

## The Global Economy – Annie’s Model, for Business Students

This essay explains Annie’s model, for business students. The model shows how economic systems like ours will skew, over time, in favor of luxuries and industries that serve the wealthy, at the expense of necessity industries and necessity workers. It is not a plot; it is a characteristic of the system and the beliefs and spending habits that go with it. Everyone plays a part in reinforcing this unanticipated consequence of applying mainstream economic theory to the real world. Annie’s model explores aspects of the system that fall between traditional microeconomic analysis and traditional macroeconomic analysis.

That is, microeconomics, or information for business managers within-company, does not fully explain the way in which business behaviors interact with the whole economic system. And macroeconomics, or information for policy-makers, assumes that the whole system operates as one; macroeconomics uses aggregates and averages.

Modelling the “micro-foundations of macroeconomics,” or how individual business behaviors create the landscape of the aggregated macroeconomy has been technically challenging. Annie has resolved this challenge by developing an explanation for the interactions among worker migration, education, and city growth. In Annie’s model, money directs and incentivizes resource-flows; it does not merely facilitate commerce, as many economic models assume. Her analysis is available here, for business managers who understand that the system is not serving people in the way that it was supposed to do, and who want to be part of a re-set.

This essay assumes knowledge of some basic economic ideas, but you can probably pick them up even if you are not a business student and have not studied economics. If you have taken (and learned) Principles of Macroeconomics, and Principles of Microeconomics, often offered to first- or second-year business students in accredited colleges – but also available from other sources – then you should be able to understand what follows.

If you have not taken these classes, there is a shortcut – you only need FOUR basic economic concepts, which you can learn much more quickly than taking two semesters of the dismal science. I do not plan to teach them in what follows, but I am sure you can find out what they are from other sources, if you care to.

Here are the FOUR basic economic concepts that go into understanding what Annie’s model – applicable to global, regional, and local market economic systems – illustrates:

- 1) Circular flow of income
- 2) Relationships among prices, quantities, revenues, and elasticities of demand
- 3)  $MV = PQ$
- 4) Derived demand

### 1. Circular Flow of Income

Accepting that today’s income is tomorrow’s spending, and that income, followed by spending, followed by income, followed by spending, cycles around the whole economic system, we can say that there is a “quantity of money in circulation.” That is, there is some amount of money that gets spent in, say, a year, by everyone on everything. Let us call it  $Q_m$ .

**Recap:**  $Q_m$  is “the quantity of money spent by everyone on everything, in a year.”

If we were technical, we might try to define it. We might call it the money supply, or the money value of GDP, or the total of everyone’s income. Then we would spend a lot of time calculating it, from real-world data. For a model, this is not necessary. An economic model is a way of illustrating the essence of

economic behaviors. It is something we might call conceptual or intuitive, rather like drawing a picture that captures an outline or impression of something, but not its details.

Annie did, with this idea ( $Q_m$  circulating), what scientists like to do when an experiment is not possible. She made a thought experiment – a “what-if” scenario in her head. Let’s assume that  $Q_m$  is constant. That is, the amount of money spent by everyone on everything doesn’t increase or decrease from one year to the next.

In other words, each year, everyone altogether spends the same amount of money to buy everything, as everyone spent last year to buy everything. (The economy makes at least some new stuff every year, and some old stuff changes hands as well.) The assumption that  $Q_m$  is constant isolates some aspects of money-flows, that are hard to isolate in the real world.

**Recap:** Assume that  $Q_m$  (the money that everyone spends on everything) remains the same from one year to the next.

## 2. Elasticity of Demand

Let us imagine that we are a business owner trying to decide whether or not to reduce our product’s price.

When we reduce the price, clearly, we bring in less money per unit. But we may sell more units, and hence make up more than the difference with increased sales. This occurs when the product has “elastic demand.” However, we may not sell enough extra units to make up the difference, and our revenues (our total take) will decline after we cut the price. This occurs when the product has “inelastic demand.”

(We must also consider costs of production – will we still make a profit, if we reduce the price? – but that is an added complication that we will ignore in this basic presentation.)

**Recap:** Some products bring in more revenues when their prices fall, because sales increase enough to offset the lower price; some do not.

**Combining Concepts 1 and 2** – We consider both the money spent by everyone on everything, and what happens when output increases. This helps us explore what happens to a business’s power over resources when all the money spent ( $Q_m$ ) interacts with the path of economic growth and change.

When  $Q_m$  (the money spent by everyone on everything) is the same from year to year, and output (what the economic system produces) increases next year, then the same money is buying more goods next year. Then, **each item sold is expected to go down in price.**

The opposite situation may be more intuitive – if there is more money and the same quantity of products, then more money chases the same products. People bid for the chance to buy, and prices increase until the quantity of products sold matches the money available again.

More money chasing fewer products will bid prices up even more than if the quantity of products stays the same! This occurred after the pandemic. (Money had been fed into the system, to keep it going, but there were supply-chain issues, keeping supplies short for many items. Prices rose, as people competed to buy scarce items. That, of course, is inflation.)

