

# What happens when the government messes with a market?

Edward Morey: draft Sept 26, 2011

Chapter 5 in KW is about what happens when the government interferes in the workings of a competitive and free market.

When such interference occurs, the results is often a less efficient allocation and distribution - Chapter 5 concentrates on such cases.

**Keep in mind that the government fixing prices or quantities can be a way to correct market failures (make an inefficient market allocation more efficient. But this is not topic of Chapter 5.**

Let's work through some examples of efficiency decreasing government interventions.

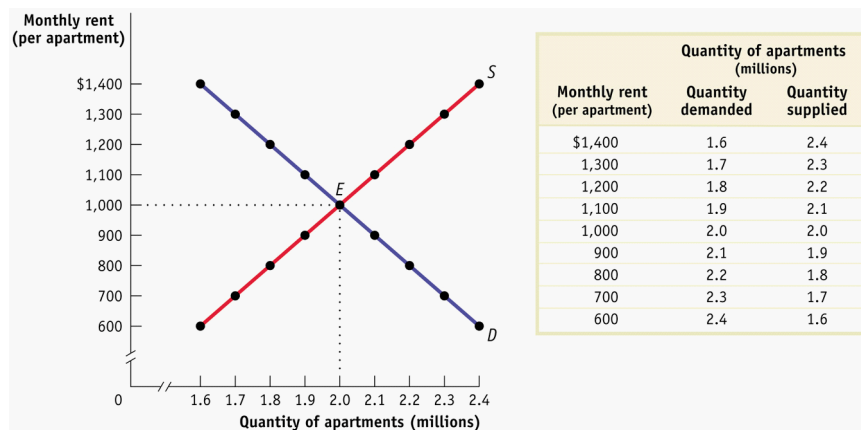
As we go along, I will try and point out when such interventions might be efficiency increasing, rather than efficiency decreasing.

# 1 The market for apartments in the absence of rent controls

Consider the demand and supply for rental apartments in NYC

In NYC there are some rent-controlled apartments

For simplicity assume that all apartments are identical.



Note the equilibrium monthly rent, \$1000/month, and the number of apartments rented in equilibrium, 2 million.

Under fairly general condition, this market equilibrium is efficient.

In equilibrium there are no frustrated landlords (each can rent as many apartments as she owns at \$1000 and has no desire to buy or sell apartments),

and there will be no frustrated renters or potential renters (everyone who wants to rent at \$1000/*month* can and does).

No one wants to toss their renters, no one want to move out, and landlords will not want to increase the number of rental units.

Keep in mind that this does not mean everyone is happy.

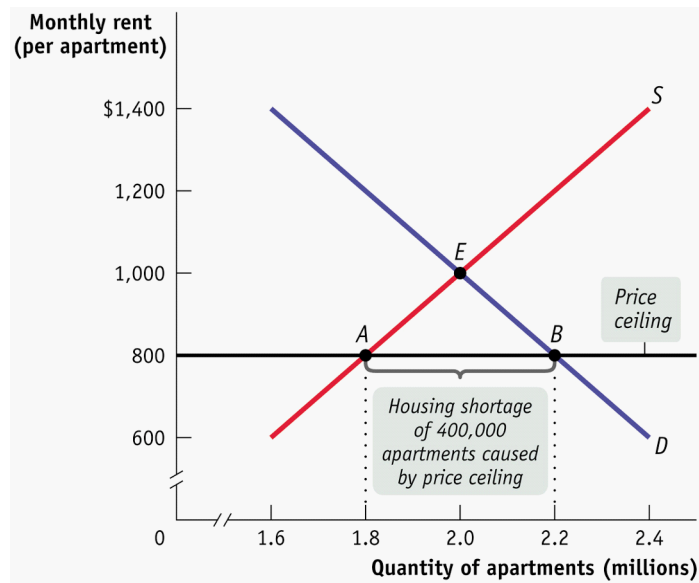
Now assume the City imposes a price ceiling on apartments (rent controls)

The new law says, "No apartment can rent for more than \$800/month"

What will happen to the rental market?

Demand is higher because price is lower: Wanda Sue and her boyfriend decide to move out of her childhood bedroom

Supply is lower because price is lower: Instead of renting out all of his apartments, Melvin decides to use one to store his bicycles and ballet slippers—his apartment was too cluttered.



Things will not be efficient. Why?

