

## Robert E. Hall

In a discipline that celebrates specialization, Robert Hall is a Renaissance man. And economics is far the richer for it.

The Stanford economist's extensive publications over four decades—books, blogs, articles and lectures—provide ready evidence of wide-ranging expertise. (The interview below hardly scratches the surface.) As a labor economist, Hall has produced some of the field's most influential models of labor market dynamics and essential articles on labor supply, demand and wages. A scholar of fiscal policy, he built the intellectual foundation for the 1986 tax reform bill as well as recent consumption tax proposals.

His work in financial theory, consumer and corporate incentives, and government policy illuminates regulatory issues currently under debate in Washington. Innovative analysis of stock market valuation by Hall demonstrated the importance of intangible capital. His studies of entrepreneurial incentives (with his wife, economist Susan Woodward) and antitrust theory are pathbreaking.

Hall's research on trading through electronic markets—"digital dealing" is his term—provided one of the first lucid explanations of the economics of then-new Internet phenomena such as eBay. Hall's analytical gifts also have generated important insights on monetary theory and optimal monetary systems. He has done invaluable work as well in growth theory, determinants of productivity, spending on health and economic geography.

His erudition has range, depth and quality that few economists can match. And the profession has recognized this with honors including the Richard T. Ely lecture in 2001, presidency of the American Economic Association in 2010, and fellowship in the American Academy of Arts and Sciences, Econometric Society and National Academy of Sciences.

Hall's *public* profile, however, is largely confined to the sphere of business cycles, in which he also has unquestioned expertise. That narrow "fame" is due to his chairmanship, for over 30 years, of the committee that determines when U.S. recessions officially begin and end. It is a painstaking and largely thankless task. Pundits and policymakers clamor for the committee's announcements, but inevitably second-guess the decisions made. Committed to the integrity of process and result, Hall has never bent to pressure, manifesting time consistency that monetary policymakers can only envy.



## THOUGHTS ON U.S. MONETARY POLICY

**Region:** Perhaps we could start with monetary policy. What is your broad view of the Fed's efforts over the past few years to stem the crisis using unconventional monetary policy and strategies?

**Hall:** First of all, I believe you should think of the Fed as simply part of the federal government when it comes to the financial side of its interventions. If you look at how the federal government responded initially, it was the Treasury that was providing the funds. Of course, TARP [Troubled Asset Relief Program] was there using the taxpayers' money without involvement of the Fed. Also, early in the crisis Treasury deposited hundreds of billions of dollars at the Fed, which the Fed then used to buy assets. So there the Fed was just an agent of the Treasury. It was as if the Treasury took its funds to a broker.

Eventually, the Treasury was impeded from doing that by the federal debt limit. But the debt limit doesn't apply to funds borrowed by the Fed, so it then started borrowing large amounts from banks by issuing reserves. That is what caused all the confusion about thinking this was somehow part of conventional monetary policy.

I would distinguish between conventional monetary policy which sets the interest rate and this kind of financial intervention of buying what appear to be undervalued private securities. Issuing what appear to be overvalued public securities and trading them for undervalued private securities, at least under some conditions and some models, is the right thing to do. In my mind, it doesn't make a big difference whether it's done by the Federal Reserve, the Treasury or some other federal agency.

**Region:** And what are your thoughts on the best course for a Fed exit strategy?

**Hall:** That again gets at this confusion. Traditionally, reserves at the Fed pay



There are two branches to the exit strategy: There's paying interest on reserves, and there's reducing reserves back to more normal levels. They're both completely safe, so it's a nonissue. The Fed itself is just not a danger. It is run by people who know exactly what to do.

zero interest in the United States, so in normal times with positive market interest rates, banks try to unload reserves; when they do so, they expand the economy. That does not happen when interest rates in the market are zero because there's no incentive for banks to unload reserves. They can't gain by getting something off their balance sheet if what they buy doesn't yield any more. And during the crisis, there was no differential, nothing to be gained by unloading reserves.

