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ORIGINAL ARTICLE

Unmasking the demand for masks: Analytics of mandating coronavirus masks

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Abstract

This paper analytically examines the demand for surgical masks following the recent health precautions due to coronavirus. Using a simple linear demand curve and alternatively examining the impacts of requirements that mandate (a) the wearing of masks by frontline workers; (b) suggested but not required masking by the whole public; and (c) compulsory masking by the whole public. The impacts of the different scenarios on the price elasticity of demand are determined along with the slope (or the rate of change) of elasticity. Some of these results differ when a non-linear demand curve is considered instead. The equilibrium mask prices increase when masks are universally mandated, whereas the consumer surplus is higher when masks are recommended but not mandated. However, the ranking of consumer surplus is shown to be sensitive to the supply elasticity of masks. These considerations enable a structured means to view the demand implications of masking requirements and provide some food for policy thought.

KEYWORDS

consumer surplus, coronavirus, COVID-19, demand analysis, demand complementarity, elasticity, health, market equilibrium, regulation

JEL CLASSIFICATION

D11; I11; L80

Insightful comments by two referees are appreciated.

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1 | INTRODUCTION

The demand for surgical masks has drawn some attention from researchers in the past (Black & Weinstein, 2000; Carias et al., 2015), but the recent COVID-19 crisis has brought the use of and attention to masks to the forefront (Abaluck et al., 2020; Greenhalgh et al., 2020). Masks were already being used by medical professionals and are now being (mostly) required for all frontline workers including law enforcement personnel, etc. They are being recommended and sometimes required for others, especially when social distancing is not possible. In a somewhat broader context, the use of masks has become a preventive strategy that is complementary to a range of precautions recommended or mandated across different jurisdictions (see Hale et al., 2020). Beyond government interventions, the social distancing initiatives and their efficacy might be sensitive for certain social events, such as the Black Lives Matter protest gatherings (Dave et al., 2020). However, formal economic analyses of the demand for masks are almost non-existent and this paper provides a simple economic framework.

Our consideration provides a systematic way of thinking about the demand for masks and has some potential policy applications, especially given the different social distancing strategies individual nations are following.¹ A glaring counter case has been that of Sweden which has not recommended the use of face masks in public (Franssen, 2020). There have also been instances of some world leaders, including the (now former) President of the United States, questioning the need for preventive measures.²

Viewed broadly, the current focus of most countries seems to be on ensuring smooth supply and strengthening supply chains for masks and other essential food and medical products.³ However, the focus on the demand side is less at this (early) stage of the pandemic. This paper somewhat tries to address that gap.

Moreover, the overall demand for personal protective equipment (PPE) kits, including masks and other protective equipment, has increased.⁴ Nations differ in their tendencies to impose requirements regarding social distancing and the wearing of masks. Furthermore, individual sectors in a nation might also differ regarding whether masks are required or just recommended (see Stern, 2020). However, one sector—the medical profession—has seen almost universal agreement on the wearing of masks (Ford, 2020). Besides political-economy reasons, even medical recommendations regarding the type of masks that are effective against COVID-19 and their actual effectiveness differ (Pike, 2020). Finally, even the respected World Health Organization has over time updated its mask-wearing recommendations.⁵ All this points to a lack of a uniform approach to masking, which creates issues for accurately forecasting demand and any related regulatory actions.

This variation, while having important scientific and medical reasoning, also has economic implications, with potentially longer-term consequences. For example, mask-wearing requirements obviously would increase the demand, but the market power of mask producers might consequently increase to an extent that price regulation might be needed in the long run. To ascertain the impact on demand and related elasticity, this paper considers a simple analytical framework.

¹While the focus in this paper is on surgical masks, the underlying analysis is potentially applicable to other similar (essential) products/services.

