



DOES
“SENSIBLE”
SAVING
SINK THE
SHIP?



MAYBE KEYNES WAS RIGHT AFTER ALL

“Paradox” Redux

Does the seemingly sensible savings behavior of individual households explain the Great Recession?

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Editor

Like many once-attractive fashions, the “paradox of thrift” lost appeal over time. Popularized by John Maynard Keynes in the 1930s, it is the idea that saving more of one’s income (a prudent move for an individual when future earnings are uncertain) is harmful for the economy as a whole. Decreased individual consumption lowers overall demand for goods and services, leading to job loss and decreased economic growth. Ultimately, says the theory, individuals will suffer—along with the broader economy—due to behavior they thought wise.

Keynes used the paradox in his diagnosis of economic ills during the Great Depression.¹ To stimulate the economy, he argued, spending should be encouraged, to boost aggregate demand and hiring. Thrift is counterproductive when economic growth is tepid. The concept held sway for much of the 20th century, promoted in Paul Samuelson’s classic text *Economics*, among others.²

The idea lost luster in the 1970s, however, along with Keynesian economics generally. The emergence of rational expectations theory and the modern macro models built upon it pointed out that people have greater foresight than the paradox suggests and indicated that, at most, it was a short-term phenomenon. Markets would adjust as needed if people did indeed save more: Prices would drop, and overall demand and production wouldn’t decline for long.

Moreover, increased saving by individuals gives banks more money to lend, thereby lowering inter-

est rates and raising borrowing and investment. In addition, falling domestic prices can lead to greater levels of exports, boosting the domestic economy as trading partners increase their imports. The paradox, it appeared, was dead, a myth punctured by modern macro. Indeed, in later editions, Samuelson’s text no longer mentioned it. (See Theis 1996.)

But the recent financial crisis and its impact on personal consumption has led economists to again consider the paradox. The U.S. personal savings rate that had plummeted from 10 percent in the 1970s to 3 percent in 2006 rose quickly during the crisis and recession, to 5 percent by 2010. Gross investment relative to gross domestic product (GDP) dropped from a postwar average of 16.1 percent to 12.5 percent thereafter.³ It appeared that perhaps the paradox had been not a myth since the 1970s, but simply asleep.

In a December 2012 staff report, Minneapolis Fed economists Zhen Huo and José-Víctor Ríos-Rull revisit the paradox of thrift, give it a few twists and suggest that even when viewed through the lens of neoclassical economics, with flexible prices, the paradox may help explain economic patterns seen in the recent Great Recession.

Their paper, “Engineering a Paradox of Thrift Recession” (Minneapolis Fed Staff Report 478 online at minneapolisfed.org), explores an economic model solidly within the neoclassical framework that generates recessions through mechanisms linked to the savings motives and behavior of individual households. It is, thus, a neoclassical model

that embraces the paradox rather than rejecting it.

As Huo and Ríos observe, other economists have developed recent models of recessions triggered by insufficient demand. “Most of those papers have price and wage rigidity at their core,” said Ríos. “Our model focuses instead on mechanisms more consistent with standard theory, although nominal rigidities also exacerbate the recessions we engineer.”

Two keys, and an extra ingredient

Two features are central to the economists’ model, providing what they say is a “very mild departure” from standard neoclassical theory. First, reallocating resources from production of “nontradables” (used only for local consumption) to “tradables” (goods that can be exported and imported) requires costly adjustment; in other words, shifting capital and labor between the two sectors isn’t cheap and easy.⁴

Second, although wages are flexible (a hallmark of neoclassical economics), labor markets are somewhat rigid: A friction exists in that firms must spend time searching for appropriate workers, and vice versa. Therefore, while wages are somewhat flexible, this search friction prevents workers from working harder or longer hours whenever they might prefer to do so.

To this more-or-less standard model, the economists introduce a third, novel feature: Households expend time, money and energy searching for the goods and services they desire and, consequently, less economywide consumption results in lower productivity. (More on this below.)

