

Dornbusch model



This is a hard topic to write on subjectively in terms of being original in my quest to assess Rudiger Dornbusch's Model. That being said, I take no credit as I make a case to positively affirm what I have come to learn about an extraordinary economist. This is a condensed chronicle of an amazing story. Come along for the ride. A trailblazer in his time, " Rudi" Dornbusch, created a model that is insightful. Where it falls short in some parts of the economy it can induce additional volatility in others to compensate.

Dornbusch came up with his innovative philosophy back when many economists were still claiming that ideal markets should reach equilibrium and stay there. Volatility was thought to be a consequence of imperfect information or market obstacles. In fact, volatility is more fundamental than that. The Dornbusch Overshooting Model as it is sometimes called, aims to explain why exchange rates have a high variance. In simple terms, the model begins by observing prices on goods that are 'sticky' in the short run, while 'prices' in the financial markets adjust to disturbances quickly.

When a change in monetary policy (for example an increase in the money supply) occurs, the market will need to move to a new equilibrium between prices and quantities. Because goods have sticky prices, an initial new equilibrium will probably be achieved through shifts in financial market prices. Then, over time, the goods prices will not stick, but rather shift to a new equilibrium, which will allow the financial market prices to shift back toward the original level, and a new long-run equilibrium will be attained between money, finance, and the supply of goods.

In short, the financial market will initially overreact to a change in money in order to achieve a new short-term equilibrium, but over time goods prices

will also respond, allowing the financial market to dissipate its overreaction and the economy as a whole will settle on a new long-run equilibrium. Rudiger Dornbusch's masterpiece, "Expectations and Exchange Rate Dynamics" was published twenty-five years ago in the Journal of Political Economy, in 1976.

The "overshooting" paper marked the beginning of modern international macroeconomics, and in that sense, it has been influential with regard to models that were to follow it many years later. Dornbusch's overshooting paper is brilliant to say the least. Economists were and are understandably cynical though most would agree Dornbusch's work is a perfect illustration of why the search for the abstract can sometimes yield a large practical payoff. It is precisely the clarity of Dornbusch's analysis that has made it so useful. Dornbusch (1976) is a great piece of literature in that it can be appreciated at many levels.

Policymakers can appreciate its insights without reference to extensive mathematics. One of the remarkable features of Dornbusch's paper is that today it is still just as easy to read and understand as it was back then. Even with the inevitable onslaught of more modern approaches, the Dornbusch model is still very much alive today on its own, precisely because it is so clear, simple and elegant. It provides even the most economically illiterate person with a quick response to a question about how monetary policy might affect the exchange rate.

To this day one can still check any answer against Dornbusch's model. Dornbusch's variant of the Mundell-Fleming paper is not just about overshooting. The general approach has been applied to a host of different

problems, including the choice of exchange rate regime, commodity price volatility, and the analysis of disinflation in developing countries. It is a framework for thinking about international monetary policy, not simply a model for understanding exchange rates. But what sold the paper to policymakers, is overshooting.

One has to realize that at the time Dornbusch was writing, the world had just made the transition from fixed to flexible exchange rates, and no one really understood what was going on. The state of the economy in general was far more volatile than most experts had guessed they would be. Along came Dornbusch who laid out an incredibly simple theory that showed how, with sticky prices, instability in monetary policy could be the culprit to a far greater degree than anyone had imagined. Dornbusch's explanation intrigued researchers because he showed how overshooting did not necessarily change behavior in markets.

Rather, exchange rate volatility was needed to temporarily equilibrate the system in response to monetary shocks, because underlying national prices adjust so slowly. The true strength of the model lies in that it highlights how, in today's modern economies, one needs to think about the interaction of sluggishly adjusting goods markets and hyperactive asset markets. This broader insight certainly still lies at the core of modern thinking about exchange rates, even if the details of our models today differ quite a bit. Dornbusch's overshooting paper is certainly one of those rare ideas where, though it is not obvious, it is true.

Now, of course, unless studying economic theory is a time passing favorite, little of what appears in today's professional economics journals will seem

obvious. However, only a small number of equations is necessary in proving one point: how simple the concept really is. Two relationships lie at the heart of the overshooting result. They are: Uncovered interest rate parity consisting of nominal interest rate and expected rate of change of exchange rate and Money demand consisting of money supply, price level and output. How does " overshooting" work? The essence over overshooting is captured by combining equations with assumptions.

Of most importance, one must assume that the domestic price level does not move instantaneously in response to unanticipated monetary disturbances, but adjusts only slowly over time. The power and generality of the overshooting idea derives precisely from the fact that one can figure it out without going back through their old math textbooks and breaking out the latest and greatest scientific calculator. The only equations needed are the above mentioned two, and therefore the result is going to obtain across a broad class of models that incorporate " sticky prices. "

Dornbusch's rationale comes as a result of what was considered as radical thinking during his day and time. At the time Rudi was working on his paper, the concept of sticky prices was under attack. Despite the religious conviction among macroeconomic theorists that prices could not be sticky, Dornbusch's model remained the favorite with international macroeconomists. Formally testing the Dornbusch model is easier said than done. To take the model to the task, one must first do the following: figure out how to allow for more general types of monetary disturbances of the money supply and interest rates.

However, the so-called “ empirical failure” of the Dornbusch model does not mean that we have to reject it as a useful tool for policy analysis. Although the overshooting concept dutifully illustrates the inner workings of the model, the usefulness of the model goes well beyond the overshooting prediction. It is a generalized framework for thinking about international macroeconomic policy. Aside from that, the model does not necessarily predict overshooting under every circumstance. In newer models consumption typically appears in place of output in money demand equations effectively tilting the balance away from overshooting.

The final element of Dornbusch's model is the price adjustment equation. That prices must eventually adjust to a monetary shock is obvious to us today. But that was not the case back then. No matter how you look at it, the bottom line is: Dornbusch's model was an important precursor to today's literature with regard to exchange rates. Though Dornbusch was not the first to advance the general notion of overshooting of economic variables. At or around the time of Dornbusch's writing other economists were proposing a very different notion of overshooting.

The dynamics in their models were not particularly parallel to Dornbusch's, in that the slow-moving variable is national wealth, which adjusts only gradually over time through the current account. The general reaction of policy economists at the time was that these alternative models were far less relevant empirically than Dornbusch's. Some of the lasting contributions of the Dornbusch model are as follows: Dornbusch (1976) is truly an extraordinary paper, one of the handful of most influential and important papers in macro and international economics of the twentieth century.

The Dornbusch model partners theoretical simplicity with elegance in international finance. Ever thought to put the word elegant and finance in the same sentence? Me either. Even today, the model in its original form remains relevant for policy analysis. What more can one say about a man who has come and gone who created a Model that, even today, in its original form, lives on? There is something to be said about the assessment of nominal exchange rate and volatility. The debate may continue but one look at Dornbusch's Model makes it plain. References <http://www.imf.org/external/np/speeches/2001/112901.htm>

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