²<https://www.nature.com/articles/d41586-020-02800-9>

³See <https://www.cidrap.umn.edu/covid-19/supply-chain-issues>

⁴<https://www.businesswire.com/news/home/20200605005270/en/2020-Insights-Worldwide-PPE-Industry---Outbreak>

⁵[https://www.who.int/publications/i/item/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-\(2019-ncov\)-outbreak](https://www.who.int/publications/i/item/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-(2019-ncov)-outbreak)

We consider the impacts on the price elasticity of demand for masks under alternatively plausible scenarios, involving: (a) the mandatory wearing of masks by all frontline workers; (b) recommended wearing of masks by everyone; and (c) the mandatory wearing of masks by everyone. Finally, as a robustness check, we consider a non-linear demand curve. The elasticity has implications for pricing and market power (subject to the underlying market structure).

2 | THE MODEL AND ANALYSIS

We start with a simple linear demand curve⁶

$$P = a - bQ, \quad (1)$$

with P denoting the per-unit price of a mask and Q the quantity demanded; a and b are positive constants.⁷ Here a is the demand-choke price or the size of the market and b is the (absolute value) slope, with implications for the elasticity or demand responsiveness.

We introduce a parameter $M > 0$ to denote government regulations or recommendations regarding the use of masks. M may be interpreted as a requirement or guideline regarding mask-wearing, with higher values of M associated either with more stringent requirements and/or greater monitoring by the authorities for non-compliance.⁸ Masks have been recommended/mandated for slowing the transmission of the virus from asymptomatic individuals (Abaluck et al., 2020).

2.1 | Mandating wearing of masks by frontline workers [case (a)]

The requirements and regulations for COVID-19 precautions vary widely across nations in the world. A nice summary is provided in Hale et al. (2020). With the provision that frontline workers wear masks, the market does not expand, since they already have masks. However, the demand curve would become steeper, as long as M is less than unity. A value of M less than one here may be interpreted as a measure of government intervention related to the use of masks (Hale et al., 2020). Formally (denoting this case by subscript 1),

$$P_1 = a - (bQ_1)/M_1, \text{ [or } Q_1 = (a/b)M_1 - (1/b)M_1P_1] \quad (2)$$

In Equation (2), the relation in brackets denotes the corresponding direct demand curve. The slope of the demand curve (2) is $-(b/M_1)$ and the corresponding price elasticity of demand is

$$\varepsilon_{D1} = - (aM_1/bQ_1) + 1 < 0 \quad (3)$$

From (2), a positive price $P_1 > 0$ implies $(aM_1/bQ_1) > 1$, which is sufficient for the price elasticity to be negative in (3). The relation (3) implies that the demand becomes more inelastic as M increases.

⁶The more general considerations of the utility functions related to specific demand functions are important but beyond the scope of this work (see Deaton & Muellbauer, 1980; Debreu, 1974; Feenstra, 2003; Keller, 1976).

⁷Here we are thinking of a generic mask and do not go into issues of related product differentiation.

⁸At a somewhat broader level, the wearing of masks can be seen as a complementary good or requirement (see Goel, 2009).

To obtain greater insight into the role of M , let us consider the case in which the price elasticity of demand is inelastic, that is, $\varepsilon_{D1} > -1$. This then implies that $(aM_1/bQ_1) < 2$, using the condition (3). Alternately viewed, an inelastic demand can be seen as placing an upper bound on M_1 , whereby $M_1 < (2bQ_1)/a$. Taking account of the upper condition, we have $(bQ_1/a) < M_1 < (2bQ_1/a)$, that is, $(b/a) < M_1/Q_1 < (2b/a)$.

Next, we determine the impact of a change in M on the elasticity.

$$(\partial \varepsilon_{D1} / \partial M_1) = - (a/bQ_1) < 0 \quad (4)$$

The relation (4) shows that greater masking requirements lower the price elasticity of demand for masks. Furthermore, we have

$$(\partial^2 \varepsilon_{D1} / \partial M_1^2) = 0 \quad (5)$$

Equation (5) suggests that the rate of change in the slope of the elasticity curve with respect to M is constant.

