BRIEFLY NOTED

Should the FDA Regulate Drug 'Gray Markets'?

BY THOMAS A. HEMPHILL

Over the last decade, the U.S. health care system has experienced an increase in the number of shortages of "ethical drugs"—drugs that require a prescription. Between 2005 and 2011, the number of these drugs newly classified as being in short supply roughly quadrupled according to two independent datasets. Fortunately, those shortages have eased in recent years, following intervention by the U.S. Food and Drug Administration. According to one of the datasets, kept by the FDA, shortages have dropped dramatically, but the other set, kept by the University of Utah, shows a much less substantial decline. As you may suspect, the difference between the two datasets is insightful.

The shortage of these drugs has resulted in the emergence of "gray markets" in which the drugs are exchanged repeatedly between various suppliers before they reach the end-user. Typically, gray markets are socially beneficial, moving goods toward consumers with the strongest demand. But in this case, prescription drug gray markets seem unsavory and will likely soon be the subject of new government regulation. However, drug makers can circumvent this intervention while, at the same time, capturing some consumer surplus that they currently lose to distributors.

The shortage / The FDA historically has defined a "drug shortage" as "a situation in which the total supply of all clinically interchangeable versions of an FDA-regulated drug is inadequate to meet the current or projected demand at the patient level." That definition is probably not satisfactory to economists, but we can appreciate its meaning: there's a sudden and dramatic decrease in supply at the drug's customary price.

These shortages affect less than 1 percent of the approximately 40,000 ethical drugs on the market. Interestingly, the vast majority of the affected drugs are generic versions. This seems counterintuitive; one would expect that once a patent has expired and generic makers can begin production, there would be ample supply at the customary price.

The two independent sources for the shortage data are the University of Utah's Drug Information Service (DIS), which manages the American Society of Health-System Pharmacies (ASHP), and the FDA Center for Drug Evaluation and Research's Drug Shortage Program. The FDA data report lower numbers than the DIS, which is in part a product of how the two organizations define a "drug shortage." But the difference is also partly attributable to the sources that the two agencies use for their data: DIS's information comes from care providers who judge whether a drug is in shortage, whereas the FDA uses drug manufacturers' data.

As shown in Table 1, both data sets exhibit the same general pattern over the past 10 years: the annual number of new shortages increased steadily in the latter 2000s, then eased in the early 2010s. However, according to the DIS data, the number of shortages remains troublingly elevated as compared to the mid 2000s, while the FDA data show a dramatically lower number of shortages in recent years.

A trend worth special attention is the percentage of drugs in shortage that are "sterile injectables." These often are older, off-patent drugs produced by generic manufacturers. They include cancer drugs, anesthetics for surgery, drugs for emergency medicine, and electrolytes for intravenous feeding. As a percentage of new ethical drug shortages, sterile injectables have remained in the 70 to 80 percent range from 2010 through 2013, with 2014

CREATAS/THINKSTOCK

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being the first year to drop below 70 percent (at 68.2 percent).

Elasticities and investment / In most markets, the volume and seriousness of product shortages depend on the extent to which demand and supply of the product respond to changes in price. In microeconomic theory, these responses are referred to as price elasticities; products that experience sharp changes in supply or demand as a result of a price change are price-elastic; products that don't experience much change are price-inelastic.

Understandably, the demand for prescription drugs is fairly inelastic. These goods are typically "medically necessary" and in many cases there are few effective substitutes. Besides, most patients have health care insurance, hence consumer demand for these drugs (and most health care services and products) is largely unaffected by price changes. Furthermore, hospitals and physicians generally prescribe medication based on its effectiveness for the patient, which is unrelated to the price paid for the drug.

On the supply side, there is also a lack of responsiveness to changes in price, at least in the short run. Pharmaceutical production often requires expensive, specialized equipment for specific drugs, and manufacturers are required to adhere to "current good manufacturing processes" that require time to implement because they are complex. Sometimes a manufacturing line can be reconfigured relatively quickly to produce a different drug that's in the same class—say, transitioning from one type of ACE inhibitor to another. But that's not the case if the reconfiguration involves two different drug classes—say, shifting from an antibiotic to an anesthetic. Moreover, pharmaceutical raw materials are not always readily available and require validation by manufacturers and FDA regulatory approvals. Furthermore, prescription drugs have a limited shelf life; as a result, manufacturers' inventories are often kept low, reflecting more of a just-in-time manufacturing philosophy.

