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Memo to Bruce Bartlett: Just Do the Math

By David G. Tuerck

David G. Tuerck is chair of the Department of Economics and executive director of the Beacon Hill Institute at Suffolk University in Boston. Tuerck led a team of economists at the Beacon Hill Institute in a series of studies aimed at determining the economic effects of the FairTax national sales tax proposal.

In this article, he criticizes a recent *Tax Notes* article by Bruce Bartlett, entitled ''Why the FairTax Won't Work'' (*Tax Notes*, Dec. 24, 2007, p. 1241, *Doc 2007-26563*, *2007 TNT 248-33*). Tuerck identifies six mistakes made by Bartlett in attempting to identify the distributional consequences of the FairTax. These mistakes, according to Tuerck, arise over Bartlett's understanding of the price effects of the FairTax, his interpretation of the purpose of the FairTax rebate, and his assessment of the burden of the FairTax on government.

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In the November 13, 2006, issue of *Tax Notes*, my coauthors and I published an article (the BHI/Kotlikoff study) in which we hoped to resolve issues related to the FairTax proposal, under which the federal government would replace almost all existing taxes with a sales tax.[1] Our article was aimed largely at correcting and updating findings reached by William G. Gale in his earlier critique of the FairTax.[2]

We hoped that our article would elevate the discussion of the FairTax, which is gaining increased attention in national politics. We also hoped that, by presenting the underlying mathematics in painstaking detail, we could dispel the confusion that had long lingered over the calculation of the FairTax rate.

Now, in a recent article, Bruce Bartlett launches an attack on the FairTax in which he lapses into the same confusion that we (and Gale before us) had attempted to dispel.[3] Bartlett singles out our study for criticism, accusing us of duplicity in our efforts to work through the mathematics involved.[4] In the process, he brings his readers back to square one in getting things right.

Although some of Bartlett's arguments are substantive, much of his article is directed at how people (proponents, voters, politicians, analysts) perceive the FairTax. Perceptions are important, but they should be based on fact, rather than error. The problem is that Bartlett's article is strewn with errors — errors that he could have avoided simply by comprehending what we — and Gale — had already put before him.

Although Bartlett covers many issues and in the process makes many mistakes, I will limit my comments here to his attempt to work through what he calls the ''distributional consequences'' of the FairTax. This is no easy task insofar as Bartlett barely sketches the mathematics that underlies his reasoning on this issue or any issue. It means revisiting many issues already addressed in our article. It also means engaging in some mathematics and, in effect, correcting Bartlett's mathematics (or what his mathematics would show if shared with us). It is important, nevertheless, to undertake this task because, left unchallenged, Bartlett's article will only sow further confusion.[5]

Of Bartlett's mistakes, I will focus on six:

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[1]Paul Bachman, Jonathan Haughton, Laurence J. Kotlikoff, Alfonso Sanchez-Penalver, and David G. Tuerck, ''Taxing Sales Under the FairTax: What Rate Works?'' *Tax Notes,* Nov. 13, 2006, p. 663, *Doc 2006-21659*, *2006 TNT 219-51*. This and other Beacon Hill Institute studies may be found on the Web site of Americans for Fair Taxation (*see* http://www.fairtax.org) and on the Institute's home page, http://www.beaconhill.org.

(Footnote continued in next column.)

[2]William G. Gale, ''The National Sales Tax: What Would the Rate Have to Be?'' *Tax Notes,* May 16, 2005, p. 889.

[3]Bruce Bartlett, ''Why the FairTax Won't Work,'' *Tax Notes,* Dec. 24, 2007, p. 1241, *Doc 2007-26563, 2007 TNT 248-33*.

[4]*Id.* at 1249-1250.

[5]Also, Bartlett's views are getting increased attention from the media. *See*, *e.g.*, Jonathan Weisman, ''Criticism Aside, 'FairTax' Boosts Huckabee Campaign,'' *The Washington Post* (Dec. 28, 2007), p. A04, *available at* http://www.washingtonpost.com/wp-dyn/content/article/2007/12/27/AR2007122702155.html. *See also* Brian Mooney, ''In Spotlight, 'Fair Taxers' Push Cause,''

(Footnote continued on next page.)

- misstating the calculation of the effective tax rate under the FairTax;
- concluding that the removal of existing taxes in anticipation of the FairTax would reduce prices;
- observing that imposition of the FairTax would raise prices by the inclusive rate, rather than the exclusive rate;
- implying that the FairTax rebate is intended to compensate consumers for rising prices;
- alleging duplicity in how BHI/Kotlikoff handles the rebate in calculating the FairTax rate; and
- erroneously claiming that the FairTax would impose a burden on the federal government and on state and local government.