Finally, we see how the response of elasticity to M changes when the quantity changes

$$(\partial^2 \varepsilon_{D1} / \partial Q_1 \partial M_1) = (a/bQ_1^2) > 0 \quad (6)$$

Unlike the rate of the change in the slope of the elasticity with respect to M_1 , the change in slope with respect to Q_1 is positive. The slope of the elasticity with respect to M_1 tends to become flatter when the quantity demanded increases. Next, we consider an alternative variation of the linear demand curve to analyze a different masking policy.

2.2 | Recommending everyone has a mask [case (b)]

Here, we consider a situation where the government recommends that everyone carries masks. The effectiveness of such recommendations would depend upon the general literacy and awareness in the public, plus their credibility or trust in government institutions.

The market for masks then expands as long as M is larger than unity and the demand curve would now become

$$P_2 = aM_2 - bQ_2 \text{ (or } Q_2 = (a/b)M_2 - (1/b)P_2) \quad (7)$$

Comparing the direct demand curve in (2) with that in (7), the respective intercepts of the curves are $(a/b)M_1$ and $(a/b)M_2$; and the corresponding slopes of the direct demand curves are $-(1/b)M_1$ and $-(1/b)$. Thus, the relative magnitudes of M_1 and M_2 dictate the size of the intercepts, while the slope of the direct demand curve in case (b) is constant. The direct demand curves Q_1 and Q_2 for alternative values of M_1 and M_2 are shown in Figure 1.

The corresponding price elasticity of demand becomes

$$\varepsilon_{D2} = - (aM_2/bQ_2) + 1 \quad (8)$$

The resulting effects on the elasticity of a change in M_2 and Q_2 are

$$(\partial \varepsilon_{D2} / \partial M_2) = - (a/bQ_2) < 0 \quad (9)$$

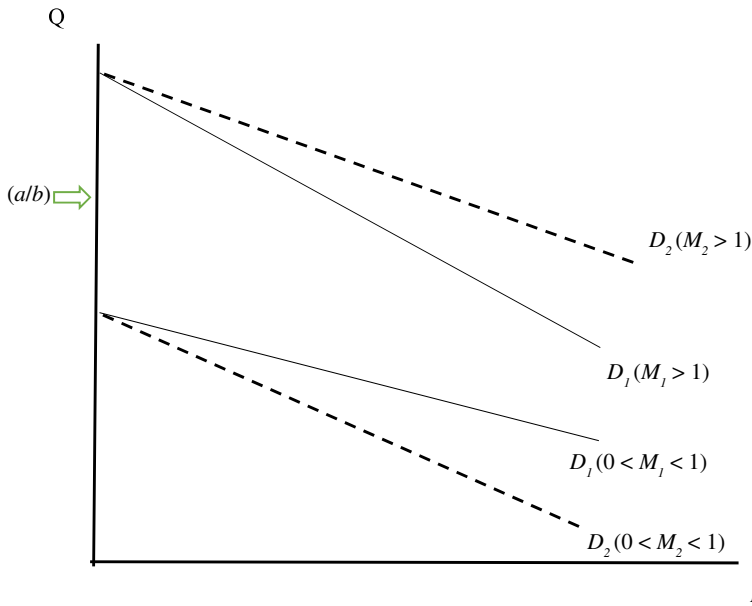


FIGURE 1 Direct demand curves for cases (a) and (b) for alternative values of M_1 and M_2 . D_1 and D_2 correspond to direct demand curves in cases (a) and (b), respectively [Colour figure can be viewed at wileyonlinelibrary.com]

$$(\partial^2 \epsilon_{D2} / \partial M_2^2) = 0 \quad (10)$$

$$(\partial^2 \epsilon_{D2} / \partial Q_2 \partial M_2) = (a/bQ_2^2) > 0 \quad (11)$$

So, we see that the results for cases (a) and (b) are qualitatively similar in terms of the impacts on the demand elasticity. While this analysis is simple, this insight is useful. For instance, market expansion and demand dependence seem to require similar government oversights.

