Supply demand and the market for drugs economics essay

Supply-side initiatives are actions meant to cut or reduce the supply by preventing drugs from entering the country. A supply reduction, unless it totally eliminates the flow of drugs into the market, works by raising price so that consumption is cut. A decrease in supply, without a change in demand, will result in a new market equilibrium where the market price is higher , but the quantity of drugs bought and sold is lower. However, the critical factor that determines the magnitude of the changes in price and quantity is the elasticity of demand.

Two concerns have emerged with regard to drug supply restriction in the context of an price-inelastic demand. First, it has been observed that lower-income addicts who cannot substitute away from the drug after the price increase tend to resort to minor crimes to support their habit. Second, addicts who have to reduce purchases tend to adopt the faster, but riskier, route of inducing euphoria by injecting the drug. A policy-maker must be aware of these potential consequences.

Clearly, therefore, if both supply-side and demand-side initiatives are costless, well conceived demand reduction efforts (i. e., schemes to prevent drug abuse by the young through prevention, education, rehabilitation of existing drug users) promise an unambiguously positive outcome relative to effective supply restrictions where there may be an offsetting expenditure effect arising out of the price increase (i. e, when the demand for drugs is inelastic, 0 > Îµ > -1, D2: , or perfectly elastic, Îµ= 0, D1: y= 1000).

As shown in panel (a) in Figure 1, a vertical demand curve is perfectly inelastic at every price. If the price goes up, the quantity demanded is unchanged (), so the elasticity of demand must be zero: (

A demand curve is vertical for essential goods – goods that people feel they must have and will pay anything to get. In our case (i. e., drug addicts), the demand curve for drugs could be vertical at a day's dose, Q*= 1000. More realistically, an individual drug addict may have a demand curve (panel (b), Figure 1) that is perfectly inelastic only at prices below p*, the maximum price he can afford to pay. Because he cannot afford to pay more than p*, he buys nothing at higher prices. As a result, his demand curve is perfectly elastic up to y* doses at a price of p*.

In Figure 2, the demand for drugs is shown by the downward-sloping demand curve (D2) to reflect the negative relationship between price and the quantity demanded. It has been drawn with a steep slope because it is commonly held that addiction suggests price inelasticity in the demand for drugs, If true, it implies that an increase in price will be accompanied by a less-than-proportionate decrease in the quantity demanded. The supply curve (S), on the other hand, mirrors the behaviour of drug suppliers. It is drawn with a positive slope since higher prices will attract larger quantities from suppliers and vice versa. Moreover, the value of the elasticity coefficient (È > 1) suggests that the supply is price elastic; small increases in the price of drugs are thought to draw a more-than proportionate increase in the quantity supplied.

As shown in both Figure 1 (panel a) and Figure 2, the initial equilibrium is represented by point e, where price is established at p* and the quantity transacted is y*. For a supply reduction shown by S', the demand reduction must be at least as large as that represented by D2′ and D1′ in order for price to remain at its original level of p*. This is to ensure that the quantity transacted falls (to y*') without any increase in price. If supply reduction keeps the price high enough (at p*) and long enough to prevent a new generation from falling victim to the habit, demand may fall in the long run and succeed in lowering consumption and drug-related harms. Moreover, the twin benefits of a lower price and lower quantity transacted will only be obtained if demand reduction exceeds supply reduction, as illustrated by point f. Even so, the continued presence of drug sales and use, although at a lower scale, suggests that a drug-free society has not been achieved. However, the evidence everywhere suggests that this goal remains a dream (Wood et al. 2009).

In sum, the net benefit from attempting a pure supply reduction of drugs remains ambiguous if demand is price-inelastic (in our case, D1: y= 1000 and D2:). Thus, by launching simultaneous initiatives on both the supply and demand sides might guarantee an unambiguously positive net result, that is reduce the consumption of drugs.