In proceeding, I will assume that the reader knows the fundamentals, about which more may be learned by reading the BHI/Kotlikoff study or consulting the Web site of Americans for Fair Taxation. The FairTax is intended to be revenue neutral and mildly progressive. It would maintain existing federal government programs in real terms while also providing a rebate to every household approximately equal to what that household would pay in taxes if it were at the poverty level. It would be imposed on both personal and government consumption expenditures. Its goals are to remove the bias of the existing tax system against saving, expand the economy, and simplify tax administration and compliance.

One matter that comes up repeatedly in connection with the FairTax is the distinction between an inclusive and an exclusive tax rate. The architects of the FairTax have calculated that the tax rate would be 23 percent on an inclusive basis (which, we find, is close to the correct rate) and 30 percent on an exclusive basis. It's important to understand the distinction between those concepts.

People usually think of sales taxes on a tax-exclusive basis. Consider an item for which the price, exclusive of the sales tax, is $1 and the price inclusive of the sales tax is $1.30, with $0.30 going to government as tax revenue. The tax-exclusive rate is 30 percent, computed as $0.30/$1. But this implies a tax-inclusive rate of 23 percent (= $0.30/$1.30). Generally, the relationship between the tax-exclusive and the tax-inclusive rate is given by this equation:

$$(1) \quad t_e = \frac{t_i}{1 - t_i}$$

where t_e is the tax-exclusive rate and t_i is the tax-inclusive rate.

This algebra is important because it reminds us that (ignoring other taxes such as excise taxes), the price of a good, inclusive of the tax, always exceeds the price, exclusive of the tax, by t_e (30 percent under the FairTax). Likewise, the price exclusive of the tax is always t_i (23 percent) less than the price, inclusive of the tax. Although this algebra is well understood by most students of the issue, Bartlett manages to get it wrong at several points in his article.

So let's consider what Bartlett has to say.

The Effective Tax Rate

One of Bartlett's arguments has to do with the "effective" tax rate that income earners would pay under the FairTax. It is in making this argument that he makes his first mistake.

Effective tax rates are calculated to show the "sacrifice" imposed by a tax, given that there is often a difference between the statutory tax rate and the tax rate that measures this sacrifice. Consider the following: Joe currently has a gross income of $50,000. He gets a deduction against his gross income of $10,000 so that his taxable income is $40,000. If the statutory income tax rate is 25 percent, his tax bill is $10,000, leaving him with $40,000 in after-tax income. But the effective rate is not the same as the statutory rate. We compute his effective tax rate by expressing his tax liability as a fraction of his gross income, which yields a rate of 20 percent.

Alternatively, we could set up the calculation as follows:

$$(2) \quad \text{Effective Rate} = \frac{\text{Gross Tax} - \text{Deduction From Gross Tax}}{\text{Gross Income}}$$

Computing his effective rate using this equation we get $\frac{\$12{,}500 - \$2{,}500}{\$50{,}000} = 20\%$, as before.

The numerator in Equation (2) is the difference between the amount that the taxpayer would pay on his earnings if there were no deduction and the amount that he can deduct from his tax liability, given that there is a deduction. We can think of the numerator as his net tax payment.

To look at the calculation in a different way, consider Joe's standard of living. Assume 50,000 widgets are produced. If Joe buys only widgets and if the price of a widget is $1, then, under the income tax, he gets to consume 80 percent, or 40,000 of these widgets, leaving 20 percent, or 10,000, for the government. The goal of computing the effective rate should be to determine how the tax, whatever it is, impinges on his standard of living. Here it impinges on his standard of living by allocating to government 20 percent of the widgets produced.

Suppose then that the income tax is abolished and that a sales tax is put in its place. Assume the statutory sales tax rate is 25 percent (expressed on an exclusive basis). Also assume that there is no rebate, that the taxpayer's gross income remains unchanged, and that the price of goods rises by 25 percent.[6] He spends $50,000 on consumption, of which 20 percent, or $10,000, is taxes. If we

The Boston Globe, Jan. 1, 2008, *available at* http://www.boston.com/business/taxes/articles/2008/01/01/in_spotlight_fair_taxers_push_cause/.

[6]Note that this is the "tax-exclusive" rate (0.25 = (0.20/1-0.20)). Below, we refer to the case in which prices rise by the tax-exclusive rate as one of full monetary "accommodation."

apply these facts to Equation (2), we get exactly the same result as before, that is, 20 percent.

In this instance, there is no ''Deduction From Gross Tax,'' but the formula gives the correct answer, insofar as Joe still has to sacrifice 20 percent of all the widgets produced.