Temporary shifts in supply or demand, which often are what cause these shortages, will not generate capital investment to increase production capacity. Evidence of increased demand in the longer term (greater than two years), however, will result in supply being increasingly price responsive.

TABLE 1

U.S. ETHICAL DRUG SHORTAGES (2005–2014)

YEAR	DIS/ASHP ETHICAL DRUG SHORTAGE	FDA ETHICAL DRUG SHORTAGE	FDA SHORTAGE: STERILE INJECTABLES	FDA SHORTAGE: PERCENT STERILE INJECTABLES
2005	74	60	30	50.0
2006	70	55	25	45.5
2007	129	92	42	45.7
2008	149	110	40	36.4
2009	166	157	75	47.8
2010	211	178	132	74.2
2011	267	251	183	72.9
2012	204	117	84	71.8
2013	140	44	35	79.6
2014	185	44	30	68.2

Sources: University of Utah, Drug Information Service; U.S. Food and Drug Administration, Center for Drug Evaluation and Research

Gray markets / Because ethical drug shortages typically are a function of short-run (less than two years) inelasticity of demand and supply, those shortages have led to the development of gray markets for these drugs. A gray market, in this sense, is an alteration in the drugs' normal distribution channels.

The drug distribution chain typically works as follows: drug makers sell their wares to wholesalers and repackagers, who then sell to pharmacies and hospitals, or else to "secondary" wholesalers (who then sell to pharmacies and hospitals, or perhaps to a tertiary wholesaler). During a shortage, this distribution chain becomes extended as the goods seek the highest demand and highest price. Wholesalers and repackagers will sell more of the drug to other wholesalers and repackagers than to hospitals and pharmacies, and pharmacies may resell the drugs "back up" the distribution chain to secondary wholesalers and repackagers. The secondary distributors may not even take physical custody of the drug, instead simply routing the drugs to other customers and settling accounts much like buyers and sellers of financial derivatives. In some cases, these distributors are "shell pharmacies" that spring up in moments of shortage to stockpile the scarce drug.

As a result, the final price on gray market–traded drugs may be as much as hundreds of times higher than the price that the manufacturer originally received for the product. Also, as the drugs bounce along the extended supply chain, they may be improperly repackaged, re-labeled, and possibly stored under unsuitable conditions, as well as replaced by counterfeits, compromising their integrity and safety.

In theory and in most cases, such reselling can benefit general welfare: it helps to deliver the goods to those consumers who most want them. But in health care, this gray market has two problems: First, many people are morally troubled by the dramatic increase in price that prescription drug gray markets produce. Though people generally appreciate the problem of scarcity and the importance of market forces to nurture supply and innovation, they are much less sanguine about wringing consumer surplus out of a "medically necessary" good. Second (and not unrelatedly), the profits from the repeated "handoffs" in the supply chain go to the distributors and repackagers instead of the drug makers, which doesn't incentivize greater supply in the long term.

Concern about these facets of the prescription drug gray market has been raised by the drug-making industry's own trade association, the Pharmaceutical Research and Manufacturers of America (PhRMA). On its website, PhRMA states:

> When a drug shortage happens or one is anticipated, a "gray market" may spring up, with the potential for price gouging.

> The practice of price gouging by secondary wholesalers, which largely comprise the "gray market, is unacceptable and presents serious concerns for patient safety, as it cannot be assured that the products have been handled in a way that maintains their integrity.