How do we know the allocation of apartments is inefficient?

Deals could be made between potential landlords, existing tenants, and potential tenants that would make all three parties better off, implying that the current situation is not efficient.

Consider a single apartment which is currently rented to someone who values the apartment at \$800 month:

- There is someone who is not renting that would pay \$1200 for the apartment. The landlord would like to rent the apartment to him for more than \$800.

If she could rent it to him for less than \$1200, both the landlord and new renter would be better off.

But, what about the current tenant?

His willingness to pay for the apartment is only \$800, so the current tenant would move out if the landlord paid him \$50/month to move out.

A deal could be made that would make all three parties better off.

For example, the landlord rents to the new guy for \$1050/month and pays the current renter \$50/month to not live there.

. The landlord is better off to the tune of \$200/month

The first renter is better off to the tune of \$50/month

And the new renter is better off - was willing to pay \$1200/month but only has to be \$1050.

This deal, or some other efficiency increasing deal, will not be struck because it is against the law. (Efficiency would increase if all three parties break the law.)

We know the current situation is inefficient because there is the potential for a deal that makes everyone better off.

## 2 Price floors on agricultural products

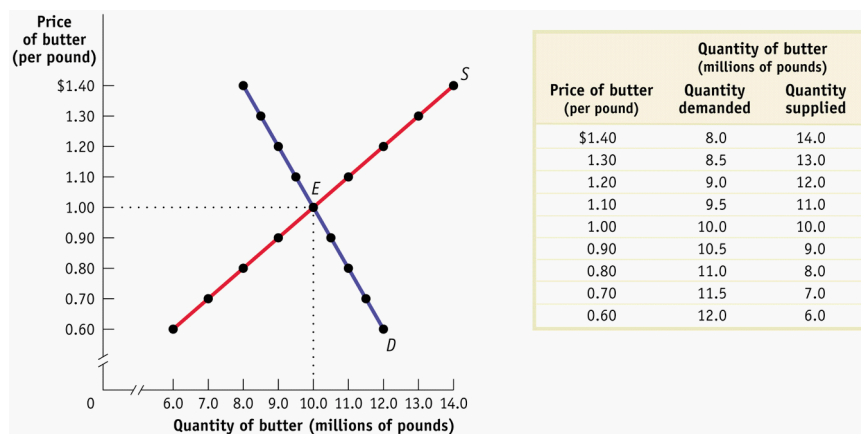
I don't know why KW chose butter.

In many countries at many times there have been price floors put on many agricultural products.

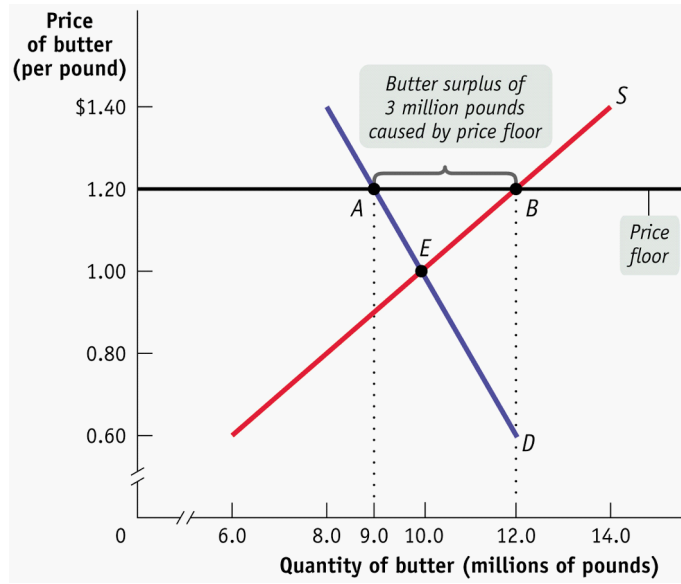
The idea is that farmers will get a "fair" price for their produce.

The U.S. government used to guarantee the price of tobacco.

The market for butter without a price floor. It is called a "floor" because the price is not allowed to fall below the "floor."



The market for butter with a price floor at \$1.20



In this example, this price floor (lower limit on a price) is not efficient. Like in the case of a price ceiling (maximum price) there is the potential to make everyone better off.

At \$1.20 a pound, the butter producers can't sell all of the butter produced.

Imagine that the quantity demanded at \$1.20 has been sold

Producers with excess supply would be happy to lower the price on the excess (giving them positive rather than zero profits on the excess).