A widget previously cost $1 but now costs $1.25. Joe's $50,000 buys him exactly 40,000 (= $50,000/1.25) widgets, leaving the remaining 10,000, or 20 percent of the total, for the government to consume.[7]

Now, to make the example more realistic, let the government offer a tax rebate. This will require a higher statutory rate. But suppose that the rebate is just high enough to make it possible for Joe to maintain exactly the same standard of living that he enjoyed under the income tax and previously under the FairTax without a rebate. Then, surely, we have to say that his effective rate would still be 20 percent.

To see that it would, assume that the government decides to set the tax-exclusive rate at 30 percent and to provide a rebate of $2,000. This implies a tax-inclusive rate of 23.08 percent, just as under the FairTax.[8] Joe now has $52,000 (the previous gross income plus the rebate) to spend and pays a ''gross tax'' of $12,000 (= 0.2308 × $52,000).

Joe can still buy 40,000 (= $52,000/1.30) widgets, and the government still gets 10,000 widgets.[9] Thus we expect the effective rate to remain unchanged. And, indeed, it does. Subtracting the rebate from his gross income, his net tax bill is $10,000, which, divided by gross income, yields an effective rate, again, of 20 percent. The effective rate remains the same even though the statutory rate is higher.

Americans for Fair Taxation, the object of much criticism from Bartlett, uses a similar method, he points out, to compute effective tax rates for hypothetical taxpayers.[10] But Bartlett would change this method. He would divide the gross tax by the sum of earnings and the rebate as follows:

$$(3)\quad \text{Effective Rate} = \frac{\text{Gross Tax}}{\text{Gross Income + Rebate}}$$

Under the FairTax plus rebate, Equation (3) would yield an effective rate of 23.08 percent (= $12,000/($50,000 + $2,000)), which, in this instance, is the same as the statutory rate. This, he argues, is closer to what taxpayers ''think of'' in terms of the effective rate.[11]

His reasoning is doubly confused. First, he suggests that proponents of the FairTax use Equation (2) rather than Equation (3) because Equation (2) yields a lower rate. But suppose we applied Equation (3) consistently to the income tax and the FairTax. Then it is the income tax that would yield the higher rate, at least for these examples. Using Equation (3), the rate under the income tax would be 23.81 percent (= $12,500/ ($50,000 + $2,500)), which is greater than the rate (20 percent) under the FairTax without the rebate and greater than the rate (23.08 percent) under the FairTax with the rebate.

Second, Bartlett's method makes it impossible to compare the burden imposed by the FairTax with the burden imposed by current law on an apples-to-apples basis. Bartlett apparently believes that people think of the effective rate in a way that makes this comparison impossible. But if they do, we should encourage them to think in terms of Equation (2) rather than Bartlett's specification. It seems counterproductive to provide numerical illustrations that could encourage readers to think only in the nonsensical way Bartlett suggests. By trying to reinvent the calculation of the effective rate, Bartlett steers the reader into a mistake of his own making — his first mistake.[12]

Three Additional Mistakes

Bartlett criticizes two prominent FairTax supporters, Neal Boortz and John Linder, for making a muddle of their argument concerning the effect of the FairTax on prices.[13] Bartlett criticizes Boortz and Linder as follows:

> One problem with analyzing the distributional consequences of the FairTax is that its supporters sometimes argue that after-tax incomes will rise by enough to pay the higher prices for goods and services once the 23 percent is added to the prices people pay today. At other times, they argue that prices will fall once income taxes currently embedded in prices are removed, implying a free lunch in which everyone is better off and no one is worse off. Actually, it's a double free lunch because not only do you get to keep all the taxes currently withheld and pay no more for goods and services now, but you get the rebate as well.[14]

While Bartlett is right about Boortz and Linder, he goes on to botch his own analysis of the effect of the FairTax on prices.

He writes:

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[7]Note that, in this example, as under the FairTax, the government pays the tax-inclusive price, $1.25, for widgets. The government gets $12,500 (= 50,000 × $0.25) in tax revenue, which it uses to buy its 10,000 (= $12,500/1.25) widgets.

[8]We show how we get this rate in the discussion that follows. The example implies that the government has determined the family consumption allowance, discussed below, to be $8,666 (= $2,000/0.2308), which is bigger than the comparable number under the FairTax but used here for illustrative purposes.

[9]The government collects $15,000 (= 50,000 × $0.30) in tax revenue ($12,000 from Joe's consumption and $3,000 from its own consumption) of which it uses $2,000 for the rebate, leaving it with $13,000 to buy widgets at $1.30 apiece.

[10]Bartlett, *supra* note 3, at 1243.