FDA steps in / As a result of the then-burgeoning shortages, President Obama issued Executive Order 13588 ("Reducing Prescription Drug Shortages") on October 31, 2011. In the order, he directed the FDA to take administrative steps to help prevent and reduce current and future disruptions in the supply of lifesaving and life-enhancing pharmaceuticals. Among those steps:

- Drug makers are required to provide adequate advance notice of manufacturing discontinuances of specific pharmaceuticals.
- They also are required to report supply disruptions six months in advance, if possible, or as soon as possible.
- The FDA is to expand its efforts to expedite the regulatory review of new drug suppliers, manufacturing sites, and manufacturing processes, whenever such expedited reviews would help avoid or mitigate existing or potential drug shortages.
- The FDA is to coordinate with the U.S. Department of Justice on any findings that such drug shortages have led market participants to stockpile drugs and sell them at higher prices, with the DOJ investigating whether that wholesaler behavior is consistent with applicable law.

From a federal regulatory perspective, the FDA does not have the regulatory authority to require a pharmaceutical company to start or increase production of a drug, nor to manage drug prices or distribution. Nonetheless, the agency has taken steps in accordance with EO 13588 that seemingly have reduced the incidence of drug shortage.

As noted previously, according to FDA data, the number of new shortages in a year has plunged dramatically from 251 in 2011 to just 44 in both 2013 and 2014, an 82.5 percent drop. The FDA reports that it has actively worked with pharmaceutical manufacturers to address problems with production and quality, helped to determine if pharmaceutical manufacturers have unused capacity they can employ to alleviate shortages, and even assisted pharmaceutical manufacturers with importing products into the U.S. marketplace.

So the FDA data seem to show great success by the government in reducing drug shortages. But the University of Utah's DIS numbers are less encouraging, suggesting that in the view of care providers (who supply the DIS data) shortages are still common. This is putting pressure on the Obama administration and the FDA to do more about drug shortages and the gray markets.

The higher prices and rents extracted by the gray market represent revenue forgone by drug makers that, on the margin, could produce increased supply.

What can be done?/ So far, those complaints have not resulted in specific federal or state "price gouging" laws against distributors, and no enforcement actions have come from the Justice Department pursuant to EO 13588. However, such action seems possible in the near future.

But it's possible that drug makers could act before the FDA in tamping down on the gray markets, motivated by both political and economic interests. The higher prices and rents extracted by the gray market represent revenue forgone by drug makers that, on the margin, could produce increased supply.

PhRMA, together with the FDA, could change this by encouraging drug makers to adopt an industry-wide policy that encourages both brand-name and generic manufacturers to actively include contractual obligations pursuant to "authorized distributors of record" agreements. These would restrict the wholesale distributors' freedom to buy directly (only from the manufacturers) and to sell the manufacturer's ethical drugs to only end-users (pharmacies and hospitals), especially in cases where there is real potential for an ethical drug shortage. This contractual, self-regulatory response to gray markets would ensure that ethical drugs in short supply are not price "churned" through the gray market distribution chain, but instead result in higher revenues for the manufacturers while ensuring the integrity and safety of the ethical drug supply chain and avoiding fallout from "price gouging" accusations against the gray markets.

As part of these contracts, pharmacies and hospitals could only purchase drugs that have a proper "drug pedigree." Pedigree documents consist of a record of the distribution route a drug has traveled since it left the manufacturer and are usually required of distributors by either federal or state law. By requiring pedigree documents, hospitals and pharmacies will be better able to track where the ethical drugs have previously been in the wholesale distribution chain, thus ensuring integrity and safety, and discouraging the establishment of "shell" pharmacies. Other appropriate industry associations can provide the public support and institute industry best "standards of purchasing practices" for pharmacies and hospitals to follow.

Too often the first reaction to a persistent industry problem is heavy government intervention. The FDA needs to pursue market-based, self-regulatory solutions with stakeholders, such as industry associations, to take the next step in mitigating the issue of drug gray markets. This market-based approach may further mitigate a potentially life-threatening circumstance for human beings in desperate need of life-sustaining pharmaceuticals. R

Can Government Spy a Terrorist?

BY CHARLES L. HOOPER

Now that Congress has apparently reined in the National Security Agency's spying powers by phasing out the NSA's bulk collection of phone records, those who support the U.S. Constitution and Fourth Amendment are cheering while those who fear another terrorist attack are grumbling.

