamma).$$

Solving for the equilibrium income, we obtain

(4) $$Y = \alpha l(\gamma)[G + q(\gamma)(2L - L\gamma)] - \alpha NF,$$

where the multiplicative factor $\alpha l(\gamma)$ outside the square bracket is the income multiplier associated with the state of industrial recovery.

The income in (4) presumes that the industrial sector is profitable. To verify when this is so, we substitute (4) into (2) to obtain the expression for the aggregate equilibrium profit in the economy as

(5) $$\Pi = (\alpha l(\gamma) - 1)[G + q(\gamma)(2L - L\gamma)] - \alpha NF,$$

which has to be ≥ 0 for recovery to be feasible. The multiplicative factor $(\alpha l(\gamma) - 1)$ outside the square bracket in the variable profit of (5) is the multiplier relevant for profits.

For the recovery of the industrial sector, we require, as noted above, that labor productivity in the industrial sectors has to be higher than in the backstop, $\alpha l(\gamma) > 1$. In the absence of this, no amount of government expenditure to counter the COVID-19 health shock will restart the industrial sector of the economy. Furthermore, the variable profits, of course, must also cover the fixed upfront costs: the (multiplied) effect of the stimulus package has to be high enough. If it is the case that the health shock is so severe that $\alpha l_0 < 1$, recovery would be impossible in this model were $\gamma = 0$, that is, if mothers of the current labor force had not augmented their children's human capital.

3. Maternal Child Care and the Efficacy of Policies for Recovery

The simple model presented above offers two policy implications worthy of consideration. The effectiveness of both of these is importantly enhanced by (unpaid) maternal care.

The necessary condition $\alpha l(\gamma) > 1$ for viable recovery is more likely to be satisfied when mothers devote a large part of the time to unpaid caring, since $l'(\gamma) > 0$. The greater the current labor force's resistance to disease and the higher its human capital, the greater is the ease of post-COVID-19 recovery. Of course, both paid and unpaid child care in the past have contributed to the present labor productivity, $l(\gamma)$. But since paid care is already accounted for in the aggregate income of the labor force, I focus on the unpaid component of it.

The Effects on the Wage Subsidy and Direct Payment Policies

In addition to making direct payments into the hands of consumers, the governments of many countries have implemented a wage subsidy for small businesses as part of the stimulus package in the COVID-19 crisis. In Canada, there is a COVID-19 Emergency Wage Subsidy program that covers 75% of the wage rate of small businesses for a period of three months. In the United States, there is an analogous Employee Retention Credit program that provides a tax credit for wages paid up to 50% of all businesses. To see the mechanisms through which such programs have their effects, suppose we denote the fraction of the wage the firm has to pay by σ ($0 < \sigma < 1$), with the government paying $(1 - \sigma)$. We may write the magnitude of the government's stimulus package as $G \equiv \bar{G} + S(1 - \sigma)$, where the function, $S(.)$, in the second term captures the expenditure associated with the wage subsidy, with $S'(1 - \sigma) > 0$, and $\bar{G}$ denotes all other expenditure components of the stimulus package, such as direct payments.[5]

The wage subsidy reduces the marginal cost of a worker in the industrial sector to $\sigma / \big(\alpha l(\gamma)\big)$. In the presence of this subsidy, by mimicking the above steps, the equilibrium income of the

[5] This expenditure $S(.)$, of course, is really endogenous and depends on the equilibrium output of the economy. But governments invariably put a cap on the total subsidy by making it temporary. If a fixed lump sum expenditure is devoted to the subsidy, we may interpret $(1 - \sigma)$ as the effective proportion of the wage that is subsidized.

recovered economy is easily seen to be

$$\text{(6)} \qquad \mathrm{Y} = (\alpha l(\gamma)/\sigma)\big(\bar{G} + S(1 - \sigma) + q(\gamma)(2L - L\gamma)\big) - \alpha NF,$$

and the equilibrium total profit of the industrial sector to be

$$\text{(7)} \qquad \Pi = (\alpha l(\gamma) - \sigma)\big(\bar{G} + S(1 - \sigma) + q(\gamma)(2L - L\gamma)\big) - \alpha NF.$$

Comparing the right hand sides of (4) and (6), we see that if aggregate government expenditures are held at same levels in the two cases, the equilibrium income in the recovered industrialized economy is higher with the wage subsidy. Similarly, comparing the right hand sides of (5) and (7) we see that the industrial profit is more likely to be positive with the wage subsidy case and, if positive, will be higher because the multiplier is larger. This is because, when $\sigma < 1$, the income multiplier in (6) is $(\alpha l(\gamma)/\sigma)$ and the multiplier relevant for the profit in (7) is $(\alpha l(\gamma) - \sigma)$, both of which are larger than their analogues without the wage subsidy ($\sigma = 1$).