[11]*Id.* at 1244.

[12]In fact, Bartlett (*supra* note 3, at 1244) shows that he is triply confused when he suggests that the effective rate, as defined in Equation (3), assumes that taxpayers save the rebate, whereas the statutory rate assumes that they spend the rebate. In fact, neither calculation has anything to do with what people spend or save but with the size of the rebate relative to the other terms in his (incorrect) equation.

[13]Neal Boortz and John Linder, *The FairTax Book* (New York: HarperCollins/Regan Books, 2005).

[14]Bartlett, *supra* note 3, at 1245.

> If the FairTax imposes a 23 percent tax on goods and services, it looks as if it is largely a wash. Their prices will fall by 22 percent once all taxes are abolished and the FairTax will add about the same, so the final consumer cost will be no higher than it is now, at least on average. If this is true, however, it is hard to understand why there needs to be a tax rebate to compensate for the burden of the tax, since it appears as if there is no burden.[15]

Then, in speculating further on what might happen to prices, he considers the possibility that prices might rise, rather than fall:

> However, if prices rise by 23 percent to allow workers to avoid cutting their wages, they aren't really better off. They have more disposable income because of the abolition of withholding, but everything costs more because of the inflation necessitated by imposition of the FairTax.[16]

Bartlett makes three mistakes here. First, he buys into the very mistake that Boortz and Linder made by saying that prices would fall when current taxes are removed. In fact, the removal of current taxes would, in and of itself, leave prices unchanged. Second, he implies that, given constant wages, prices would rise by the inclusive rate t_i when in fact they would rise by the exclusive rate t_e. Third, he misconstrues the role of the rebate. In fact, the rebate has nothing to do with what happens to prices.

To see how Bartlett errs, we have to do some math. Assume that there are just two kinds of consumption, personal consumption C and government consumption G. Assume also that under current law, G is financed by revenue from a tax t_{inc} imposed on income and that all after-tax income is consumed. There are no transfer payments.

We then introduce two equations:

$$(4) \quad G = t_{inc} Y = t_{inc} (C + G) = \text{Total Revenue}$$

where t_{inc} is the rate at which income is taxed and Y is production in real dollars, and

$$(5) \quad MV = PY$$

where M is the money supply, P is an index of market prices, and V is the velocity of money.

For our purposes, it is convenient to rewrite (5) as

$$(6) \quad P = \frac{MV}{Y}$$

Consider a simple example. Let production consist only of widgets and let Y equal $1,000, M equal $1,000, and V equal 1. Thus P equals 1. In this world, the price paid by consumers (the market price) is just equal to the price received by producers (the producer price). We can set the market price and the producer price of a widget at $1.

The income tax t_{inc} is 20 percent, so that government raises $200 in revenue, which it uses to buy 200 widgets. Consumers (who are also workers) are left with $800 in after-tax income, which they use to buy the remaining 800 widgets.

Now let's address Bartlett's second mistake. Consider what would happen if the government simply removed existing taxes and, perforce, quit spending. The straightforward answer: With t_{inc} equal to zero, and assuming no change in M, V, or Y, consumer demand would rise to absorb all 1,000 widgets, still priced at $1 apiece.[17] There would be no change in prices.

To understand Bartlett's third mistake, suppose the government substituted the FairTax for the income tax. This would require it to compute a FairTax rate that, when applied to personal and government consumption, would yield just enough revenue to keep government purchases constant in real dollars. As above, designate this rate as t_i when expressed on tax-inclusive basis and as t_e, when expressed on a tax-exclusive basis. So what is t_i? Well, in this example, 20 percent. In real terms, government consumption G still equals 20 percent of total consumption $C + G$ and of total production Y. Of the total number of widgets produced, government still gets 20 percent and consumers the remaining 80 percent.

The FairTax rate has nothing to do with what happens to prices, and what happens to prices has nothing to do with the FairTax rate. To see why, consider the difference between the market price and the consumer price of a good. The market price is the price the consumer pays, inclusive of the FairTax. The producer price is the price received after he pays the FairTax. The relationship between the two prices is as follows:

$$(7) \quad PP = \frac{P}{1 + t_e}$$

where PP equals the producer price. Before the FairTax, $PP = P$, because t_e is zero. If, under the FairTax (and as it turns out in this example), t_i is 20 percent, then $t_e = \frac{t_i}{1 - t_i} = 25$ percent and P must exceed PP by 25 percent. But that is all. P may rise, fall, or remain the same after the FairTax is imposed, and whatever it does depends strictly on how the monetary authorities decide to adjust M, assuming that they decide to adjust it at all. Although the monetary authorities could bring about a fall in P by contracting M, there is no reason to believe they would do so just because the FairTax has been instituted.