The two sides will continue battling it out, each saying the other is wrong. However, we can shed some significant light on this issue by borrowing an insightful technique from medicine. By doing this, we will see that constitutional government is compatible with national security. We can have both.

Medicine and national security / It may seem counterintuitive that medicine can provide insight into national security. But as University of Pittsburgh Medical Center professors Stuart Mendenhall and Mark Schmidhofer demonstrated in these pages a few years ago, medicine and national security deal with similar problems. (See "Screening Tests for Terrorism," Winter 2012–2013.)

Physicians face a quandary. Should they "spy" on a person's body to root out evil diseases? Or does that put the patient at more risk? Physicians aren't constrained by the Constitution, but they are constrained by fiscal prudence and the Hippocratic oath, which prohibits them from harming patients.

We might feel healthy today, but many of us are harboring dangerous diseases such as cancer. Doctors can use a number of diagnostic tests that might uncover such diseases. The question is, which tests should be used and when? Answering that requires a feat of mathematics that takes into account a number of factors:

- What percentage of the population harbors the disease?
- How accurate is the diagnostic test?
- What if the test yields a positive signal and the patient has the disease?
- What if the test yields a positive signal and the patient *does not* have the disease?

To help resolve this, doctors employ a calculation known as positive predictive value (PPV). It is a measure of the ratio of the true positive and false positive rates, and it equals the proportion of patients who test positive who really do have the disease. A PPV of 10 percent means that one in 10 people who test positive really does have the condition and that nine out of 10 people who test positive don't have the condition. For reference, the PPV for mammography for women 50 and older is 14 percent while the prostate cancer PSA test has a better PPV of 20–50 percent.

PPV and the TSA / Shift your attention from the NSA to that other homeland security agency, the Transportation Security Administration. The TSA has been in the news a lot lately because of dreadfully porous airport security. The two agencies are really peas in a pod: both regularly violate the Fourth Amendment to search innocent Americans with the hope of ultimately protecting those same innocent citizens. Both essentially have the same purpose, yet the TSA is easier to contemplate because of our familiarity with its agents and the straightforward purpose of its actions: the TSA searches our persons and our baggage to prevent weapons from entering commercial aircraft.

We can employ the PPV calculation to evaluate the actions of the TSA. Consider:

- How many Americans fly? There are over 800 million passengers annually on all scheduled flights.
- How many among this flying population are active terrorists? The data show the number is close to zero, but let's assume a much larger number: 100 terrorists and they each fly twice a year.
- How accurate are the TSA's tests? According to ABC News, which acquired a Department of Homeland Security document, "Undercover investigators were able to smuggle mock explosives or banned weapons through checkpoints in 95 percent of trials." So the answer is a measly 4.3 percent accuracy (three out of 70 correct) for flagging weapons when they are present. Let's also assume that if no weapons are present, the TSA's accuracy—not flagging innocent people—is much higher, say, 95 percent.

What is the TSA's PPV? It is a microscopic 0.0000214 percent. Consequently, for every true terrorist that the TSA flags as a potential terrorist, 4.7 million innocent passengers are also flagged as potential terrorists. Not only does this make a mockery of the whole "security" idea, but it doesn't provide much assistance in finding real terrorists, and these false positives cost the TSA time and money. For those of us incorrectly flagged as potential terrorists, it costs us time, personal privacy, potentially missed flights, black marks on our records, the ability to carry liquids and pocketknives, and huge amounts of stress.

More troubling, the real TSA PPV must be far lower than 0.0000214 percent. If our assumption is correct and there are 100 terrorists who take two flights each year, then, given the TSA's poor accuracy in finding weapons, 191 of those terrorists' attempts would have resulted in successfully boarding airplanes. With a 50 percent success rate, we would be seeing over 95 airline hijackings per year, year after year.

Thankfully, the record on foiling real terrorists is much better. The shoe bomber and the underwear bomber have been the only two post-9/11 attempts and neither succeeded, thanks largely to passenger activism;

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flight crews and motivated passengers are an important bulwark against nefarious in-air activities. If two terrorists succeeded in getting through the TSA's security system and the TSA has a 4 percent accuracy rate, then we can be confident that only two tried. Had three tried, three likely would have gotten through. We can conclude, therefore, that the TSA's actions and all those security lines we have endured over the years have likely prevented zero hijackings.