2.3 | Mandating everyone has a mask and wear all the time [case (c)]

We now consider a more stringent policy where the government requires that everyone wears a mask all the time. This policy would have equity considerations as well, with the less well-off unable to afford masks. In this case, the market would expand as well as the demand curve would become steeper. This case covers a stricter masking policy.

Formally, the demand curve with $M > 1$ would now look like

$$P_3 = aM_3 - (bQ_3) / M_3 \text{ (or } Q_3 = (a/b)M_3^2 - (1/b)M_3P_3) \quad (12)$$

Both the inverse and direct demand curves in the three cases [(a), (b), and (c)] highlight the differences in the slopes and the intercepts.

And the corresponding price elasticity is

$$\epsilon_{D3} = - (aM_3^2 / bQ_3) + 1 \quad (13)$$

In this case, a positive price ($P_3 > 0$) implies $(aM_3^2/bQ_3) > 1$. The changes in the elasticity in (13) are

$$(\partial \epsilon_{D3}/\partial M_3) = - (2aM_3/bQ_3) < 0 \quad (14)$$

$$(\partial^2 \epsilon_{D3}/\partial M_3^2) = - (2a/bQ_3) < 0 \quad (15)$$

Interestingly, in this case, unlike the previous two cases, the rate of change in the slope of the elasticity is not zero.

$$(\partial^2 \epsilon_{D3}/\partial Q_3 \partial M_3) = (2aM_3/bQ_3^2) > 0 \quad (16)$$

Now we see that the pattern of elasticity responses is somewhat different. Specifically, the rate of change in elasticity response $(\partial^2 \epsilon_{D3}/\partial M_3^2)$ is negative, rather than zero. In other words, the rate of change in the elasticity response becomes more negative. This has the potential to increase the market power of mask producers.

2.4 | Alternative demand curve: Market expansion [case (d)]

Since demand might very well be non-linear, we consider another inverse demand function as a robustness check, with $\beta > 0$ and constant, and all the other variables as defined above.

$$P_4 = Q_4^{-\beta} M_4 \quad (17)$$

Unlike the previous cases, the slope of this demand curve is non-constant. Then, the corresponding price elasticity of mask demand becomes

$$\epsilon_{D4} = -1/\beta < 0 \quad (18)$$

Now the price elasticity is constant. Here M_4 shifts the slope of the demand curve, but does not alter the responsiveness or elasticity. Thus, in this case, M_4 would be more aligned with the situation where masks are being recommended but not required. From (18) we have

$$(\partial \epsilon_{D4}/\partial M_4) = 0 \quad (19)$$

$$(\partial^2 \epsilon_{D4}/\partial M_4^2) = 0 \quad (20)$$

$$(\partial^2 \epsilon_{D4}/\partial Q_4 \partial M_4) = 0 \quad (21)$$

Given the constant elasticity, it is insensitive to changes in mask requirements. Thus, the implications for regulation would be different in this instance.

2.5 | Non-linear demand curve: Demand dependence [case (e)]

We now consider another non-linear demand curve of the form

TABLE 1 Summary of the price elasticity and its changes under alternative demand curves

Inverse demand function	ϵ_D	$(\partial\epsilon_D/\partial M)$	$(\partial^2\epsilon_D/\partial M^2)$	$(\partial^2\epsilon_D/\partial Q\partial M)$
$P_1 = a - (bQ_1)/M_1$	$-(aM_1/bQ_1) + 1$	<0	0	>0
$P_2 = aM_2 - bQ_2$	$-(aM_2/bQ_2) + 1$	<0	0	>0
$P_3 = aM_3 - (bQ_3)/M_3$	$-(aM_3^2/bQ_3) + 1$	<0	<0	>0
$P_4 = Q_4^{-\beta}M_4$	$-1/\beta$	0	0	0
$P_5 = Q_5^{-\beta M_5}$	$-1/\beta M_5$	>0	<0	0