As to what would happen, we can narrow down the possible outcomes. At one extreme, the monetary authorities could hold M and therefore P fixed, so that the

[15] *Id.* at 1246.
[16] *Id.* at 1247.
[17] Of course, M, V, and Y might well change. But it's appropriate to assume that all three variables are constant within the "static" framework assumed here.

market price of a widget remained fixed at $1 and the producer price fell to $0.80. At another extreme, the monetary authorities could increase *M* by 25 percent, the tax-exclusive rate, so that the producer price of a widget remained fixed at $1 while the consumer price rose to $1.25. In either event, the government would still get its 200 widgets and consumers their 800 widgets.

Now let's consider some additional algebra. First, assume that the monetary authorities chose to "accommodate" the FairTax by increasing the money supply by α, where $0 \leq \alpha \leq t_e$, once the FairTax is enacted. When $\alpha = 0$, we have the case of "nonaccommodation," and when $\alpha = t_e$, we have the case of "full accommodation."[18]

Now assume, as Bartlett does, that the monetary authorities act in such a way as to keep gross wages, which is to say producer prices, constant. To that end, they would have to set α equal to t_e. Why? Because, as Equation (7) shows, *P* would have to rise by t_e so that *PP* would remain constant. Thus, prices rise by t_e, not t_i. This corrects his third mistake.

Bartlett's fourth mistake is to confuse the purpose of the rebate with what happens to prices. So let's assume that the federal government has determined there to be some amount *B*, which represents the "base" for the rebate. *B* is the aggregate "family consumption allowance" roughly equal to the family's poverty level. Operationally, *B* is the aggregate of individual household incomes, set at whatever level government chooses to compensate households for their taxes.

For example, in the BHI/Kotlikoff study, we determined that the family consumption allowance for a household of four in which there are two married partners is $26,981. Under the FairTax, every household fitting this description would receive a rebate of $6,206, whatever its income. There is a different family consumption allowance for each type of household, depending on whether the household is headed by married partners or not and depending on household size. We got *B* by aggregating the family consumption allowance across all of the various household types. In what follows, we continue to ignore various other complexities, considered in detail in our study.

So now, we are ready to write down an equation that permits us to solve for t_i:

(8) $t_i(C + G)(1 + \alpha) = (G + t_iB)(1 + \alpha)$, which yields

$$(9) \quad t_i = \frac{G}{C + G - B}$$

As before, if there is no rebate and $B = 0$, then $t_i = \frac{\$200}{\$800 + \$200} = 20$ percent. If government sets the aggregate consumption allowance *B* equal to, say, $200, then the rate would be higher:

$$(10) \quad t_i = \frac{\$200}{\$800 + \$200 - \$200} = 25\%.$$

Why the rebate? The answer is that some households have less income than others. Suppose that there are 10 households sharing the 800 widgets. Rich households might get many (some would say a disproportionate share) of the widgets. Poor households might get few or none. But if every household got a rebate of $\frac{.25 \times \$200}{10} = \$5.00$ (in real dollars), it could have at least 5 widgets. Because there are only 800 widgets to go around and because every household now pays a tax of 25 percent, rather than 20 percent, richer households would end up with fewer widgets than they would have had without the rebate, but poorer households would end up with more.

Put differently, the rebate reduces the effective tax rate for low-income households and increases it for high-income households. The "distributional consequence" of the rebate is thus to redistribute income, specifically, to reduce the effective tax rate (correctly calculated) for the poor. It has nothing to do with compensating taxpayers for rising prices or falling incomes. Thus, we have Bartlett's fourth mistake.

Who's Being Dishonest?

The foregoing example leads to Bartlett's fifth mistake. Referring to the BHI/Kotlikoff study, Bartlett says:

> The cost of the tax rebate that would have to be paid is also cleverly dealt with in the new study so as to minimize its budgetary impact. . . . [T]he study does not show government spending rising by the amount of the rebate. . . . Rather the cost of the rebate is dealt with by reducing the tax base. . . . The only purpose of doing it that way is to maintain the fiction that the rebate is a reduction in taxes rather than an increase in federal spending. It would be more honest to do this accounting by adding the rebate cost to the spending side of the budget.[19]

Let's see who is being dishonest here. First, as equation (8) shows, we are, in fact, putting the rebate (t_iB) in the budget; we add it to *G* to reflect the new spending that the rebate necessitates.