Having liberty and security / Is the NSA any different than the TSA? Not likely. Even the FBI admitted that no major terrorist cases were cracked as a result of the Patriot Act's massive snooping powers. Based on the available evidence, both government agencies have spent massive amounts of taxpayer money and searched many innocent people, but have not protected us in the slightest, except perhaps through a deterrent effect. As the PPV calculation shows, mathematics thwarts both government agencies. Their security measures can never be accurate enough to overcome the extremely small prevalence of motivated terrorists.

Even without the NSA's bulk data collection and the TSA's ubiquitous airport security lines, the government has many tools available to apprehend terrorists when there is probable cause. Wholesale spying is not the answer. We should trim these two government agencies and realize that the choice is not between the U.S. Constitution and security; we can enjoy the blessings of both. *R*

Are Imports a Drag on the Economy?

BY PIERRE LEMIEUX

A *Wall Street Journal* story last June 3rd suggested that imports are a "drag on the economy." The story also quoted a business economist who claimed that the trade deficit in the first quarter was a "huge drag" on gross domestic product. "As measured by GDP," the reporter explained, "exports are positive for economic growth, while imports are negative."

Such statements are examples of a common error by journalists and pundits, who seem to believe that imports by necessity hurt domestic production and thus the country's economy. Even economists sometimes fall prey to this mercantilist error, despite economic analysis having debunked it long ago.

Balance of trade / By the 19th century, economists knew that imports are not a problem—quite the contrary. In his 1848 *Principles of Political Economy*, John Stuart Mill wrote:

> The only direct advantage of foreign commerce consists in the imports. ... The vulgar theory [of protectionism] disregards this benefit, and deems the advantage of commerce to reside in the exports: as if not what a country obtains, but what it parts with, by its foreign trade, was supposed to constitute the gain to it.

A few decades earlier, in his *Treatise on Political Economy* (1803 for the first French edition), Jean-Baptiste Say explained that "it is no injury to the internal or national industry and production to buy and import commodities from abroad; for nothing can be bought from strangers, except with native products." That is, peeking behind the veil of money, what a group of people buy from another has to be paid with real production.

The issue was, and still is, often presented in terms of the "balance of trade," which equals the value of a territory's exports minus its imports. In his *Wealth of Nations* (1776), Adam Smith criticized "the mercantilist system," which considered imports harmful, and he denied the common prejudice against a negative balance of trade. In this, Smith joined his friend and fellow Scottish Enlightenment giant David Hume, who made the same anti-mercantilist argument a quarter of a century before.

Economic error / Imports are no more problematic than purchases in general. To understand this, consider an individual consumer. His income is to him what gross domestic product (which is equal to national income) is to a country. Can we meaningfully say that the individual's purchases are "a drag" on his income? Of course not. His purchases are the very reason why he is working to earn an income. Similarly, it would be wrong to claim that our consumer should always maintain a positive personal "balance of trade"—there will likely be times in his life when it is necessary and beneficial for him to spend more than he earns.

Now, expand this perspective from the individual to a group of individuals who live inside some political border (whether national or regional). Their exports are sales realized on (and income earned from) the other side of the border, while their imports are purchases that they make over this border. Just like the individual who sells goods he produces in order to purchase what he wants, so the group sells their goods in order to purchase foreign goods, not the other way around.

The exports are the cost and the imports are the benefits, which was Mill's point. To speak in collectivist terms, when "we" export, we ship "our" resources to foreigners; when we import, we use "their" resources. Why should we want to do more of the former and less of the latter?

Of course, we benefit from this trade in the sense that each exporter gains at

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least as much as his usual profit, and each importer could not have obtained a better deal at home. Goods and services are imported from the most efficient producers. Thus, exchange does not create any economic "drag." So why does the old mercantilist fallacy persist that exports are good and imports are a "drag on the economy" or a "drag on GDP"?