To spell out the economic intuition for this, I note that there are two effects here of the wage subsidy. When the subsidy increases (that is, σ decreases), first the government stimulus is higher and, in standard fashion, increases income and therefore profits. Second, the multiplier is also higher with the subsidy. The former represents the stimulus coming from the purchasing power the government puts in the hands of wage earners. The latter captures the fact that, with the wage subsidy, the variable profits left in the hands of the producers are now higher and these owners now demand the products and services provided by other producers, and so on. The owners of a profitable restaurant, for example, whose workers' wages are subsidized, will increase their demand for the output of a clothing firm, a shoe firm, another restaurant, etc.

The wage subsidy is a double-barreled fiscal policy that is more powerful than other forms of fiscal stimuli (captured here by $\bar{G}$) like, for example, direct payments to consumers or the building of public works. Indeed, the wage subsidy enhances the multiplier on other forms of government spending, too, via a larger multiplier. Whether this is precisely the intention of

governments in instituting a wage subsidy or whether it is, rather, intended to keep small businesses afloat is unclear. Whatever the reason for the wage subsidy, this form of fiscal stimulus is particularly potent in theory.

The model may cast some light on recent empirical findings related to bankruptcy and aggregate demand. If the fixed indivisible cost F in the model is entirely in the nature of a fixed cost that can be avoided if there is no production, a firm's profit will have a lower bound of 0. In that case, a firm that is not profitable will not affect aggregate demand one way or another. But if it has a substantial sunk cost component that was incurred in an earlier period, a firm will lower aggregate demand through its losses. Furthermore, if it has to be liquidated it will not be able to resume easily and so there is good reason for the government to prevent its bankruptcy.[6]

Auclert et al (2019) have recently estimated the effect of the boost to aggregate demand provided by consumer bankruptcy protection in the U.S. during the Great Recession (2007-2009). They find that on average a 1% increase in protection increased the employment by around 2% by the end of 2009. Bernstein et al (2019) use U.S. data to examine the effect on employment in the neighborhood of the liquidation of a firm as opposed to its reorganization in the event of bankruptcy. They find that, with liquidation, there is a relative decline of about 4% in the employment that works mainly by inducing lower growth in other firms in the vicinity. Thus the liquidation of firms has serious negative pecuniary externalities on the local economy through aggregate demand. The probability of this occurring is reduced with the government's wage subsidies.

There is an additional benefit of these government interventions pertaining to bankruptcies. Canadian households are very highly leveraged, partly because of their borrowing to finance homes in the major cities with very high real estate values.[7] In a comparison with five other OECD countries (France, Germany, Japan, United Kingdom, and United States), the International Monetary Fund places Canadian households in 2018 at the top of the list in terms of

[6] Some bankruptcy, of course, is to be expected in the normal course of things and this may be efficient; that is how inefficient firms are purged. But in the COVID-19 pandemic, even otherwise healthy firms can go bankrupt, and it is not in society's interest that this should happen.

[7] *Globe & Mail* article, "COVID 19 disruptions could send many Canadian households into a financial tailspin," March 31, 2020.

indebtedness-to-income, with this ratio at 100.7 while for those in the U.S it is at 75.9.[8] This has particular relevance because a significant proportion of small businesses, which constitute the overwhelming majority of all businesses, are sole proprietorships.[9] In this case, the firm's bankruptcy is also a personal bankruptcy because they do not have limited liability. The consequences for aggregate demand and the scope for compounding the effects of COVID-19 on unemployment can be staggering. In the light of this, the measures of the federal government in terms of direct payments and wage subsidies seem very well-directed.