As the differential reestablishes, which the markets think is going to happen in the next year or so, then that issue comes up. It would be highly expansionary and ultimately inflationary if market interest rates began to rise above zero and the Fed didn't do something to either reduce the volume of reserves or increase the demand for reserves.

So the Fed has two tools, and Chairman Bernanke has been very clear on this point. He's given a couple of

excellent speeches that have described this fully, so it shouldn't be an issue, and I think more or less it's not anymore. The Fed can either leave the reserves out there but make them attractive to banks by paying interest on them, or it can withdraw them by selling the corresponding assets they're invested in. Selling assets will be timely because those investments will have recovered to their proper values; the Fed can sell them and use the funds to retire the reserves.

So, again, there are two branches to the exit strategy: There's paying interest on reserves, and there's reducing reserves back to more normal levels. They're both completely safe, so it's a nonissue. The Fed itself is just not a danger. It is run by people who know exactly what to do. And we have 100 percent confidence they will do it. It's not something I worry about.

## FINANCIAL FRICTIONS

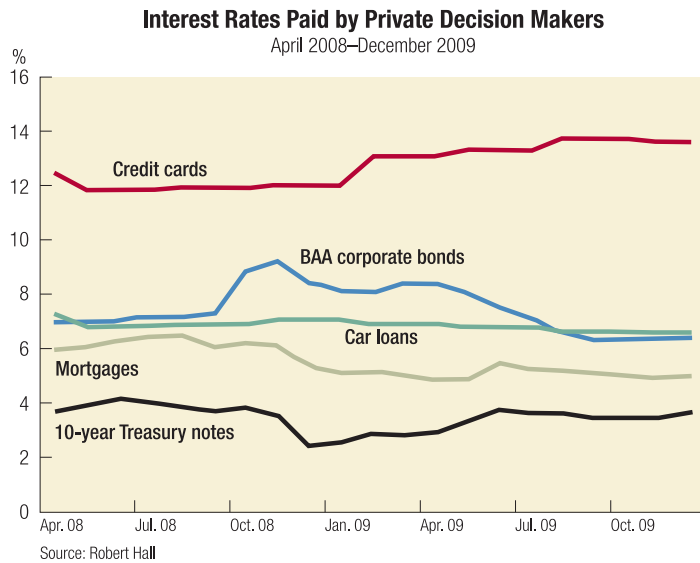
**Region:** That's reassuring, but I believe you *do* worry about financial frictions...

**Hall:** I do, I do very much.

**Region:** Your recent paper on gaps, or "wedges," between the cost of and returns to borrowing and lending in business credit markets and homeowner loan markets argues that such frictions are a major force in business cycles.

Would you elaborate on what you mean by that and tell us what the policy implications might be?

**Hall:** There's a picture that would help tell the story. It's completely compelling. This graph shows what's happened during the crisis to the interest rates faced by private decision makers: households and businesses. There's been no systematic decline in those interest rates, especially those that control home building, purchases of cars and other consumer durables, and business investment. So although government interest rates for claims like Treasury notes fell quite a bit during the crisis, the same is not true for private interest rates.



Between those rates is some kind of friction, and what this means is that even though the Fed has driven the interest rate that it controls to zero, it hasn't had that much effect on reducing borrowing costs to individuals and businesses. The result is it hasn't transmitted the stimulus to where stimulus is needed, namely, private spending.

The government sector—federal, state and local—has been completely unable to crank up its own purchases of goods; the federal government has stimulated [spending] slightly but not enough to offset the decline that's occurred at state and local governments.

**Region:** Yes, I'd like to ask you about that later.

**Hall:** So to get spending stimulated you need to provide incentive for private decision makers to reverse the adverse effects that the crisis has had by delivering lower interest rates. So far, that's just not happened. The only interest rate that has declined by a meaningful amount is the conventional mortgage rate. But if you look at BAA bonds or auto loans or just across the board—there are half a dozen rates in this picture—they just haven't declined. So there hasn't been a stimulus to spending.