Accounting and GDP / One reason for this persistent error is plain and simple ignorance of what GDP is. For instance, the *Financial Times* of last June 14th stated that, in Greece, "about three quarters of GDP is domestic." In fact, 100 percent of GDP is domestic: that's why it's called "gross *domestic* product." GDP measures domestic production during a certain period of time. Part of GDP is used to purchase imports. But there is no reason why imports would reduce what people produce, because people need their production in order to purchase imports. Saying the contrary would be like saying that an individual's purchases reduce his salary, which is a total confusion.

Often, the import-drag error comes not from an analytical mistake about why people produce and trade, but from a simple misinterpreting of accounting identities underlying GDP. Once GDP is defined as it is, there are many ways to look at it. GDP as production is equal to total income (what is produced is what is earned), and to total expenditures (what is produced is purchased by somebody). These equalities represent the fundamental accounting identities of the national income and product accounts. These simple points are explained in standard macroeconomic textbooks as well as in publications from the Bureau of Economic Analysis (BEA) such as its *Concepts and Methods of the U.S. National Income and Product Accounts* (November 2014).

When we look at GDP from the expenditure side, we have

$$GDP = C + I + G + X - M$$

an accounting identity saying that what is produced and earned in the economy (*GDP*) goes to (final) purchases by either consumers (*C* is consumption expenditures), businesses (*I* represents investment expenditures), government (*G* is government expenditures), or foreign importers (*X* denotes exports).

Remember in passing that GDP includes, by definition, only final goods and services; intermediate goods are excluded in order not to double count—for example, the wheat that goes in the flour and in the bread.

In the accounting identity above, imports (*M*) are subtracted from the right-hand side as a pure matter of accounting. As measured by statisticians, *C*, *I*, and *G* already include imported goods, and we need to exclude those from the total because they do not count as *domestic* production. The accounting identity does not in any way mean that imports reduce GDP. Imports appear with a minus sign only because data collectors initially included them in *C*, *I*, and *G*, and thus they need to be taken out.

In the accounting identity, the two terms $X - M$ are often put inside parentheses, as $(X - M)$. This does not change the equation in any way, but falsely suggests that the balance of trade is part of the equation, and that a negative balance of trade reduces GDP. This practice deepens the confusion.

To repeat: imports are "subtracted" from a certain accounting identity not because they are a "drag" on GDP, but because they have been included in other variables of the equation and thus need to be removed. Hence, *imports are not deducted from GDP; they are simply not added to it.* This follows from the definition of GDP and the consequent accounting identities.

If we go behind simple definitions and accounting conventions, if we move from accounting to economic analysis, imports actually *increase* the value of GDP—that is, what it is worth for the ultimate domestic consumers. The reason for this is that imports allow all parties to produce what they are most efficient at, in exchange for what costs less to import. Some individuals may even produce in order to import—if, for example, one decides to work more in order to buy an expensive car manufactured in Germany.

What happens if people start importing more than they export, creating a deficit in the balance of trade—that is, a negative $(X - M)$? Since imports have increased in *C, I,* or *G,* but have been equally deducted in *M,* GDP does not change. Going from accounting to economics, it is true that a negative balance of trade has to be financed so that the total

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(current and capital) balance of payments remains in equilibrium. This adjustment will occur through capital inflows into the country. It can also be—like in the United States—that some capital inflows are autonomous: they originate from investors eager to invest here, which allows a trade deficit to develop. But this does not change the fact that imports don't reduce GDP.

Government and the BEA / Besides ignorance of national accounting, there is another reason for the erroneous belief that imports are a drag on the economy. The interest of exporters is to reduce their competition and to arouse protectionist sentiments. Exporters are concentrated among larger companies and are less numerous than consumers who benefit from imports, so the former will organize more easily and lobby more efficiently than the latter, as the theory of collective action suggests. Widespread consumer benefits are less immediately visible than bankruptcies and jobs lost (in fact, jobs transferred to other industries). Thus, governments will naturally side with exporters rather than with consumers, and become clubs of exporters instead of associations of consumers.