G2: A reduction in the drug-induced criminality â†' Pure Demand-side initiative

Demand-side initiatives attempt to reduce the demand for drugs at all prevailing prices or, in purely graphically terms, shift the entire demand curve to the left of its original position. Schemes to prevent drug abuse by

the young through prevention, education, rehabilitation of existing drug users, minimisation of relapses among rehabilitated users and controlled and supervised substitution therapy, meant to deprive users away from harmful drugs, constitute some of the commonly used demand reducing measures.

As depicted in both Figure 3 and Figure 4 above, starting from the initial equilibrium (e), I assume supply remains unchanged. A successful demand reduction will shift the demand curve leftwards (D2′), causing it to intersect with the given supply curve at a lower price (p*'). The new lower demand curve, D2′, intersects with the original supply curve (S), resulting in a lower price (p*') and a lower quantity bought and sold (y*'). The total expenditure on drugs is reduced as well, providing less incentives for drug-induced criminality or drug substitutions.

The elasticity of supply now determines the relative magnitude of the movement in price and quantity. The more elastic (inelastic) the supply, the smaller (larger) the decline in price and the larger (smaller) the decline in consumption (i. e, drug-induced criminality) induced by a given demand reduction. Nevertheless, both variables move in the same direction.

G3: A reduction of the emergence of organized crime connected with the (illegal) sale of drugs â†'Demand-side and/or Supply-side initiatives

In the case of an inelastic demand and a elastic supply, the options for achieving a " drug-free" society are illustrated in Figure 5 above. Point e, as before, represents the equilibrium price and quantity before the anti-drug campaign.

A purely demand-reduction effort to reduce drug trade (and consumption) to zero requires a big reduction in demand in order to shift the demand leftward to a point like f, where the lower demand curve (D2′) intersects with the existing supply curve (S) and yields a street price (p*’) that is so low that it is no longer profitable to supply drugs at all. In other words, the drug trade is wiped out due to insufficient demand.

Alternatively, a purely supply reduction initiative to eradicate both the drug trade and consumption requires a substantial supply shift leftwards to a point like g, which yields a price so high (p*”) as to make the drugs beyond the reach of buyers.

Finally, a simultaneous shift leftward of both the demand and supply curves (arising from very effective supply and demand reduction initiatives) could, theoretically, see the reduction of the drug trade and consumption (and respectively a reduction of the emergence of organized crime connected with the (illegal) sale of drugs) at a price level that lies between the two extreme limits of p*” and p*”’. Such a situation is shown by point h, where the highest price offered by the drug user (p*”’) is just below the threshold price (p*) considered profitable by the supplier.

Moreover, the three options from above could be applied as well in the case of a perfectly inelastic demand in order to reduce the drug trade (and consumption) and respectively, to reduce the emergence of organized crime connected with the illegal sale of drugs. However, the “ drug-free society” cannot be achieved (Figure 6).

To summarise, price elasticities of demand and supply play a key role in determining the magnitudes of change in price and quantity induced by supply-side and demand-side initiatives. As noted, a pure supply reduction lowers consumption but increases price and, unless demand is very price-elastic, the reduction in consumption will be small but the total expenditure on drugs will increase considerably. On the other hand, a pure demand reduction lowers both price and quantity, with supply elasticity determining the relative size of the decline in both variables (additionally, consumption and expenditures on consumption will also be lower relative to the original level). In addition, whether an extreme objective of taking both demand-side and supply side initiatives is worth pursuing will depend upon how much it costs society to do so. If large shifts in demand and supply can be achieved at relatively low cost, a “ drug-free” society is indeed a noble goal.

b)

The interpretations given to G1, G2 and G3 above looked at supply and demand shifts, ignoring costs. In deciding on an optimal policy, defined as one that maximises social welfare, costs become very important and must be weighed against the expected benefits. To be more precise, social costs must be weighed against the social benefits expected from a chosen policy option.

P1: Increased punishment and/or increased probability of getting caught for drug-pushers

To the extent that drug consumption transmits a negative externality, the social marginal benefit (SMB) from drug use must lie below the private marginal benefit (PMB), as reflected by market demand curve (D2, and D1

respectively) in Figure 7 and Figure 8 below. Assuming no externalities on the supply side, the market supply curve (S) reflects the cost of producing and distributing drugs. In a market without restrictions on drug supply or demand, the level of drug consumption (y*) will exceed the socially optimum level (y*').