$$P_5 = Q_5^{-\beta M_5} \quad (22)$$

The resulting price elasticity of demand in this case is

$$\epsilon_{D5} = -1/\beta M_5 < 0 \quad (23)$$

So here M_5 can be seen as making the demand elasticity smaller in absolute value. This would be consistent with more stringent masking requirements—for example, businesses denying entry/service to customers without masks or police action for not wearing masks in public. Differentiating (23) yields

$$(\partial\epsilon_{D5}/\partial M_5) = 1/\beta M_5^2 > 0 \quad (24)$$

$$(\partial^2\epsilon_{D5}/\partial M_5^2) = -2/\beta M_5^3 < 0 \quad (25)$$

$$(\partial^2\epsilon_{D5}/\partial Q_5\partial M_5) = 0 \quad (26)$$

In this case, the change in the price elasticity of demand with respect to M_5 does not change with the quantity demanded.

The findings from the different demand variations are summarized in Table 1.

We see that (a) the price elasticity of demand can be constant or variable; (b) the slope of the price elasticity of demand with respect to masking can be positive, negative or zero; (c) the rate of the change in the elasticity slope is non-positive with regard to M and non-negative with respect to Q . Thus, the underlying demand curve and the type of masking policy can have important demand responsiveness implications.

3 | MARKET EQUILIBRIUM

3.1 | Inelastic supply

To see the market equilibrium and possibly compare equilibrium prices under different demand conditions, we assume an inelastic supply of masks, such that $Q_s = Z$, $s = 1, 2, 3$, where Z is a positive constant. This assumption on supply makes sense in the short term, especially given the supply chain/international tariffs issues and the resurgent cases of coronavirus infections (Goel et al., 2021; Haruna

TABLE 2 Equilibrium prices and impacts of masking requirements: inelastic supply of masks

Inverse demand function	P^a	$(\partial P^a / \partial M)$
$P_1 = a - (bQ_1)/M_1$	$(aM_1 - Zb)/M_1$	>0
$P_2 = aM_2 - bQ_2$	$aM_2 - Zb$	>0
$P_3 = aM_3 - (bQ_3)/M_3$	$(aM_3^2 - Zb)/M_3$	>0
$P_4 = Q_4^{-\beta} M_4$	$M_4 Z^{-\beta}$	>0
$P_5 = Q_5^{-\beta M_5}$	$Z^{-\beta M_5}$	>0

^aEquilibrium values.**TABLE 3** Equilibrium prices and impacts of masking requirements: elastic supply of masks

Inverse demand function	P^a	$(\partial P^a / \partial M)$
$P_1 = a - (bQ_1)/M_1$	$(Ab + M_{s1}aR)/(b + M_{s1}R)$	>0
$P_2 = aM_2 - bQ_2$	$(Ab + M_{s2}aR)/(b + R)$	>0
$P_3 = aM_3 - (bQ_3)/M_3$	$(Ab + M_{s3}^2aR)/(b + M_{s3}R)$	>0

Note: The subscript s is added to denote cases with elastic supply [see Equation (27)].^aEquilibrium values.

& Goel, 2016; Hufford & Evans, 2020; Zhang et al., 2020). This consideration also enables us to focus on the relative effects of different demand formulations.

The corresponding results are summarized in Tables 2 and 3. We see that an increase in masking requirements increases the equilibrium price in all cases.⁹ While this is not an all too surprising finding, we are also able to rank equilibrium prices.

Following Table 2, and using $M > 1$, it is easy to see that $P^*_3 > P^*_2 > P^*_1$ —that is, mask prices are the highest when it is mandated that everyone has a mask and it is worn all the time. In nations with greater unequal income distributions, higher mask prices would present affordability challenges. This has prompted some nations to subsidize masks or to place price caps.¹⁰ Moreover, the price increases are more modest when masks are recommended and not mandated, and when only essential personnel are required to wear masks. Interestingly, although the inverse demand functions P_1 and P_2 yield the same elasticity relation (Table 1), the equilibrium prices in the two instances are different (Table 2).