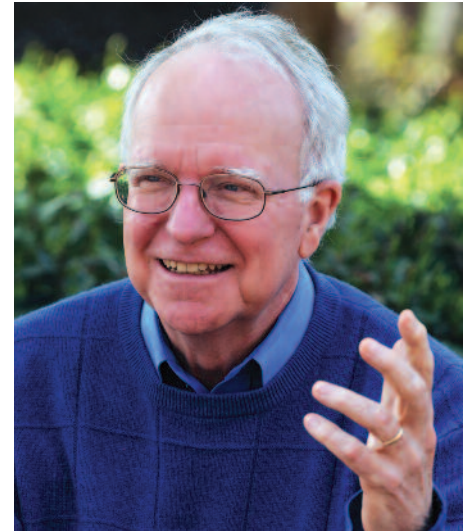
The mechanism we describe in our textbooks about how expansionary policy can take over by lowering interest rates and cure the recession is just not operating, and that seems to be very central to the reason that the crisis has resulted in an extended period of slack.

**Region:** So to incorporate that in a model seems quite important.

**Hall:** Yes, and many, many macroeconomists have turned their attention to that. I've been following the literature and been a discussant at many conferences of other people's work on this. In fact, the Fed is giving a conference at the end of next week, and I'll be presenting my paper on frictions.

**Region:** Your model is able, I think, to explain a fair amount of the current business cycle by incorporating those frictions.

**Hall:** I mainly look at, as kind of a thought experiment, how much of a decline in activity occurs when that kind of a friction develops. When private borrowing rates rise and public borrowing rates fall, the difference between them is the amount of friction. I show that that's a potent source of trouble. I haven't tried to align it with



Even though the Fed has driven the interest rate that it controls to zero, it hasn't had that much effect on reducing borrowing costs to individuals and businesses. ... When private borrowing rates rise and public borrowing rates fall, the difference between them is the amount of friction. ... That's a potent source of trouble.

Most of the undervalued assets that the Fed has bought have been mortgage related. ... There would be a case for expanding that type of policy to other seemingly undervalued instruments.

history prior to the current crisis. That's an interesting question, but data on historical events aren't always so easy, so that lies ahead.

**Region:** And the policy implications? What can and should be done to reduce frictions?

**Hall:** Good question! Well, it does point in the direction of focusing on things like lower rates for corporate bonds, BAA corporate bonds. They appear to be undervalued private assets, although that's not been one of the types of assets that policy has seen as appropriate to buy or to help private organizations to buy. That would be one way to turn.

We've concentrated on doing that in mortgage-related assets. You can see in the picture that it's had some effect. Most of the undervalued assets that the Fed has bought have been mortgage related. It's been kind of an obsession with trying to solve these problems as they arise in home building, but home building is only part of the story. The collapse in other types of investment spending has been equally large. There would be a case for expanding that type of policy to other seemingly undervalued instruments.

That would presumably result in the same pattern you've seen in mortgages. That policy has been successful—differentially successful in depressing mortgage rates as opposed to bond rates or other areas.

## EQUITY DEPLETION

**Region:** Let me ask you about a paper you wrote in December 2008, on equity depletion, defined as the “withdrawal of equity from firms with guaranteed debt.” We're all well aware of government bailouts, and implicit or explicit guarantees of financial institutions...

**Hall:** That paper was actually reprinted in a book that just came out, *Forward-Looking Decision Making* [Princeton University Press, 2010]. It's the last chapter in this book, which is a compilation of the Gorman lectures I gave at University College London in October 2008.

**Region:** You had a wonderfully provocative statement in it. You declare that equity depletion “appears to be an unlimited opportunity to steal from the government.”

Could you tell us what you mean by that? Why does equity depletion occur, and how does it constitute an opportunity to steal?