**Recap:** If everyone spends the same money on everything next year as they did this year, but output increases next year, then sellers will cut prices in order to sell, and prices will fall until the money available can buy all the products on offer.

### 3. $MV = PQ$ or, slightly more technically, $MV = \sum P_i Q_i$

If you don't like math, you can skip this part. It was explained in words, above. Economists say that  $MV$  (the money supply,  $M$ , multiplied by the velocity of money,  $V$ , or the number of times each dollar changes hands in a year) equals the sum of price times quantity, for every product produced in the system. Price per chair, for example, times quantity of chairs sold, represents all of the money spent on all of the chairs sold in a year. The total of this ( $PQ$ ) calculation, (its sum, or  $\sum P_i Q_i$ , in math) for **all** of the different products in the economy, equals the total money spent, or  $MV$ . **(Money spent equals money spent, defined in two different ways.)**

Let us approximate  $Q_m$  (what everyone spends on everything) with economists'  $MV$  (Money times the number of times each dollar changes hands). ( $Q_m = MV$ ).

If  $MV$  (or  $Q_m$ ) is constant (the same each year), and the number (quantity) of goods ( $\sum Q_i$ ) increases, year on year, then the prices of the goods ( $P_i$ ) **MUST** decrease. If the money spent is the same, but there are more products changing hands this year than last year, then the prices of the products **must** be lower. It's a mathematical certainty, given the two different ways of defining the same thing, that is, all the money spent.

Therefore, in our uncomplicated version of this thought experiment, all prices can decrease, but **there is no reason to assume that all prices will decrease in a similar way**. For example, when output increases but there is no more money in the system, food can become half-price while the price of a robot declines only 10%.

**Recap:**  $Q_m$  (or  $MV$ ) is what everyone spends on everything this year.  $Q_m$  (or  $MV$ ) remains the same next year, but output is greater next year. There will be more products changing hands, but no more money to allow price increases; in fact, prices will fall. Producers will cut prices in order to sell. This is a thought experiment, not a real-world situation (yet).

### 4. Derived Demand

A business budget works pretty much like a household budget, only it is more complicated. If we don't have the money (= revenue from sales), we don't buy everything we might want. Derived demand is the idea that workers and intermediate goods, to make a product, are only purchased if the purchasing business wants them and can afford them. There is only a demand for these items if there is a primary demand for the product they make, from consumers.

As businesses get larger, this phenomenon gains importance for the way the whole system operates. Business revenues dictate how money is spent, on workers and inputs. Profits as a motivation may still exist, but the real-world way in which money is spent corresponds closely to the uses of corporate revenues. Big businesses can afford more things like inputs and workers than can small businesses. This is true, even if big businesses do not earn excessive profits.

(We will not discuss total profits versus profits as percent of revenues, but any business manager with sufficient experience should understand that large revenues go with large profits, but this is not necessarily a large **percent** of profit, or excessive "profit per unit.")

**Recap:** How money is spent throughout the system has much to do with what businesses can afford to buy.

## Summary

To put it all together, we investigate how corporate and other business revenues change, over time, as overall output increases (economic growth). As ALL prices decline (in our thought experiment), revenues to some types of business will decline (inelastic demand), and revenues to other types of business will increase (elastic demand). This results mostly from the type of product (resource-loser or money-magnet), not so much from business acumen.

If you have studied Principles of Economics diligently, you will remember that luxury goods are more likely to have elastic demand (revenues increase when prices fall), and necessity goods are more likely to have inelastic demand (revenues decrease when prices fall). So, when output increases and money passes from business to consumer, to business, to consumer, etc., in the circular flow of income, then money gravitates toward luxury-goods industries (money-magnets) where revenues increase over time, and away from necessity-goods industries (resource-losers) where revenues decrease over time.

What this means is that a market system with increasing output, or “economic growth,” will skew, over time, in favor of luxuries over necessities. This occurs under current business laws and current beliefs about good business practices.

It isn't a plot; it's a property of the system. And, the system could be tweaked rather than thrown out completely. For example, we can change overarching business laws without developing a patchwork of arbitrary government regulations; we can change beliefs about good business practices or good consumer behavior; and we can reduce the quantity of money in circulation. All of these things might help restore balance to a global economic system that has been allowed to skew in favor of luxuries over many decades.

## Appendix

Annie made a numerical example, in which the system's money does indeed flow into luxuries at the expense of necessities, as predicted by the argument above. Then she made a numerical example where the  $Q_m$  (money in circulation) increases, as occurs in the real world. A skew in favor of luxuries was WORSE, in Annie's increasing-money example.

Then Annie made a mathematical model. It worked the same as the numerical examples. That is, it skewed in favor of creating more luxuries (and higher incomes in luxury industries) than necessities, after a point in the growth process that we might call “take-off” (technical term).

What is different about this model, from most mainstream models, is that it does not assume a return to equilibrium in order to solve its equations. Other essays on this website explain why our system does not return to equilibrium. Therefore, Annie's non-equilibrium model can capture the dynamics of growing market systems better than can a typical equilibrium model.