Furthermore, comparing the prices in the last two demand curves, we find that $P_4 > P_5$ —the constant price elasticity of demand yields a higher price. Next, we consider the case where the supply of masks is not completely inelastic. Such a situation can arise when the initial supply constraints from the pandemic are somewhat relaxed, that is, when the supply chain of masks partly resumes or becomes more functional.

If the government were to impose a price ceiling, P_{\max} , say $P_{\max} \leq P_1^*$, then the price ceiling would support masking by frontline workers [case (a)], but not by the general public [cases (b) and (c)]—since, $P^*_3 > P^*_2 > P^*_1$. This suggests that price interventions by the government should be

⁹Also notice that, consistent with intuition, as the perfectly inelastic supply curve shifts out, i.e., Z increases, the equilibrium prices go down.

¹⁰<https://www.bloomberg.com/news/articles/2020-05-12/italy-s-plan-to-cap-price-of-face-masks-at-50-cents-has-flopped>

coordinated with masking policies. As the price ceiling is relaxed, more general masking measures can be incorporated.

3.2 | Somewhat elastic supply

As an alternative consideration to gain further insights and see what might happen over time as the supply of masks becomes more elastic, we consider a supply of the form

$$P_s = A + RQ_s \text{ (or } Q_s = (1/R)P_s - (1/R)A), \quad (27)$$

where A and R are positive constants. Now we assume $a > A$. As R increases, one can see that the supply curve would become steeper (or less elastic).

Following the above sequence of analysis and using the demand curves in cases (a), (b) and (c), we thus update Table 2, showing the respective equilibrium prices.

With the condition that the intercept on the demand curve be greater than that on the supply curve, the price rankings in Table 3 support those in Table 2—that is, using $M > 1$, see that $P_{s3}^* > P_{s2}^* > P_{s1}^*$. Even with somewhat elastic supply, mask prices would remain highest when it is mandated that everyone has a mask and it is worn all the time. In light of these price increases, perhaps subsidizing masks or some sort of price regulations might be in order.

4 | CONSUMER SURPLUS

To obtain further insights into the relative benefits of different masking approaches, we compare the consumer surplus under different inverse demand functions. For this purpose, the comparison of inverse demand functions P_1 – P_3 seems more directly comparable. The corresponding results are presented in Table 4, using $Q_s = Z$.

4.1 | Inelastic supply

We see that the consumer surplus (CS) under P_2 (under the policy recommending everyone has a mask), unlike the other two cases, is independent of the masking requirements. Furthermore, the consumer surplus, in this case, is higher than the other two cases (with $M > 1$), which are identical. Formally,

$$CS^*_2 > CS^*_1 = CS^*_3 \quad (28)$$

Thus, masking recommendations yield higher benefits for consumers than when masks are mandated for everyone or the frontline workers. However, this partial equilibrium finding does not account for the positive health spillovers from the mandating of masks by everyone.¹¹ The consumer surplus in all three cases will increase as the supply constraints are relaxed, that is, $(\partial CS_i / \partial Z_i) > 0$.

¹¹The societal implications of spillovers from masking can be seen as being similar to those from second-hand smoke (see Goel & Nelson, 2008).

TABLE 4 Consumer surplus under alternative demand functions: inelastic supply of masks

Inverse demand function	Consumer surplus
$P_1 = a - (bQ_1)/M_1$	$Z^2b/2M_1$
$P_2 = aM_2 - bQ_2$	$Z^2b/2$
$P_3 = aM_3 - (bQ_3)/M_3$	$Z^2b/2M_3$

Note: The consumer surpluses are evaluated at the respective equilibrium prices shown in Table 2.

TABLE 5 Consumer surplus under alternative demand functions: elastic supply of masks

Inverse demand function	Consumer surplus
$P_1 = a - (bQ_1)/M_1$	$bM_{s1}(a - A)^2/2(b + M_{s1}R)^2$
$P_2 = aM_2 - bQ_2$	$b(aM_{s2} - A)^2/2(b + R)^2$
$P_3 = aM_3 - (bQ_3)/M_3$	$bM_{s3}(aM_{s3} - A)^2/2(b + M_{s3}R)^2$

Note: The consumer surpluses are evaluated at the respective equilibrium prices shown in Tables 2 and 3.