But first: the economists’ model and their technique. They begin with a standard, off-the-shelf neoclassical growth model. Households provide labor, consume goods and services, and save for the future. Firms hire labor and purchase inputs, invest in capital, and produce goods and services. There is also a government sector, which taxes and spends. Furthermore, the economy is “open,” meaning that it imports and exports. Prices and wages are flexible.

Within this basic structure, the model determines the values of economic variables (for example, wage rates, prices, interest rates, employment, output) and allows for analysis of implications of changes in the environment, one of which is, critically, the discount factor: the level of patience households have for saving for the future rather than spending

on consumption here and now.

In particular, the authors “explore the properties of recessions induced by an attempt to save more”—that is, by an increase in household thrift.

The baseline model includes the three features mentioned earlier:

- (1) **Moderate adjustment costs** to reallocating resources from production of nontradables to tradables.
- (2) **Search friction in labor markets**, which prevents workers from substantially increasing their work effort whenever they may want to do so.
- (3) **Search friction in goods markets**, in which households must spend effort finding the goods they want. This means that the economy’s full production potential can’t be utilized.

Engineering recession

With this baseline model as their laboratory, Huo and Ríos run a variety of experiments, engineering a (theoretical) recession in order to explore how large an increase in household thrift is required to generate specified drops in output (1 percent) and employment (0.5 percent). The goal is not only to determine how large a thrift shock is needed, but also to see the other effects of the recession.

In the first and simplest test, with the bare-bones baseline model, they find that generating these output and employment drops takes a 1.12 percent rise. And beyond the (economist-imposed) drops in output and employment, the increase in thrift results in reduced productivity, dramatic wage declines for nearly a year, a large drop in investment and much higher exports. “To summarize,” write Huo and Ríos, “in the baseline economy an increase in savings generates a long-lasting recession with loss of both employment and productivity. The recession is accompanied by an increase in net exports.” Many of these effects are transitional, however, with their greatest impact felt over the first year or two. After eight or so years, many variables have returned to their initial prerecession values.

They then explore several optional scenarios by

altering the three key features: adjustment costs, labor market rigidities and goods market frictions. They start by raising adjustment costs to make it harder to expand output of tradables through reallocation of the economy's labor and capital. To generate a 1 percent decline in output in an economy with higher adjustment costs, they find, doesn't need as big a boost in household thrift (just 1 percent instead of 1.12 percent) as needed if adjustment costs are more moderate.

They next look at different wage-setting protocols, such as labor contracts that last for one year, and find that a far lower increase in thrift (just 0.55 percent) is necessary for similar recessionary impact.

Moreover, they find that both factors—adjustment costs *and* labor market frictions—are essential for a neoclassical model to exhibit the paradox of thrift. If adjustment costs are very low, a much greater increase in thrift (1.44 percent) is required to generate a similar reduction in output, but this would happen with an increase in employment.

Why? The chain of events is intricate:

- Low adjustment costs permit fast resource reallocation from the nontradable to the tradable sector, and greater output of tradable goods.
- To get the reduction in overall output that characterizes a (thrift-induced) recession, a very large reduction in consumption of nontradables is required.
- That reduction can be achieved by a greater increase in thrift, which makes people willing to work at a much lower wage.
- That, in turn, increases employment in the tradable sector.

Thus, to engineer a recession when adjustment costs are low, a greater increase in thrift is needed, and employment in the tradable sector will also increase. As for labor frictions, if they're entirely absent, household thrift must actually *decrease* (by 0.50 percent) to create a recession. "The recession is generated by a desire to enjoy utility today," explain the economists, "with households wanting to consume more and work less."

Thus, the Huo-Ríos experiments find, both adjustment costs *and* labor frictions are necessary

features for a neoclassical growth model to generate recessions when households save more.

A special ingredient

In their paper, Huo and Ríos draw particular attention to a third, rarely investigated feature: search frictions in the goods market (by contrast, labor market frictions are widely acknowledged and studied). Here they draw from earlier research by Bai, Ríos-Rull and Storesletten (2011), which suggests that increased household expenditure can increase economic productivity and, conversely, increased thrift will result in lower productivity.