[18]The monetary authorities would have to consider how the degree of accommodation, varying from none to full, would affect the overall economy and how it would affect the well-being of various groups such as retirees. As Bartlett points out, nonaccommodation might be impractical insofar as workers would resist a reduction in their gross wages even though their real wages would remain unchanged. At the same time, full accommodation would raise prices and thus penalize retirees who had been paying income taxes on their savings all along. In the end, whatever the degree of accommodation, there would be some transitional effects to consider and perhaps ameliorate. All that said, the degree of accommodation and any price change that results has nothing to do with rationale for the rebate, the calculation of the FairTax rate, or the burden of the FairTax on the purchasing power of consumers or government, figured in the aggregate.

[19]Bartlett, *supra* note 3, at 1250.

Perhaps Bartlett would rewrite equation (9) as $t_i = \frac{G + \text{Rebate}}{C + G}$. But that is the same as writing $t_i = \frac{G + t_i B}{C + G}$, which follows directly from Equation (8). Apparently, Bartlett doesn't understand that it is necessary to take the further step of writing down Equation (9), as BHI/Kotlikoff did (in far greater detail), to solve for t_i.

The BHI/Kotlikoff specification has nothing to do with anyone's zeal for the FairTax. Rather it has to do with the problem of calculating t_i when the rebate, which influences the size of t_i, also *depends on* the size of t_i. Our method, which is based on one used earlier by Gale, solves this problem. So Bartlett's fifth mistake is letting his own zeal for debunking the FairTax interfere with his attention to the algebra.

Mistake Number 6

Finally, we have this passage from Bartlett:

> The new study also maintains the fiction that the federal government would pay taxes to itself on its own purchases and that the tax on those purchases would not increase spending by the amount of the tax. . . . Thus they have effectively assumed away one of the major problems of the FairTax — that it will raise prices by the amount of the tax.[20]

Again, as Equation (8) shows, there is no presumption that prices will rise. That depends on the response of the monetary authorities. Or to put it algebraically, the expression (1+α) appears on both sides of the equation and therefore cancels out.

Furthermore, the assumption that the government pays taxes on its own purchases is not a fiction but a reflection of the status quo. To see why, consider what happens, under current law, when the government buys a widget. The government pays $1 to the producer, who then pays $0.20 in taxes, which the government collects and uses to buy widgets. In other words, for every dollar the government spends on widgets it gets $0.20 back in taxes. The total tax take is $200, equal to the sum of $160 (= 800 × $0.20) in taxes collected on production for personal consumption and $40 (= 200 × $0.20) collected on production for government consumption.

Now assume that the FairTax is put in place and that (to keep things simple) there is no rebate ($B = 0$). At one extreme, the market price of the widget would remain fixed at $1 and the producer price would fall to $0.80. The government would pay $1 per widget, of which $0.20 would be taxes, just as before. At the opposite extreme, the monetary authorities would permit the market price of widgets to rise to $1.25, in which case the government would pay $0.25 in taxes on each widget that it buys.

Nothing has changed in real terms. In either case, the taxes that government pays itself are worth exactly one-fifth the cost of a widget ($0.20/$1.00) or ($0.25/$1.25). Whether market prices rise or remain the same has nothing to do with the effect of the FairTax on the real value of government spending.

Bartlett also fails to understand that it would make no difference if government didn't tax itself. Suppose the architects of the FairTax had decided not to tax government, that is, not to include government spending in the FairTax base. In effect this would mean repricing government to remove the taxes already paid on production for government. Again, nothing real would change. Ignoring the rebate, we rewrite equation (8) as:

$$(11)\quad t_i C(1 + \alpha) = G(1 - t_i)(1 + \alpha)$$

which again gives us:

$$(12)\quad t_i = \frac{G}{C + G} = 20\%.$$ [21]

Thus, if government wanted to end the practice of paying itself taxes on current purchases, it could do so. Government would no longer have to pay the market price for goods because it could now buy widgets at the producer price, which would be 20 percent below market price. With nonaccommodation ($\alpha = 0$) market price would remain unchanged. But government would pay the producer price ($0.80) and would need 200 × $0.80 = $160 in tax revenue to continue buying 200 widgets. Individual consumers would buy their 800 widgets at $1 apiece, paying the needed $160 (= 800 × $0.20) in tax revenue. With full accommodation ($\alpha = t_e = .25$), market price would rise by 25 percent and consumers would buy their 800 widgets at $1.25 a piece, paying a total of $200 (= 800 × $0.25) in tax revenue. Government would use the $200 to buy 200 widgets, as before, paying $1 (the producer price) apiece.

This example shows (as Gale showed) that the FairTax rate has nothing to do with whether government pays taxes to itself or not and (as BHI/Kotlikoff and Gale showed) whether market prices rise or not.