4.2 | Somewhat elastic supply

With the supply of masks not completely inelastic, using the supply curve from Equation (27), we see the corresponding consumer surpluses in Table 5.

We again see that, given $M > 1$, the consumer surplus in case 3 would be greater than in case 1, that is, $CS^*_{s1} < CS^*_{s3}$. In this case, mandating masks by everyone yields a higher consumer surplus than placing such requirements only on frontline workers. However, the ranking of CS^*_{s2} is less clear. This makes sense when one thinks that consumer benefits in CS^*_{s2} , related to masking recommendations, would partly be dependent upon on the public's trust in government institutions, the prevalence and severity of complementary restrictions such as lockdowns or closure of foreign borders (see Hale et al., 2020), and some other social developments that might have spillover effects (Dave et al., 2020).¹² The concluding section follows.

5 | CONCLUDING REMARKS

Given the still evolving COVID-19 spread and different political-economic-health capacities of various regions (within and across nations), a uniform approach to social distancing and masking is missing (also see Asian Development Bank, 2020). This research considers the implications of alternative masking policies and analyzes their effects on demand responses, using a short-term perspective. We consider alternative scenarios dealing with when masks are recommended versus when they are required and consider both linear and non-linear demand functions. The goal is to provide some formal structure to thinking about the demand for masks brought on by coronavirus pandemic.¹³

¹²However, the ability of the public to respond to the virus (voluntarily or in response to regulations) is constrained when the additional supply of masks is not forthcoming (Sections 3.1 and 4.1).

¹³While the analysis is an application to the demand for masks, the theoretical framework is applicable to other similar instances.

We find the price elasticity of the demand for masks under alternative demand formulations and then determine its changes with respect to changes in masking requirements. We see that the price elasticity of demand would change with masking requirements in most cases, and the rate of its change could be variable. Specifically, while, as expected, greater or more stringent masking requirements generally make the demand more inelastic, this is not necessarily the case across all demand functions.

We see that greater masking requirements increase equilibrium mask prices in all cases and mandating the wearing of masks in all cases yields higher prices than when masks are recommended or mandated only for essential personnel (Table 2). As supply constraints are relaxed over time, the price increases will tend to be relatively more modest but, unlike the case of inelastic supply, the consumer surplus from universal mask requirements exceeds the case where only frontline workers face such requirements (Table 5).

From a policy angle, when the demand becomes more inelastic, the market power of producers increases (or the value of the Lerner index goes up). Determination of elasticities would also be important for governments considering subsidizing masks and for producers considering bundling masks with other safety equipment. With an essential commodity like masks (especially during the prevalence of the coronavirus), government regulations might be needed to check potential price increases and prevent inequities in access to masks across different income groups. This brings into focus the equity-efficiency tradeoff in the present context—nations with greater income inequalities might have to consider subsidizing masks for people at the lower end of the income distribution. Indeed, we see that the equilibrium mask price is higher when masks are universally mandated. This has not been the focus of regulators recently, since they are presently concerned with ensuring adequate supplies and well-running supply lines. Finally, the consumer surplus from masking recommendations, not considering the social benefits, is higher than masking requirements. This difference might explain the resistance to mandatory wearing of masks by some politicians and sections of the public. However, the ranking of consumer surplus under different scenarios is sensitive to whether the supply of masks is flexible or inflexible. Thus, as the supply constraints on masks are relaxed, some of the masking policies might deserve reconsideration.

Given the recent and unexpected worldwide spread of COVID-19, researchers are employing various techniques to better understand the causes and effects of related developments (see, for example, Baldwin & Weder di Mauro, 2020; Goel & Nelson, 2021; Yum, 2020). This paper can be seen as adding insights to the demand surge for masks following the outbreak of coronavirus. As data on actual demand become available over time, some of these theoretical conjectures can be verified (see Deaton, 1990). For now, this work provides a framework to view the demand side of an increasingly important product.

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