I am not suggesting here that maternal child care today will help *this* recovery because it is expected to last a very long time or that it will permanently reduce productivity. Rather, my point is that maternal child care during the time when the current labor force was in its childhood will help the recovery now. If recovery today is going to be inordinately difficult, it would have been even more difficult were it not for the maternal care the current labor force had when young.

The Effects on the Economy's Resilience in Recessions and the Case for Universal Child care

Let us revert to the case when there is no wage subsidy. From the expression in (4) we see that the government expenditure multiplier on income is increasing in women's (past) child care. This is only one externality of caring activity that goes unrecognized and unremunerated in reality. There is another. The evidence on the unavailability of formal paid care of children shows that this lack impinges more on women's labor supply than men's.[10] It is usually women who make the sacrifice, making it possible for their spouses to participate fulltime in the labor force. This will be even more in evidence in the post-COVID-19 recovery period, for formal childcare will be slow to resume because it is an activity where physical proximity and exposure to infection is likely quite high. In other words, even for that part of the population that is healthy enough to resume work and for whose labor there is a manifest demand, participation is not possible unless unpaid labor steps in to provide the lack, at personal cost.

[8] See https://www.imf.org/external/datamapper/HH_LS@GDD/CAN/GBR/USA/DEU/ITA/FRA/JPN
[9] In 2014, for example, small businesses comprised over 99% of all the businesses in the U.S., and 72% were sole proprietorships. See https://taxfoundation.org/us-has-more-individually-owned-businesses-corporations/
[10] Formal child care is that which is licensed by the government. Informal child care, by contrast, is unlicensed and is provided by friends, relatives, grandparents etc.

It may be pointed out that, though in the model I assumed that men and women are equally likely to be infected and die from COVID-19, the evidence to date suggests that the majority of the victims are male.[11] To the extent that maternal childcare in men's childhood improves their health as adults and prevents their death, there is an additional unrecognized benefit that men in particular seem to receive from their mothers.

What effect does it have on GDP when women partly withdraw from the labor force to take care of their children? That is, what is the effect on the equilibrium income *Y*, shown in (4), had the mothers of current workers had a higher γ? When γ increases, there are three separate effects in the model, even in normal times:
(*i*) The proportion of the population that is healthy enough to participate in the labor force, $q(\gamma)$, increases.
(*ii*) The human capital and, therefore, productivity of the workers, $l(\gamma)$, who participate in the labor force increases.
(*iii*) Finally, when women withdraw partly or fully from the labor force, GDP declines because, by definition, it excludes nonmarket contributions to the economy.

In the above, (*i*) and (*ii*) tend to increase GDP and so tend to offset (*iii*). The net effect will depend on how sensitive long-term health and productivity of the labor population are to maternal care in childhood. If the elasticities of these functions, which I posit here to be positive, are sufficiently large, then (*i*) and (*ii*) can offset the decline in the labor income of women and raise even the *measured* contributions to the economy (that is, GDP) of the rest of the population. And GDP is what impinges on the profitability of firms through demand, even if it does not capture women's true contribution to the economy. The precise technical condition for the net effect on *Y* of an increase in γ to be positive, obtained by differentiating (4) with respect to γ and rearranging, is:

$$\varepsilon_l \, g(\gamma) + \left(\varepsilon_l + \varepsilon_q\right)\left(1 - \frac{\gamma}{2}\right) > \frac{\gamma}{2}, \tag{8}$$

[11] See e.g. "In N.Y.C., the Coronavirus Is Killing Men at Twice the Rate of Women," *New York Times*, April 7, 2020,

where ε_l and ε_q, respectively, are the elasticities of $l(\gamma)$ and $q(\gamma)$ with respect to γ, and $g(\gamma) \equiv G/(2l(\gamma)L)$ is the government stimulus per healthy person in the economy. We posit that the two elasticities are positive (see below for evidence). When $\gamma \approx 0$, inequality (8) will certainly be satisfied: a marginal curtailment of work in the labor force by women actually increases the equilibrium GDP of the economy. This is because, when starting from $\gamma \approx 0$, the income loss from the marginal curtailment of market work is minuscule compared to the long-term benefit to the infra-marginal workers in terms of health and higher productivity.