Enforcement on the supply side (i. e., increased punishment and/or increased probability of getting caught for drug-pushers) will reduce the market supply (shift the curve leftwards to SE), raise the price to p*' and reduce drug consumption to the socially optimal level of y*'. The after-enforcement supply curve will now incorporate the additional costs incurred by illegal suppliers to avoid detection and punishment (area " abcd" in Figure 7 and Figure 8).

If demand is inelastic (D2 in Figure 7), the reduction in drug consumption will be small and the gain in social welfare from avoiding the negative externality associated with drug use will also be small. This gain is shown by the shaded area marked " def" (Figure 7). It is clear that these additional costs (area " abcd") exceed the additional gain from reducing consumption (area " def"). However, by reducing consumption to y*' via supply enforcement, society avoids the net loss shown by the " def" area.

If demand is perfectly inelastic (D1 in Figure 8), despite the reduced consumption induced by the higher price (from p* to p*'; since an individual drug addict cannot afford to pay more than p*, he buys nothing at higher prices, p*') due to a supply enforcement, total expenditure on consuming drugs will increase (area " abce"). This increased spending by persistent

users translates directly into higher revenues for drug suppliers who remain in business.

Hence, if the demand is inelastic (D2), or perfectly inelastic (D1), the total spending on drug consumption and the total resources committed to supplying drugs will increase. Thus, supply reduction under these circumstances has the unintended effect of drawing more of society's resources into an activity (illegal sale of drugs) that is being discouraged.

Moreover, the impact of supply enforcement is also influenced by the price elasticity of supply; in general, the lower (higher) the supply elasticity, the smaller (larger) the effect of a given increase in enforcement in raising price and lowering consumption. Thus, the lower (higher) the price elasticity of supply, the greater (smaller) the enforcement costs and the likelihood of reducing the net social gain.

In sum, if the demand for drugs is inelastic (D2) or perfectly inelastic (D1), supply enforcement may not be an efficient method of achieving the optimum level of consumption. This is because the cost of additional resources committed by the society (i. e., the additional expenditures by drug dealers plus the costs of supply enforcement) towards achieving this end will far exceed the benefits to the society.

P2: Legalize the sale of drugs

The effect of a supply restriction can be reproduced with a clear improvement in welfare by legalizing drug production and imposing an excise tax to reduce consumption to the optimal level. This is illustrated in both Figure 9 and Figure 10 below.

In the case of inelastic demand, (D2 in Figure 9), assuming drug supply is legalized, the pre-intervention price and consumption are shown, as before, by p* and y*, respectively. Consumption can be reduced to the socially optimal level, y*', by imposing an excise tax equal to " cd" per unit of output. This raises the cost of production and the after-tax supply curve is indicated by ST . The market price of drugs increases to p*', consumption falls to y*' and, as in the case of supply enforcement, net social losses (equivalent to " def") are avoided. However, in contrast to supply enforcement, the tax extracts resources from the drug industry equal to the value of " abcd". The effects of this reduction in resources are borne by both consumers and producers: the former, via a higher price and lower consumption rate, and the latter, by way of lower price and output. The resources are transferred to the government and will (hopefully) fund activities with a higher net social value.

Of course, the suppliers and consumers do not necessarily bear the tax burden equally. The more inelastic the demand, the greater is the share of tax borne by the consumers. Similarly, the more inelastic the supply, the greater is the tax share borne by the suppliers. This point is better appreciated by looking at the equivalent estimate of the revenue collected, shown by the area marked p*'cdp*". While the tax raises the consumer price from p* to p*', it lowers the unit price received by suppliers from p* to p*". Thus, in this example of inelastic demand, consumers pay a bigger share of the tax (area p*'cdp*), relative to suppliers (area p*gdp*").