**Hall:** George Akerlof and Paul Romer wrote a paper published in 1993 in the *Brookings Papers* that described what they called “looting.” The particular

form that looting took was through the ownership of a savings and loan; this was a feature of the savings-and-loan crisis of the late 1980s.

As a “looter,” you would use the savings and loan to attract deposits, pay the deposits as cash to yourself and then declare bankruptcy. Akerlof and Romer described a number of clever ways of doing that to escape the attention of lax regulators, and that's the type of thing you see in many settings.

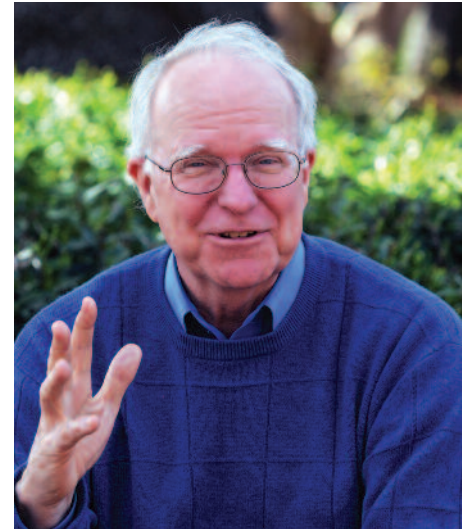
One of the big problems encountered recently is that institutions that have become very undercapitalized were still depleting their equity by paying dividends. The government has had to push very, very hard to get these financial institutions to stop paying dividends. Dividends are exactly equity depletion. With a government guarantee, it's exactly what there's incentive to do—as described in that paper.

On the other hand, it seems we've been much more successful currently than we were in what Akerlof and Romer described as far as preventing the most extreme forms of this conduct.

It's a danger whenever you have guaranteed financial institutions that have gotten into a very low capital situation. They've suffered asset value declines, they've become extremely leveraged and they have this very asymmetric payoff to the owner: If they go under, it's the government's problem; if they recover, it's the owner's benefit. That asymmetry, which is the so-called moral hazard problem, is just a huge issue.

And yet, while we have a lot of institutions in that setting today, we don't see many of them doing things that Akerlof and Romer described, such as paying themselves very large dividends. It's been difficult to get them to cut the dividends, but they have not paid out very large dividends or concealed dividends.

So it looks like we've been somewhat successful in preventing the worst kind of stealing, but the asymmetry is still potentially a big issue. There are way too many bank failures that should not have occurred and especially should not have cost the taxpayers as much as they did.



It's a danger whenever you have guaranteed financial institutions that have gotten into a very low capital situation. They've suffered asset value declines, they've become extremely leveraged and they have this very asymmetric payoff to the owner: If they go under, it's the government's problem; if they recover, it's the owner's benefit. That asymmetry, which is the so-called moral hazard problem, is just a huge issue.

**Region:** Your thoughts about what measures can be taken to curb this moral hazard?

**Hall:** The most important thing is to be sure that financial institutions that are guaranteed by the government have large amounts of capital so that the danger of them spending the taxpayers' money rather than their own money is very small. That's a principle that's been deeply embedded in our regulations for a long time.

But I pointed out in this chapter the principle of so-called prompt corrective action, which says if capital goes below this mandated level, which is typically around 8 percent, then something has to be done right away before all the remaining capital gets depleted.

We just have not been successful at doing that. We have principles of regula-

tion that allow the regulators to say that a bank is well capitalized even though the markets know that it's not. Banks have been declared to be well capitalized even when the market value of their debt and the market value of their equity have declined to very low levels.

Regulators seem to ignore something that everyone in the market seems to know, which is that they're shaky. There seems to be a lack of willingness to pay attention to all the signals that a regulator should pay attention to. All they do is look at certain accounting records, which don't reflect what people know.