Whether the inequality in (8) holds for an arbitrary or realistic γ is an empirical issue. So I turn to the evidence from labor economics for the evidence on the relative efficacies of maternal care relative to formal and informal care to see if there is reason to presume that it does.

How do maternal child care and maternal work in the labor market affect children's development? Do they necessarily have opposite effects? There is a fair amount of evidence for the effectiveness of maternal care in determining children's outcomes that impinge on the children's future productivity. Bernal and Keane (2011) examine the effect of child care on the cognitive abilities of children of single women in a nationally representative U.S. sample in the 1990s. They find that a year of formal child care has no effect on the child's cognitive abilities but a year of informal child care (provided by siblings, grandparents, friends, etc.) reduced cognitive test scores. So we may infer that formal care is equivalent to maternal care in terms of its effects on the child's cognitive skills but informal care is inferior. Baker, Gruber, and Milligan (2008) examine the effects of the introduction of universal child care in the province of Quebec, Canada, during 1997-2000 on children's skills, among other things. They found a significant negative effects (greater anxiety and aggressiveness in the children, for example) associated with greater use of formal child care. However, they argue that these may be short run effects that may not persist in the long run.

Baker and Milligan (2010) examine the effect of granting extended maternal leave in Canada using a nationally representative sample. They found a substantial increase in the uptake of leave by new mothers and an increase in maternal care, which largely replaced informal care. They

found that this had little effect on child development on children up to two years. As they point out, the measures of child development provided by the survey are not sufficient to discern developmental changes. Also, it could be that the effects manifest in the long run and these are not captured in their analysis.

There is evidence that formal care improves outcomes relative to informal care in the long run. Havnes and Mogstad (2001) examine the long term effects of a very large government program initiated in 1975 in Norway of providing child care. They found that exposure to this formal program had positive effects on the children's education and subsequent labor force attachment as adults, and led to a reduction in welfare dependency. This comparison was essentially between formal care and informal care because the uptake in formal care came from working mothers who were previously using informal care; there was no increase in maternal labor supply. The upshot of this line of research seems to be that formal care is as good for children as maternal care, but informal care is not.

Fiorini and Keane (2014) use longitudinal data from Australia to assess the effect of parental time allocation on the development of children's cognitive and non-cognitive skills. They found that the allocation of time to educational activities like reading to children increased the children's cognitive skills, especially when done by parents. Non-cognitive skills, they found by contrast, depends on parenting style. Parental warmth (combined with a suitable amount of discipline) increased non-cognitive skills. Earlier, Bianchi (2000) showed that, in the U.S., when mothers get outside employment, they protect the time they spend with their children by curtailing other activities like household chores and volunteer work, etc. Also, fathers pitch in more with the chores and they also spend more time with the children. This should be seen in the light of the facts that the non-cognitive benefits children receive will later increase their productivity as adults by reducing the number of work-days lost due to ill mental health [Currie and Madrian (1999)] and also raise the productivity and returns on their cognitive skills [Edin et al (2017)]. So there is no presumption that children's human capital will necessarily decline when women start working.

This implication in the context of the present discussion is not a suggestion that mothers "should" devote themselves only to caring of their children (because formal care is as good). Rather, the suggestion here is that we *should* recognize what is taken for granted and deemed to be of little consequence because, it may be thought, women are merely indulging their preferences when looking after their children. That they may do, for child care is not done with any monetary calculation in mind. What is being emphasized here is that this time devoted to unpaid caring work has very beneficial macroeconomic consequences for society. Even if it manifests only in the long term, this positive externality in normal times and, especially, in the recovery from an economic recession or depression is generally not acknowledged.

Heckman (2008) surveys evidence that shows adverse childhood life experiences have serious health consequences in adult life, including increased disease burden, depression, suicide, alcoholism, poor job performance, among other effects. The policy implication of such evidence in the context of the present discussion on COVID-19 is that there are likely to be strong macroeconomic effects of good parental child care. This implies that there are strong macroeconomic reasons for acknowledging this and, where it may be lacking, instituting quality child care that is universal and affordable. Not only will that ensure a more healthy and productive labor force in the future, it will also make the economy less vulnerable to deep recessions and more equipped to return to normalcy.