At the same time some buyers and potential butter buyers would be happy to buy the excess if its price were less than \$1.20.

If the excess was sold, the sellers and buyers of the excess would both be better off, with no harm done to the other buyers and sellers.

So, there is the potential to make some buyers and sellers better off, without hurting the others (the original buyers are not made worse off by these additional trades), but this potential is not realized unless there are illegal trades at less than \$1.20/pound.<sup>1</sup>

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<sup>1</sup>Note that I am assuming the the guys who bought butter at \$1.20 can't undo their trades and are not pissed off that the price of butter is now less than \$1.20

This is a common real-world inefficiency.

It caused by the government trying to usurp the market by fixing the price of a product above the market price.

They do this, typically with farmers, because they feel sorry for the producer. For example, "protect the family farm"

What happens to the excess if an inefficiency increasing black market for the excess butter does not arise? It depends.

Sometimes the government buys the excess and then either destroys it (a complete waste), gives it to soup kitchens, or stores it somewhere. Giving it to the poor is better than throwing it away, but it would have been more efficient to not produce it in the first place—the resources could have used to produce something people want.

If the government doesn't buy it, the butter producer is stuck with it. She, or he, can't sell it for less than the price floor, and no one will buy it at the price floor. All of the resources that went into producing this butter are wasted. (When I lived in Norway my girlfriend's family—they owned a dairy farm—consumed more butter than they would have if the price of butter was free to fall.)

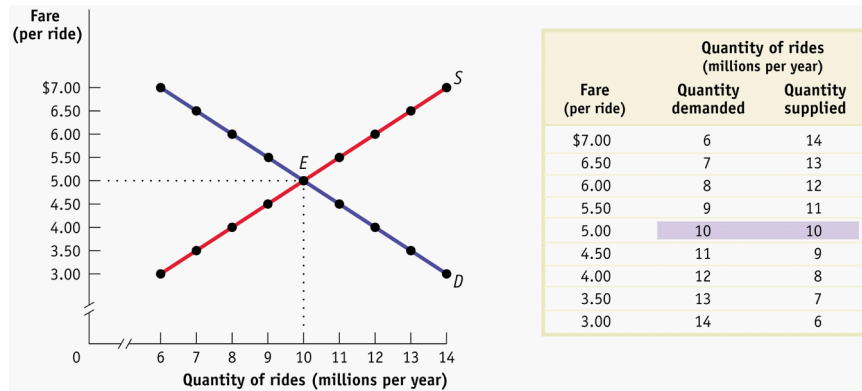
The bottom line is that too much of the stuff is produced and only some of what is produced is consumed.

Another possibility is the government figures out how much the excess supply will be and then pays farmers to produce less butter.

### 3 Now let's look at restrictions on quantity (quotas)

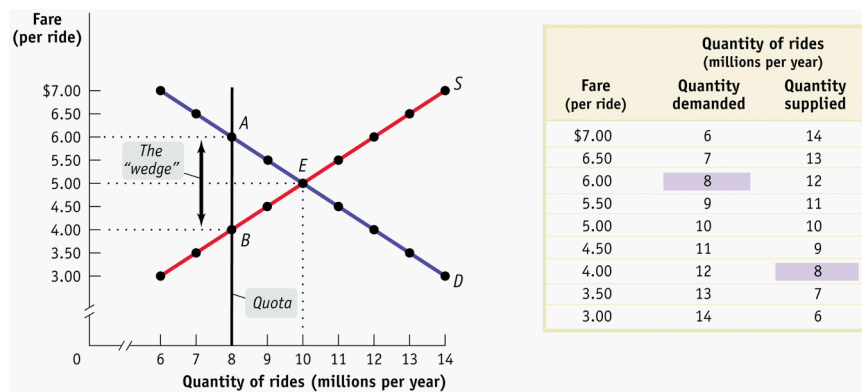
KW look at the market for taxi cab rides, per day, in NYC.

#### 3.1 Here is what would happen if there are no restriction on the number of taxicab rides produced.



The equilibrium price is \$5 and the equilibrium quantity is 10 million rides per day.