It's not easy though. There's been a large amount of discussion of this topic among very knowledgeable financial economists. My colleague Darrell Duffie here at Stanford has been a particular leader. There's a group called the Squam Lake Working Group, of which he's a member, that has been advocating ideas like, as a backstop, having long-term debt be convertible to equity. That is what happens in a bankruptcy, but under this strategy it would happen without a bankruptcy. It would happen automatically with certain contingencies and would solve the problem in a very nice way. It would potentially increase the borrowing cost, but it would properly get the incentives right.

A lot of people look to the example of Citibank. Citibank's long-term debt has been selling at a considerable discount, which is a sign that the market knows that there's an issue. So instead of doing what we have done, which is give guarantees of short-term debt with government investments, the alternative that the Squam Lake people are thinking of, and I've been thinking of too, is to somehow convert Citibank's long-term debt into equity, which is the same thing that the market is in effect doing. That would eliminate the danger then that the bank couldn't meet its obligations, in a way that is less burdensome to the taxpayer.

In retrospect, what we did was to save the economy from a tremendous train wreck. But we didn't do it in a way that was as cheap for the taxpayer as it could have been. And, of course, there have

been many examples discussed of this.

This is all in retrospect. And I certainly don't criticize the people who were doing it at the time, especially Chairman Bernanke. But looking forward now to the next time this happens, convertible debt would be a huge step forward. If people at the Treasury could have just pushed a button to convert the debt, without needing a new law, they would have done it in a second. There's no doubt about that. They just didn't have that power.

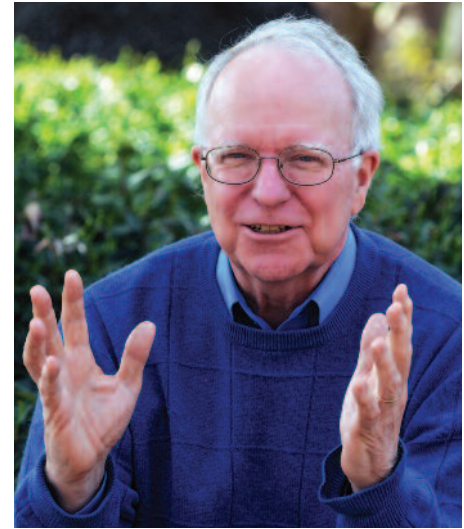
So we need to give regulators that power through some sort of sensible security design. Regulators could do that, and financial institutions wouldn't see it as terribly burdensome because the market would know that the probability of this kind of thing happening again is pretty low. And when it does happen again, which will be sometime in the next century, that button would be there to press, and we wouldn't have the chaos that we had in September of 2008.

## GOVERNMENT SPENDING AND GDP

**Region:** You mentioned earlier the difficulty of stimulating the economy, and I'd like to discuss your work on government multipliers. The federal government's stimulus package has been a topic of heated debate among economists, in terms of how much stimulus it's truly provided and whether more is needed. In a recent paper, you analyze basically what happens to GDP when government purchases goods and services.

Would you give us your rough estimate of the size of the multiplier in the current era of very low interest rates, and share your sense of the impact of the current stimulus package?

**Hall:** The first thing to say, just looking at the big picture, is that when the idea of a stimulus through federal purchases program came up in the current crisis, the thinking was, "That's feasible. We can increase purchases." And then the question was how much would it raise



It takes so long to get [federal government] spending up that typically the spending rises only after the recovery has occurred, and it comes at completely the wrong time. ... But the other fact is that there's been a small increase in *federal* government purchases, but it's been more than offset by declines in *state* and *local* government purchases.

GDP. There was a vigorous debate, around here anyhow, on this multiplier question.

The discussion has shifted now because the premise was that we would be able to raise government purchases. But, in fact, government purchases have *not* increased.

In part that's because it's very difficult and time-consuming to actually get the government to buy more stuff. This has been a critique of fiscal policy as long as I've been an economist, this notion that it takes so long to get spending up that typically the spending rises only after the recovery has occurred, and it comes at completely the wrong time.