Why would less spending diminish measured productivity? The innovative notion is that, particularly in the service sector, employees have too little to do when stores, restaurants and the like aren't filled with customers. Cashiers are too often idle, grocery clerks seldom restock shelves and waiters just wait around. So if consumers don't spend, workers don't produce.

And spending demands not only money (which households are especially reluctant to part with in the thrift scenario), but *effort*. To find the particular product they want, shoppers must sacrifice time and energy they might prefer to spend on other activities. This search effort is indispensable to the creation of economic output—value doesn't exist until the transaction occurs—but the effort is gauged only by the shopper, and this is not noted by government statisticians.

"Firms stand ready to produce, with capital and labor," write Ríos and Sebastian Dyrda in a related paper, "but output occurs only when consumers find the firms and generate demand for that output. The search efforts of consumers are not measured in GDP, and the higher output is imputed to higher productivity" (Dyrda and Ríos-Rull 2012, p. 9). Eventually, less demand might result in layoffs and lower wages, but in the interim, productivity falls.

To determine the quantitative impact of this factor, the economists alter their baseline model by removing the goods market friction. The result is startling. Without this friction, generating a 1 percent output drop requires a nearly 2.6 percent increase in household thrift, or about 2.5 times larger than in the baseline. The recession thus caused reduces employment by 1.25 percent and productivity by

0.20 percent. Consumption drops by 9 percent, over twice the decline in the baseline model.

markets—ensure that when households spend less, the broader economy, and ultimately households themselves, may well suffer. **R**

Extensions and conclusions

The economists' paper extends their theory further, replacing a hypothetical, perhaps far-fetched increase in willingness to postpone consumption with an all-too-plausible financial system shock as the trigger for more thrift. Results are broadly similar. Employment drops by about 0.8 percent, productivity by 0.5 percent and consumption by 3 percent.

They also explore the model's behavior when there is a significant destruction of wealth in the national economy, modeled as a foreign net asset position that changes from zero to largely negative. In this variant, the broad economic changes aren't transitory, as in the initial experiments, but permanent. Wealth destruction requires resource reallocation to tradable goods and causes permanent expansion of net exports and permanent decline in wages.

While this type of recession can happen anywhere in the world, Huo and Ríos point out that it most closely resembles the situation in much of southern Europe (Greece, Italy and Portugal) as well as Ireland. "With the apparent exception of Spain, also in southern Europe, productivity dropped dramatically during the Great Recession in these small and somewhat rigid economies, even though existing technology didn't change," Ríos said. "Our model accounts for this productivity decline through a reduction in consumption."

Moreover, Ríos observed, "These countries each suddenly discovered they were poorer than they thought they were—more so than elsewhere in Europe or the United States—given the desperate nature of their public finances and/or their real estate markets." This, of course, resembles destruction of national wealth from a change in foreign net asset position.

The Huo-Ríos model thus provides a clear and all-too-relevant mechanism by which household frugality results in recession: the paradox of thrift. While its neoclassical bones incorporate flexible wages and prices, functioning credit markets and open borders, other rigidities—resource reallocation costs and frictions in both labor and goods

Endnotes

¹ “Since the expectation of consumption is the only *raison d’être of employment*, there should be nothing paradoxical in the conclusion that a diminished propensity to consume has *cet. par.* a depressing effect on employment” (Keynes 1936, chap. 16).

² “It is a paradox because in kindergarten we are all taught that thrift is always a good thing” (Samuelson 1958, p. 237). Also see: “By attempting to increase its rate of saving, society may create conditions under which the amount it can actually save is reduced. This phenomenon is called the paradox of thrift” (McConnell 1960, p. 261).

³ See Federal Reserve Economic Data at <http://research.stlouisfed.org/fred2/> and the Bureau of Economic Analysis. The ratio of gross investment to GDP averaged 16.1 percent from 1947 to 2007 and 12.5 percent from 2008 to 2011.

⁴ Huo and Ríos note that researchers usually consider agriculture, mining and manufacturing industries as the “tradable goods” sector. Their empirical analysis modifies this to include housing and business construction, to account for the search friction feature of their model.

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