**3.2 But in NYC there is an upper limit on the number of taxi rides (there is an upper limit on the number of taxis), and that upper limit is less than the number of taxi rides that would be bought and sold in market equilibrium**



KW draw the graph assuming the upper limit on taxi rides is 8 million

When quantity is restricted to 8 million rides per day, the marginal customer would pay \$6 for a ride and the marginal taxi would be happy to supply him with a ride for \$4.

### 3.2.1 So, what will a ride cost?

It will cost \$6, what the market will bear—the available taxis have no incentive to charge less.

This is a good deal for those who have a license to be a taxi.

They make an excess profit of \$2/ride on every ride.

There is a wedge between *WTP* (\$6) and *WTA* (\$4)

Driving a taxi is a profitable business in NYC. Or is it?

**3.2.2 But before we get to the profitability of driving a taxi in NYC, is the the situation efficient?**

No,

Taxi drivers and potential taxi drivers would love to provide more rides to the residents of NYC at a prices less than \$6 but at least \$4, but, legally, cannot, because of the quota.

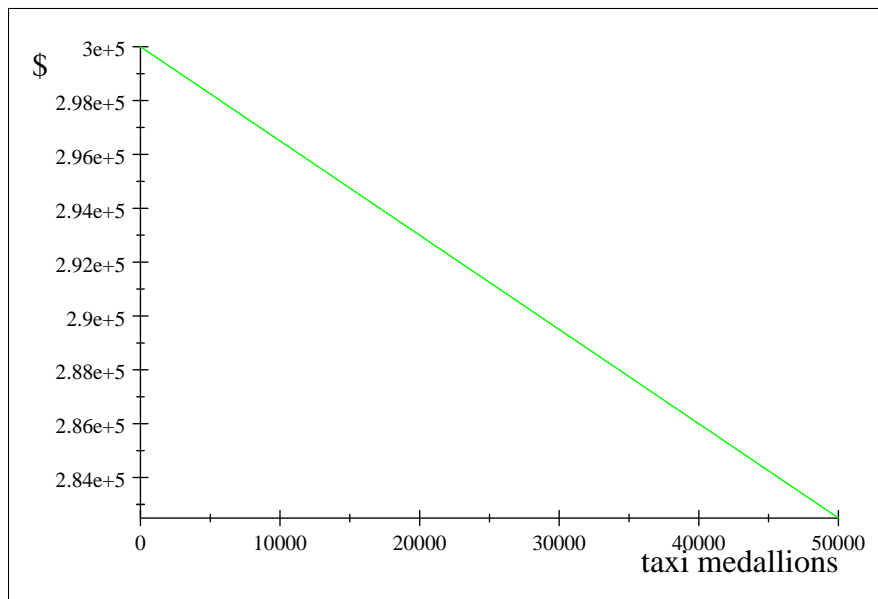
Potential rides would love to get a taxi for less than \$6 and are willing to pay more than \$4, but, legally, cannot.

If these potential drivers and riders could make a deal ,both would be better off, so the current situation is inefficient.

There are a bunch of guys would would turn their cars into taxis if it were legal and they could charge \$5/ride. And there are bunch of people who currently do not ride in taxis that would pay them the \$5 to ride in the new taxis.)

### 3.2.3 How does NYC limit the number of taxi rides?

They do it by limiting the number of legal taxis. In NYC you need a taxi medallion to legally operate a taxi. There is a fixed number of medallions, initially issued by the government. These medallions can be bought and sold, there is a free and competitive market for taxi medallions. Think of these medallions as permits.



Demand for and fixed supply of medallions

In my graph, There should be a vertical line at 13,000 medallions.

What is the price of medallion if this graph correctly indicates demand?

Almost \$300K

I drew the demand curve too low. A medallion was recently sold at auction for 413K.

Why so much???

The high price reflects the wedge the government created between taxi fares (\$6 in a graph above) and the price a taxi would be willing to provide the ride (\$4 in that same graph)

This results in an excess profit per ride to the owner of a medallion of \$2.

This is why some potential medallion owner is willing to pay so much for a medallion.

The people who initially got the original medallions, have seen the price of medallions rise over the years (a scarce appreciating asset) and some of those owners have sold their medallion and used the money to retire to Florida.

Other rent out their medallions.

The people who buy the medallions don't make excess profits from driving a taxi when one consider the opportunity cost of the \$400K they invested in the medallion.

Some times the government increases the number of medallions by auctioning off a 100 or so additional medallions. This shifts the supply curve for medallions to the right and decreases, a bit, the price of medallions. Current medallion owners don't like this.