**Region:** We searched in vain for "shovel-ready projects."

**Hall:** Yes, "shovel-ready" turned out not to be. But the other fact is that there's been a small increase in *federal* government purchases, but it's been more than

offset by declines in *state* and *local* government purchases.

The stimulus bill recognized that that was a danger. We have had these tremendously pinched state and local governments. A lot of them have just had no choice when their tax revenue declined but to reduce spending.

In spite of recognizing that potential when the stimulus program was designed, still the net effect of the crisis and the policy response was for government purchases to decline, not to rise. But by very small amounts. Basically, nothing happened to government purchases. And that was in an environment in which everybody—and certainly Congress was enthusiastic about it—was willing to go for a program with higher purchases. But no matter how hard they tried to turn the knob, it just wouldn't go very far.

**Region:** So ARRA [American Recovery and Reinvestment Act of 2009] was for naught?

**Hall:** First of all, you have to take it apart, as I do in that paper, and ask how much of it went directly into government purchases, which is fairly small, or would stimulate state and local purchases, which was also fairly small.

A lot of it was providing income supplements, and there you get into the question of whether the people receiving the supplements increased their spending or not. That's a whole other issue; I'm not commenting on that issue. That's a very difficult question to answer.

To go on to the other part of your question, had there been an increase in government purchases that was successfully achieved, how much would that have increased GDP? The answer I got was around a factor of 1.7, which is at the high end of the range of what most economists were talking about.

I only reached that by thinking very carefully and reading a lot of recent commentary on this question of the implications of having a zero fed funds rate. That turns out to be very impor-

tant. Others have found that to be true.

So I think that the people who looked at the evidence of what the multiplier is in normal times and said it's maybe 0.8 or 1.0 (which I would agree with) kind of missed the point. There was a lot of, I think, inappropriate criticism.

Valerie Ramey, in contrast, has focused not on the immediate policy question but raised the scientific question about the long-run multiplier. Her numbers are ones that I respect and agree with. They're more in the 0.9 range.

But on the issue of multipliers during periods of zero interest rates, because we didn't have any changes in government purchases during this one time when we've reached the zero interest point, we don't have any good empirical evidence. What we need is a time when interest rates are zero and there's a big increase in government purchases. That just hasn't happened.

So we have no way to know through pure practice; we have to use models. The models are very clear that it makes a big difference when we're at the zero interest rate limit. The normal configuration is that you get this fiscal expansion—the government buys more, but that triggers sort of an automatic response from monetary policy to lean against it. If you shut that down by having interest rates stay at zero, you'll get a bigger effect. That's what this literature says and it's quite a big difference.

## TAX POLICY

**Region:** Of course, this raises the issue of taxes, of needing to pay for deficit spending. And I notice the *Time* magazine cover above your desk about the flat tax.

**Hall:** From long ago!

**Region:** Yes, exactly. Your work with Alvin Rabushka on the flat tax was a huge sensation in the early 1980s, as represented by making the cover of *Time*.

**Hall:** That's right. It's one thing to get your face on the cover of *Time*; it's quite

another to get your idea on it! Forget what's-his-name's face!

**Region:** And I think it can be argued that that helped pave the way toward the 1986 Tax Reform Act.

**Hall:** We like to think so. I'll accept that.

**Region:** Twenty-five years later you reissued the book, updated of course, and continue to advocate it as the “most fair, efficient, simple and workable plan on the table.”

Given its clear merits and strong advocates, why do you think it's gained relatively little traction in the United States?