In case of perfectly inelastic demand (D1 in Figure 10), Consumption can be reduced to the socially optimal level, y*', by imposing an excise tax equal to

“ ce” per unit of output. This raises the cost of production and the after-tax supply curve is indicated by ST . The market price of drugs increases to p*’ and consumption falls to y*’. However, in contrast to supply enforcement, the tax extracts resources from the drug industry equal to the value of “ abce”. The effects of this reduction in resources are borne by both consumers and producers: the former, via a higher price and lower consumption rate, and the latter, by way of lower price and output. Of course, the suppliers and consumers do not necessarily bear the tax burden equally. This point is better appreciated by looking at the equivalent estimate of the revenue collected, shown by the area marked p*’cep*’. While the tax raises the consumer price from p* to p*’, it maintains the unit price received by suppliers at p*. Thus, in this example of inelastic demand, consumers pay a bigger share of the tax (area p*’cdp*), relative to suppliers (area “ dce”).

The net increase in welfare under the legalise-and-tax approach is assured because the tax, in effect, internalises the negative externality associated with drug consumption. Furthermore, apart from generating tax revenue, the resources necessary to discourage illegal production and control tax avoiders will be far smaller than the enforcement costs under a regime where all production is illegal. The authorities only have to raise the cost of illegal production above the cost of legal production to discourage the former.

Despite the theoretical elegance of this approach, governments hesitate to adopt it because it is seen as morally wrong to legalise drug use, even if the longer-term objective is to restrain consumption more effectively.

P3: Distribute drugs for free

If the government were to distribute the drugs free (p*= 0), the quantity would be y*= 1000 when demand is perfectly inelastic (D1), and y*= 2000 when the demand is relatively inelastic (D2). As depicted in both Figure 11 and Figure 12 below, starting from the initial equilibrium (e), I assume supply remains unchanged.

In Figure 12, a successful demand reduction would be possible only in the case of perfectly inelastic demand curve, (from D1 to D1′), causing it to intersect with the given supply curve at a lower price (p*’). The new lower demand curve, D2′, intersects with the original supply curve (S), resulting in a lower price (p*’) and a lower quantity bought and sold (y*’). The total expenditure on drugs is reduced as well, providing less incentives for drug-induced criminality or drug substitutions. However, the drug trade (and consumption) could not be reduced to 0.

Furthermore, in Figure 11, in the case of inelastic demand (D2), the consumption is more likely to increase than to decrease. The implementation of a policy such as distributing drugs for free, will increase the quantity from y* (equilibrium quantity) to y*’= 2000 and reduce price from p* (equilibrium price) to p*= 0.

P4: Decrease the demand for drugs

As discussed earlier in the paper regarding policy P1, the social marginal benefit (SMB) from drug use must lie below the private marginal benefit (PMB), as reflected by market demand curve (D2, and D1 respectively) in Figure 13 and Figure 14 above. Assuming no externalities on the supply side,

the market supply curve (S) reflects the cost of producing and distributing drugs. In a market without restrictions on drug supply or demand, the level of drug consumption (y*) will exceed the socially optimum level (y*').

In both Figure 12 (and Figure 13), persuasion efforts to reduce the demand for drugs are unaffected by the price elasticity of demand. Successful persuasion will result in the original demand curve, D2 (and D1) declining to D0. This will raise the overall social welfare, provided the costs of such efforts are not excessively large and if persuasion itself does not generate a large negative social value.

As to sum up, the analysis of the optimal policy-instruments to be implemented on the market for drugs supports the conclusions of the earlier interpretations (G1 to G3): when the impact of a policy on welfare is considered explicitly, demand reduction delivers a clear improvement in outcome whereas supply reduction requires special conditions to do so.

c)

Goals

G1: Reduction in the consumption of drugs

G2: A reduction in the drug-induced criminality

G3: A reduction of the emergence of organized crime connected with the (illegal) sale of drugs

Policy-instruments

P1: Increased punishment and/or increased probability of getting caught for drug-pushers

D1, S

D2, S

D1, S

D2, S

D1, S

D2, S

By launching simultaneous initiatives on both the supply and demand sides might guarantee an unambiguously positive net result, that is reduce the consumption of drugs.