The government's interest in siding with exporters against consumers may explain why even government bureaucrats are tempted to misuse the GDP expenditure identity—or, at least, why they don't actively combat the repetition of the error. In its monthly *Survey of Current Business*, the BEA appears more prudent than the typical journalist, but it still offers ambiguity. "The slowdown in real GDP growth ... primarily reflected an upturn in imports," the BEA wrote in last February's issue of the Survey. It is true that "reflected" does not mean "was caused by," but it could easily be read as implying some sort of drag. Moreover, a recurring chart in the Surveys shows imports as a negative "contribution" to GDP.

The regular BEA press releases are worse. In last May 29th's release, for example, the BEA talks about "imports, which are a subtraction in the calculation of GDP." That's their standard terminology. When I recently questioned a BEA spokesperson about this, she admitted that my analysis is correct. She wrote in an email:

> The reason imports are a subtraction in the calculation of GDP ($C + I + G + X - M$) is because imported goods and services are included in the value of consumer spending (C), business investment (I), and government consumption expenditures and gross investment (G). Because we only want to measure what is produced domestically, we therefore must subtract imports in the equation to ensure that imports do not enter into our value of domestic product (GDP).

Yet, in the same email, she maintained that the formulation of the press release "correctly identifies imports as a subtraction in the calculation of GDP without saying it 'contributes' to GDP in any way." BEA bureaucrats would have made good medieval casuists.

Given this misleading information, it is not overly surprising that the *Wall Street Journal* reporter, when I questioned him about his claim that imports are a "drag on GDP" and "negative" for economic growth, replied, "All we mean to say is what the Bureau of Economic Analysis said: 'imports, which are a subtraction in the calculation of GDP, increased.'" Financial journalists and editors should review their basic economics, perhaps by reading Iowa State University economist Leigh Tesfatsion's "U.S. National Income and Products Accounting: Basic Definitions and Concepts," found online.

As for BEA economists, they should know better because they are the producers of GDP statistics and the official guardians of its methodology. They should be held to a higher standard. But, as Public Choice theory—"politics without romance," in James Buchanan's words—has taught us, we must study politicians and bureaucrats not as they should be, but as they are. R

The U.S. Export-Import Bank, Boeing, and the Value of Friends in High Places

BY PETER J. MCCORT AND E. FRANK STEPHENSON

In a shocking upset, political novice Dave Brat, a little-known Randolph-Macon College economics professor, defeated then–House Majority Leader Eric Cantor in the 2014 Republican Primary for Virginia's 7th District congressional seat. The victory came despite Cantor's campaign outspending Brat's 40–1 and Brat trailing badly in pre-election polling.

So how did he pull off the stunner? Brat campaigned hard against Cantor's close ties to large corporations and his support for the Export-Import Bank, a government agency that finances foreign purchases from American firms. Ex-Im has been nicknamed the "Bank of Boeing" because of its extensive role in financing the aircraft maker's international sales. The bank provided about $50 billion of funding for Boeing sales between 2008 and 2012, and in 2013 two-thirds of Ex-Im's $12 billion of loan guarantees benefitted the company. Boeing clearly recognized the bank's importance to its business, because in 2013 it spent $15.3 million lobbying for the bank's reauthorization.

With Ex-Im requiring reauthorization by September 30, 2014, Cantor's June 10 loss cast substantial and unanticipated

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TABLE 1
ESTIMATION RESULTS

Dependent Variable: Percentage Change in Boeing's Share Price

Two Days Before Cantor Defeat (June 6)	0.492* (0.064)
Day Before Cantor Defeat (June 9)	–0.349* (0.055)
Day of Cantor Defeat (June 10)	–0.528* (0.055)
Day After Cantor Defeat (June 11)	–1.948* (0.063)
Day After McCarthy Comments (June 22)	–0.973* (0.055)
Day Before Rumored Deal (September 2)	–1.017* (0.055)
Day of Rumored Deal (September 3)	0.410* (0.055)
Percentage Change in S&P 500	1.105* (0.081)
Constant	0.039 (0.055)
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Notes: Standard errors in parentheses. * indicates significance at 1% level.

doubt on the bank's future. It seemed even less secure on June 22nd, when Cantor's successor as majority leader, Rep. Kevin McCarthy (R–Calif.), said in a television interview that he favored shutting down the bank because the private sector could underwrite exports. McCarthy's statement was especially noteworthy because he previously had been a supporter of the bank and in 2012 had voted for its renewal and an increase in its lending limit. Yet, despite those developments casting doubt on the bank's future, news broke on Sept. 3rd that the Republican-controlled House was moving toward a deal that would reauthorize the Export-Import Bank into 2015.