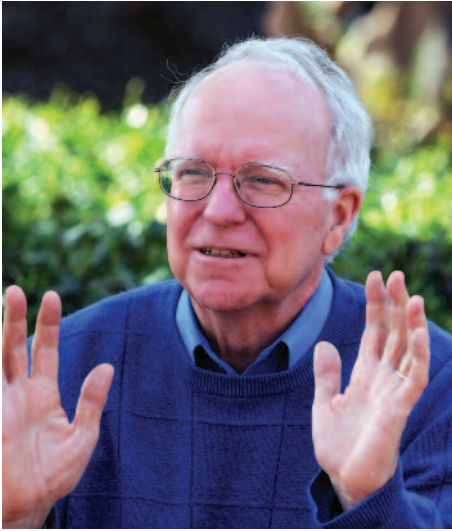
**Hall:** One important thing to understand is that contrary to some people's impressions, it's not gone very far in the rest of the world either.

**Region:** Not in central and eastern Europe? Mexico, perhaps?

**Hall:** Yes, but if you look at their overall tax structure, it's not what we have in mind. Their rates are high because they've adopted income tax systems that work like a flat tax, but they're on top of a very high value-added tax. So the combination doesn't achieve the low rates that we were hoping for.

In the U.S., there's been a lot of backsliding. It looks like there's going to be more and more. The state of California, for example, has a couple of times added surcharges for very high incomes. There seems to be a belief that it's a great idea, that we can get all the revenue we need by taxing high incomes, without regard to the problems that those tax rates create, especially in the longer run. That's one of the things we talk about in our book. There's more to the logic of low marginal tax rates than just the question of who pays the tax.

But another factor I would emphasize is that since 1981 when we first promoted that plan, there's been a dramatic widening of the income distribution in the U.S. That means that the idea of the



Since 1981 when we first promoted that [flat tax] plan, there's been a dramatic widening of the income distribution in the U.S. That means that the idea of the poor paying the same tax rate just seems less viable than it was when the income distribution was tighter.

poor paying the same tax rate just seems less viable than it was when the income distribution was tighter.

The division between a small number of winners in the modern economy, mostly businessmen and lawyers, as opposed to most other people, has grown significantly.

In “others,” I include doctors, by the way. One of the amazing things that doesn't get much attention these days is the widening division between doctors and lawyers. It used to be that doctors and lawyers competed for the best houses in Palo Alto. Now they're all lawyers or venture capitalists; they're not doctors.

While there are a lot of good ideas in flat tax reform, it wouldn't be remotely practical to do it with a single positive tax rate now. So I play around with systems that have, say, two brackets. The “not-so-flat” tax. But of course that doesn't have quite the simple appeal that the “flat tax” did. [Laughter]

But there's still a great idea in that book which applies to any tax system, which is, it basically figures out how to implement

a value-added tax or other consumption tax in a way that's progressive.

There were two economists on President Bush's Advisory Panel on Federal Tax Reform in 2005, Jim Poterba and Ed Lazear, who really understood that. They pushed pretty hard; that was one of the designs that would make sense for how to do a consumption tax, even though it wouldn't be a flat tax.

The origin of our initial flat tax effort was Rabushka coming to me in 1980 and saying, “I know what the people want. The people want a flat tax, but I don't know quite what that is.” And I said, “I know what it is because I've been thinking about it since I was a graduate student.” But, of course, for me, it was a consumption tax—an efficient, simple, fair consumption tax. The flatness wasn't so important but, of course, the flat tax name, which Rabushka contributed, was very important politically.

**Region:** Marketing is important.

**Hall:** Yes, but now the idea of tax flatness is understandably not as popular.

## DYNAMICS OF LABOR MARKETS

**Region:** You've also done a great deal of research on labor markets. In 1982, you documented the “importance of long-term jobs” in the United States. I'm not sure that's still the case.

**Hall:** It's still the case. That paper's been replicated quite a few times. It's almost a law of nature. The financial press is constantly telling us how much turnover has increased, how the old days of the lifetime job have disappeared. But there's no particularly strong evidence of that. There are some interesting changes going on, but nothing that dramatic.

**Region:** A 2005 paper of yours argued that job separation was also fairly stable and what was more important was looking at the hiring process and job finding.