Bartlett continues to botch his algebra in the following passage:

> It cannot possibly make any sense for the Department of Defense to pay 23 percent more for a weapons system because the FairTax has been added. The revenue just goes to Treasury, another branch of government. Spending and revenues are higher to exactly the same extent; it's a wash, which is why foreign countries don't do it.[22]

First, a tax-inclusive FairTax rate of 23 percent, combined with full monetary accommodation by the Fed, would raise the price of weapon systems by 30 percent, not 23 percent. Second, as shown above, it is an entirely arbitrary matter whether the Defense Department or any department of government ends up, in effect, paying taxes to itself. If, as Bartlett concedes, "it's a wash," what, precisely, is the objection?

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[20] *Id.* at 1249-1250.

[21] Equation (11) accounts for the fact that, in this specification, it is necessary to reduce the cost of government by t_i, given that the government doesn't charge itself a tax.

[22] Bartlett, *supra* note 3, at 1249.

Bartlett is not content to misrepresent the implications of the FairTax for federal government spending but manages to do so also for state and local government spending. Thus he says:

> The problem for state and local governments is worse. The FairTax simply raises their spending without simultaneously raising their revenue. Realistically, their only choice is to increase their taxes to pay the FairTax on their spending. . . . Thus, to the extent the FairTax forces state and local governments to raise their tax rates, it becomes a backdoor means of financing it at a deceptively low rate.[23]

This argument ignores the fact that state and local government, like the federal government, is already paying prices that include federal taxes that would in turn be replaced by the FairTax. Second, it ignores the fact that state and local government would be able to maintain current services at no greater burden to state and local taxpayers by some simple adjustments in their tax codes. I explain the need for those adjustments in the appendix and show how by making them, state and local government would maintain its purchasing power, along with that of individual consumers.

So it turns out that Bartlett's sixth mistake is really a combination of mistakes:

- falsely arguing that the FairTax would necessarily cause government spending to rise;
- falsely claiming that government does not currently tax itself;
- ignoring the fact that whether it taxes itself or not is irrelevant;
- failing, again, to understand the irrelevance of price changes for measuring real effects;
- confusing the price change under full accommodation (t_e) with the inclusive tax rate (t_i); and, most egregiously,
- falsely claiming that the FairTax represents a burden on government.

Conclusion

This article has identified six mistakes (and more) made by Bartlett in his critique of the FairTax and, collaterally, his attack on BHI/Kotlikoff. Bartlett accuses BHI/Kotlikoff of presenting deceptive mathematics to make the FairTax more palatable to politicians. That he takes this tack is ironic, considering his own inclination to put political ''reality'' ahead of principle.

Which, indeed, he does. Bartlett engages in the disingenuous game of arguing against an idea by claiming it to be politically infeasible. When he says that Congress would never implement the rebate as planned and that it would be subject to ''political manipulation,'' he is, in effect, saying that scholars should avoid confronting politicians with ideas that would limit their ability to make bad policy. In that fashion, Bartlett is like the doctor who won't tell her overweight patient that he might die of heart disease if he doesn't diet — this on the assumption that the patient wouldn't stick to a diet anyway.

And it's worse than that. Bartlett, in giving gratuitous advice on practical politics, gets the practical politics backwards. The FairTax does not attempt just to encourage saving and simplify tax administration and compliance. The FairTax would make it harder — not easier — for politicians to manipulate the tax code to the end of satisfying special pleaders. To extend the earlier metaphor, it would put elected officials on a diet, insofar as every additional dollar put toward government spending and toward the rebate would mean a higher tax rate visible at every retail transaction and a political liability to anyone who suggested it. The fact that the FairTax would restrain, not expand government, is the bitter pill that policymakers would have to swallow.

Bartlett tries to put down the FairTax as an invention of the Church of Scientology. But it was not Tom Cruise, but Thomas Hobbes, who wrote, some 350 years ago, that ''when the impositions are laid upon those things which men consume, every man payeth equally for what he useth.'' I submit that Hobbes's insight offers the better foundation for applying economic science to our understanding of the FairTax.

Appendix

Implementation of the FairTax would cause state and local government to lose purchasing power unless it made some adjustments in its tax law. At the same time, those adjustments would permit state and local government to maintain the real value of its purchasing power without reducing that of consumers or of the federal government itself.

Consider what happens when we add state government spending to the tax base. Let

$$(A1)\quad t_i(C + G + SG)(1 + \alpha) = (G + t_iB)(1 + \alpha)$$

where G is federal government spending and SG is state government spending.