Given the bank's importance to Boeing, it might be expected that Boeing's market value would fall in response to Cantor's defeat and McCarthy's remarks, but then rebound on the news of reauthorization. To test this, we used an event study to examine the effects of Ex-Im news on Boeing's share price.

Analysis / As discussed earlier, the events of interest are Brat's unexpected defeat of Cantor on June 10th, McCarthy's comments on June 22nd, and the September 3rd deal among House Republicans to reauthorize the bank. To allow for the leakage of information on Cantor's looming loss, we used dummy variables for the two days immediately before the election, the day of the election (the market closed before the polls), and the day following the election. For McCarthy's comments, we used a dummy variable for the first day of trading after his TV appearance. And for the September 3rd announcement of a deal to renew the bank's charter, we used dummy variables for Sept. 2nd and 3rd, again to allow for information leakage. Our sample period was from May 21, 2013 through September 3, 2014, giving us 324 observations.

Estimation results are reported in Table 1. The negative coefficient on the dummy variable for the day after Cantor's defeat indicates that Boeing had an abnormal loss of nearly 2 percentage points following Brat's election. The dummy variables for election day and the day before the election also have negative coefficients, suggesting that Cantor's defeat may not have been entirely unexpected. The cumulative abnormal return—the sum of the three negative coefficients—is about 2.8 percentage points. Given Boeing's market capitalization of about $100 billion, the cumulative abnormal return of –3 percentage points suggests that Cantor's defeat cost Boeing's shareholders nearly $3 billion.

Turning to the effect of McCarthy's comments about the Export-Import Bank, the estimated coefficient is negative and statistically significant. Since his comments are associated with Boeing's share price falling by nearly 1 percentage point, market participants must have believed that the comments indicated a reduced likelihood that the Export-Import Bank would have its charter renewed.

Concerning the September 3rd news that Ex-Im's extension was in the works, the positive coefficient on the dummy for that day indicates that the news was associated with an increase in Boeing's share price. The estimated effect, about 0.4 percentage points, is considerably smaller than the negative returns associated with Cantor's defeat or McCarthy's remarks. Possible reasons for the small response include uncertainty about whether the news was accurate and the relatively short (less than one year) extension being contemplated. It is also possible that the small magnitude results from a diminished concern over July and August 2014 that the bank's charter would be allowed to elapse; if this is the case, then the rumored deal did not provide new information to the market about the likelihood of the bank's closing or being renewed. The large negative return for the dummy variable for September 2nd, the day before rumors began circulating of a deal to extend the bank, suggests that the rumored deal was not anticipated by market participants.

Finally, the estimated coefficient on the S&P 500 return variable indicates that Boeing shares also tend to move closely with the overall performance of the market. Including this variable in the analysis is important to control for other influences such as macroeconomic events affecting the overall stock market.

Conclusion / The findings indicate that Boeing's shares fell in response to the possibility that the Export-Import Bank would not be reauthorized following Cantor's defeat and McCarthy's comments. Conversely, the finding of a positive return associated with the rumored deal in September 2014 indicates that Boeing was expected to benefit from the bank's extension. Those results are consistent with Ex-Im's moniker as the "Bank of Boeing," though nothing in this analysis can differentiate between proponents' claim that the bank provides financing unavailable from private lenders and opponents' contention that the bank is unnecessary and a manifestation of "crony capitalism." The strong relationship between Boeing's share price and the expected status of the Export-Import Bank also explains why Boeing devoted millions of dollars to lobbying for the continuation of the bank's charter. R