This brings me to the issue of universal, subsidized child care. Lefebvre and Merrigan (2008) have shown that Quebec's 1997 reform policy that lowered the cost of child care, along with the provision of free kindergarten, has a substantial positive effect on maternal labor supply of preschoolers. Carta and Rizzica (2018), by exploiting an Italian reform that reduced the age of entry of children into subsidized childcare, have recently shown that subsidized universal childcare increased maternal labor supply without having adverse outcomes for children. These findings are in contrast to the evidence from the U.S., reviewed by Blau and Currie (2006), which shows at best a weak link between subsidized child care and maternal labor supply.

My argument here for subsidized and universal, high quality child care, however, does not depend on it necessarily eliciting greater maternal labor supply. The fact that the inequality in (8)

would very likely hold in general implies that, by increasing GDP, maternal child care has already "paid for itself" by increasing the nation's income through an externality that the providers do not internalize. To insist that child care is strictly a private affair—either because children are a matter of private choice or because a "woman's place is in the home"—is to not even acknowledge this externality. A refusal to implement universal and subsidized quality child care for women who may want to participate in the labor market is tantamount to the government appropriating these external benefits by foisting patriarchal beliefs. Indeed, the case seems strong for a blanket lump-sum subsidy offered to *all* women with pre-adolescent children, whether or not these women choose to be employed in the labor market. The United States does not have universal child care, though it did temporarily implement one during the Second War when women were required to work outside the home. In Canada, only the province of Quebec has it.

4. Concluding Remarks

Our lifestyles rely on trade with far-flung countries around the world, a result of our relentless pursuit of comparative advantage to lower costs and raise profits. And all along, we downplay what is right here as the bedrock of our wellbeing: the unpriced care given to us by our immediate family. That aspect of our lives which is most unrecognized by economics is also what sustains us in crises like that inflicted on us by the COVID-19 pandemic. In this brief essay, I have sought to point to one unmarketed resource that plays a central role in a market economy but remains in the background: maternal child care.

Our individualism is buttressed by the belief that the pursuit of self-interest also confers benefits on society, partly taking its cue from the logic of Adam Smith's *Wealth of Nations*. We tend to ignore our innate interconnectedness and downplay the contributions of those who do not function through the market.[12] We leave the internalization of serious externalities to the law and, in the macro economy, to government interventions. But the primary considerations there are almost invariably externalities pertaining to resources that are deemed scarce.

[12] Folbre (2002) offers an insightful feminist discussion of the importance of interconnectedness and family in the economy.

We have essentially bought into the definition of economics offered by Lionel Robbins in his 1932 essay that claimed economics deals solely with the allocation of scarce resources.[13] This restriction of the scope of economics, no doubt, has brought our discipline considerable success in explaining behavior, individual and aggregate. Nevertheless, this has been achieved at the expense of dispensing with what does not fall within this category. One rather doubts that a mother who bestows or squanders care on her child would consider her maternal love to be a scarce resource even if her time and energy are limited. Were we to pay more attention to Adam Smith's other—and arguably greater—classic, *The Theory of Moral Sentiments*, which is neglected by economists, we may be more open to recognizing what maternal love accomplishes, even for our economic wellbeing. The fundamental preoccupation with scarcity in neoclassical economics, which sets the price of free goods at zero in equilibrium, completely discounts the value of this unconditional gift beyond recognition.

Robbins, ironically, wrote his essay when the world economy was in the throes of the Great Depression, when even "scarce" resources—those that can be harnessed as means to ends—were seriously unemployed and, therefore, abundant. By embracing his view that "economics is a study of the disposal of scarce commodities," (p. 37)—a definition that has found its way into most modern textbooks in economics—we also commit ourselves in our conceptual thinking to economizing on 'love,' which is not a means to an end. Perhaps, in this time of the COVID-19 pandemic, when we are on the verge of another Great Depression or worse, it is time to shed our exclusive preoccupation with scarcity and reassess the implicit arrogance in practice of overlooking or undervaluing or exploiting the rarest of all human actions—those that are done gratis?

[13] Backhouse and Medema (2009) provide the history of how Robbins's definition got widely adopted in economics profession.

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