Solving for t_i,

$$(A2)\quad t_i = \frac{G}{C + G + SG - B}$$

Assume that, under the current system, the income received by consumers is $1,250, that G = $200 (that is, the federal income tax rate is 16 percent), and that state governments impose a sales tax at 5 percent, measured on a tax-exclusive basis. This implies a tax-inclusive state sales tax rate of 4.76 percent. Further assume, as under current law, that neither the federal nor the state government pays the state sales tax on its purchases.

Then after-tax income is $1,050. Assuming that all of this income is consumed, the state collects $50 in sales tax revenue. Assume that there is a single good, widgets, and that the producer price is $1. Then the market price is $1.05. But, because they do not pay the state sales tax, both federal and state governments pay $1. This means that individuals would be able to consume 1,000 widgets, the federal government would be able to consume 200 widgets, and the state government would be able to consume 50 widgets.

[23] *Id.*

Now apply Equation (A2) to compute the FairTax inclusive rate, assuming that there is no rebate:

$$(A3) \quad t_i = \frac{\$200}{\$1{,}000 + \$200 + \$50} = 0.16$$

Because we assume that all income is spent, the FairTax inclusive rate is equal to the income tax rate.

Assume nonaccommodation.[24] The producer price decreases to $0.84 (= $1.00 - $0.16), and income falls from $1,250 to $1,050 (= $1,250 × 0.84). However, there are now no income taxes and the individual can consume the entire $1,050. Because the state sales tax is imposed on the producer price, state sales tax revenue falls unless the state adjusts its tax system.

Consider what happens if the state makes no change in its tax system. Because the sales tax falls on the producer price, the state collects only $0.042 (= 0.05 × $0.84) for every unit sold to the consumer. This also means that the price the consumer faces is no longer $1.05, but $1.042 per unit. Therefore, the consumer can purchase 1,007.68 (= $1,050/$1.042) widgets. However, the consumer's gain is the state's loss. The state collects $42.32 (= 1,007.68 × $0.042). Because the price paid by the state for a widget, $1, includes the FairTax, the state can buy 42.32 widgets, not 50 widgets, as previously. The consumer can buy 7.68 more widgets, and the state can buy 7.68 fewer widgets.

However, if the state adjusts its legislation to gain back the purchasing power lost to the consumer, both the state and the consumer would be able to buy the same number of widgets as under the current system. The simplest corrective is to apply the state sales tax on the FairTax-inclusive price, that is, $1. The state would once again collect $0.05 (= $1.00 × 5 percent) on each unit sold, and the price faced by the consumer would once again be $1.05. The consumer would consequently be able to purchase 1,000 widgets (= $1,050/$1.05), just as under current law. The state would collect $50 (= 1,000 × $0.05), which would allow it to purchase 50 widgets, as before.

Now suppose the state imposes an income tax instead of a sales tax. Suppose also that the taxpayer still earns $1,250 in income, that the federal government collects $200 in income tax revenue (imposing a rate of 16 percent), and that the state collects income tax revenue of $50 (at a rate of 4 percent). Since all income is spent, the consumer buys $1,000 worth of goods, the federal government buys $200 worth of goods, and the state government buys $50 worth of goods. In this case the market price faced by the consumer is the same as that faced by the state and federal governments, $1, so the individual consumes 1,000 widgets, the federal government 200, and the state government 50.

Now we impose the FairTax, and because total consumption and federal tax revenue is the same as in the previous example, the FairTax tax-inclusive rate is, again, 16 percent. Assuming nonaccommodation, the producer price falls to $0.84, and income to $1,050. Once more we consider two scenarios: one in which the state government does not adjust the income tax rate and one in which it does.

If the state government does not adjust its income tax rate, it will collect $42 in tax revenue (= $1,050 × 0.04). The consumer's disposable income will therefore be $1,008 (= $1,050 - $42). Market price remains constant at $1, since it includes the FairTax. Therefore, the consumer buys 1,008 widgets and the state buys 42 widgets. Once more, the state loses purchasing power matched by a gain in purchasing power enjoyed by the consumer.

The state has to increase its revenue collections by the FairTax tax-exclusive rate, 19.05 percent (= 0.16/ (1 - 0.16)). This is not a coincidence; it is because income has decreased by the FairTax (tax-inclusive) rate. So suppose then that the state increases the income rate to 4.76 percent (= 4 percent × (1 + 19.05 percent)). The individual would pay $50 as state income tax (= $1,050 × 4.76 percent), which would make his disposable income $1,000 (= $1,050 - $50). As before, the individual would buy 1,000 widgets and the state 50, thus keeping the purchasing power of both constant.

[24]As above, the level of monetary accommodation is irrelevant to our results. Assuming nonaccommodation makes the illustration simpler.