If the demand for drugs is inelastic or perfectly inelastic, supply enforcement may not be an efficient method of achieving the optimum level of consumption. Well conceived demand reduction efforts promise an unambiguously positive outcome (i. e., less incentives for drug-induced criminality) relative to effective supply restrictions where there may be an offsetting expenditure effect arising out of the price increase.

A simultaneous shift leftward of both the demand and supply curves (arising from very effective supply and demand reduction initiatives) could, theoretically, see a reduction of both the drug trade and the organized crime related with the (illegal) sale of drugs). However, a drug-free society cannot be achieved.

A simultaneous shift leftward of both the demand and supply curves (arising from very effective supply and demand reduction initiatives) could, theoretically, eradicate the drug trade, and respectively , the organized crime connected with the (illegal) sale of drugs), thus achieving a “ drug-free” society.

Goals

G1: Reduction in the consumption of drugs

G2: A reduction in the drug-induced criminality

G3: A reduction of the emergence of organized crime connected with the (illegal) sale of drugs

Policy-instrument

P2: Legalize the sale of drugs

D1, S

D2, S

D1, S

D2, S

D1, S

D2, S

Governments hesitate to adopt this policy because it is seen as morally wrong to legalise drug use, even if the longer-term objective is to restrain consumption more effectively.

To the extent that legalizing drugs would make them cheaper, it would create many new addicts and the incidence of drug-induced crime would increase. Thus, legalizing drugs not only does not decrease criminal behaviour; almost certainly, it would spur its increase.

If there are any regulations or taxes of (for example, an excise tax)placed upon the legalized drugs, the emergence of organized crime, most certainly, will not be reduced.

Governments hesitate to adopt this policy because it is seen as morally wrong to legalise drug use, even if the longer-term objective is to restrain consumption more effectively.

Goals

G1: Reduction in the consumption of drugs

G2: A reduction in the drug-induced criminality

G3: A reduction of the emergence of organized crime connected with the (illegal) sale of drugs

Policy-instruments

P3: Distribute drugs for free

D1, S

D2, S

D1, S

D2, S

D1, S

D2, S

A successful demand reduction would be possible only in the case of perfectly inelastic demand curve, causing the new lower demand curve to intersect with the given supply curve at a lower price and a lower quantity bought and sold. Thus, the consumption is expected to decrease.

In the case of inelastic demand, the consumption is more likely to increase than to decrease.

A successful demand reduction would be possible only in the case of perfectly inelastic demand curve, causing the new lower demand curve to intersect with the given supply curve at a lower price and a lower quantity bought and sold. Thus, the total expenditure on drugs is reduced as well, providing less incentives for drug-induced criminality or drug substitutions.

If one sees

drug-induced

criminality as

criminality

under the

influence of

drugs, then free

distribution

would increase

drug-related criminality.

Since drugs are distributed

for free (p= 0), the emergence of organized crime connected

with the illegal sale of drugs

is expected to

be eradicated.

Goals

G1: Reduction in the consumption of drugs

G2: A reduction in the drug-induced criminality

G3: A reduction of the emergence of organized crime connected with the (illegal) sale of drugs

Policy-instruments

P4: Decrease the demand for drugs

D1, S

D2, S

D1, S

D2, S

D1, S

D2, S

Persuasion efforts to reduce the demand for drugs are unaffected by the price elasticity of demand. Successful persuasion will result in the original demand curve to decline. Thus, the consumption of drugs is reduced. However, the drug consumption cannot be reduced to 0.

Persuasion efforts to reduce the demand for drugs are unaffected by the price elasticity of demand. Successful persuasion will result in the original demand curve to decline causing a reduction in drug-induced criminality

Persuasion efforts to reduce the demand for drugs are unaffected by the price elasticity of demand. Successful persuasion will result in the original demand curve to decline, causing a lower demand curve that intersects with the existing supply curve and yields a street price that is so low that it is no longer profitable to supply drugs. In other words, the organized crime related to the illegal sale of drugs is reduced (if not wiped out) due to insufficient demand.