**The medallion scheme has a lot of other interesting implications** Legal taxis are operated 24/7. When the owner is not driving the taxi, it is leased to someone else.

There is a great incentive for illegal taxis - individuals who will drive you, illegally, wherever you want and at a fare below the market price for a ride in a legal taxi.

### 3.3 What is the take-home story from the taxi medallion example?

Quotas are bad, or quotas can **sometimes** be bad?

The latter?

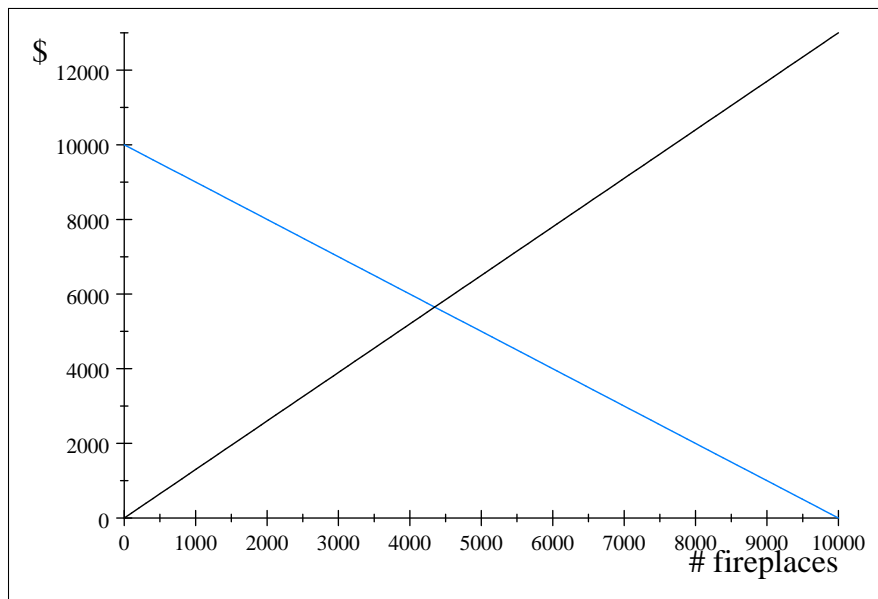
If the market equilibrium would have been efficient, then imposing an upper limit on supply (a quota) will cause inefficiency.

However, sometimes a quota can be used to correct a market failure.

#### 4 Consider the demand and supply of wood fireplaces in Aspen, a box canyon.

People want wood fire places in their condos: they looks nice, throwing a log on the fire is what one does in the mountains, and a condo with a fireplace will rent for more, *ceteris paribus*, than one without a fireplace.

Consider the demand and supply for wood fireplaces in the city of Aspen



Demand (blue) and supply (red) of fireplaces in Aspen

Fireplaces in Aspen are fancy and expensive to install. The free market equilibrium quantity is around 4000 fireplaces, and the equilibrium price is around \$6000

**4.1 However, burning wood in a box canyon produces smoke which reduces visibility, burns eyes, and causes respiratory problems (pollution), so the free-market equilibrium number of fireplaces is too high from an efficiency perspective (a market failure)**

**4.1.1**

The city of Aspen hires you as an economic consultant a \$5K/day to find a solution.

You determine that the efficient number of fire places is 2500, not 4000. (You collected a lot of data and made a lot of money.)

You recommend a fireplace medallion program - one can't have a fireplace unless one has a medallion.

The city creates 2,500 medallions, auctions them off on steps of city hall, and imposes a big fine on any one who has a fireplace but not a medallion.

People are allowed to buy and sell medallions. (Some houses might end up with six fireplaces.)

Sometimes the government initially gives the medallions away to some of those who currently have a fireplace. This is done so the current fire place owners don't scream too loud.

For example, in the Aspen example, the city might have given each fire place owner  $25/40 = 0.625$  of a medallion. In which case one would need to purchase a fraction of a medallion if one wanted to keep their fireplace.

The efficient number of fireplaces exists (2, 500), and the medallions will be owned by the people with the highest willingness-to-pay to have a fireplace.

If I have a higher WTP than you for a fireplace medallion, you can sell it to me and make both us better off. This is efficiency increasing , and it will happen.

This system exists in some mountain communities, and works (need to research more specific). Maybe one of the T.A.s would like to do some research on this.)