**Hall:** That's right.

**Region:** So you've been studying that process carefully, looking at job search dynamics, wage stickiness, wage bargaining, productivity, other factors. You've developed a model that explains labor market fluctuations without assuming what you consider to be unrealistically high labor supply elasticity.

**Hall:** I think “explain” might be a little bit of an overstatement. I'm not sure how many of my colleagues would agree with the word “explain.” [Laughter] I think “accounting for” might be right.

**Region:** Fair enough. What factors have you found most successful in accounting for job-finding rates? And what are the key drivers of labor market volatility?

**Hall:** The important feature that controls the job-finding rate is the incentives to employers to create jobs. At any given time, if the incentives are not very strong—it could happen for many different reasons—then employers will do relatively little to try to recruit workers. Job seekers will then have trouble finding jobs, will see themselves at the end of a long line of people waiting for the job.

Interestingly, the number of people who find jobs each month is more or less a constant. Of course, this changes, but it's a pretty good starting point for understanding labor market dynamics that the number of people who find jobs each month is the same in a strong market or a weak market.

In a strong market, you have a relatively small number of job seekers, so each one finds it easy. In a good market, it takes the average person about a month to find another job. In a weak market, there are twice as many people looking, but each one of them is half as likely to find a job each month; the product of the two—the number looking for a job and the fraction of them who find a job—is the same.

So, something like 4 million people find jobs every month. Even with 10





Something like 4 million people find jobs every month. Even with 10 percent unemployment, as recently, we've still seen the same thing. A very large number of people looking, very low job-finding rate for each individual, but the product—the number of jobs filled—is roughly a constant. It's a very important fact about the labor market.

percent unemployment, as recently, we've still seen the same thing. A very large number of people looking, very low job-finding rate for each individual, but the product—the number of jobs filled—is roughly a constant. It's a very important fact about the labor market.

Think about a slack market from an employer's point of view. They see there are all kinds of highly qualified people out there they can hire easily, so they don't need to do a lot of recruiting—people are pounding on the door.

**Region:** And these days they're census takers.

**Hall:** [Laughter] Right! So that's the first thing to think about: job creation incentives.

If you ask, how did we get into a situation where job creation incentives have declined? It's that there's been a decline in the profitability of hiring a worker without a corresponding decline in the

wage. The incentive to create a job is the difference between what a worker will contribute to the business and what the worker has to be paid.

That's a very simple calculus. But that seems to vary. In a recession, for various reasons, the profit margin from hiring a worker declines, and that reduces job-creating efforts, all the things that keep the labor market moving. And that, in turn, causes it to be difficult for the job seeker to find a job.

There's a great debate going on as to just what the factors are that reduce the additional profit from hiring another worker.

For a while, there was the thinking that movements in productivity—productivity is one of the factors, so if productivity falls and the wage doesn't fall with it, then that reduces the profit margin. But that idea has not worked in the last three recessions because they were periods when productivity was rising, not falling. So the old productivity story has not worked for the last 30 years.

But each of us has our own set of ideas. To tie it to what we were talking about before, financial frictions have the same effect. Increasing financial frictions reduces the desirability of adding workers. That's especially true if there's anything about the employment relationship that has an investment character. If a worker has to be trained and becomes highly productive labor in time, then this question of what the cost of funds is becomes important. A rise in the cost of funds will result in a decline in employment, and that's something a lot of people are looking at right now.

There are many threads to this topic. We're debating actively which ones are most important.

## RECESSIONS AND RECESSION DATING

**Region:** People are wondering when will, or did, the current recession end, but I'd like to ask how you and the NBER [National Bureau of Economic Research] committee you lead decided

when it *began*. Many countries define a recession as two quarters in a row of negative GDP growth, and by that standard I think the United States would have entered its recession in, maybe, the third quarter of 2008.

**Hall:** But that gets back to the whole question of, do you include the peak of real GDP? We always talk about the date of the peak. That helps sort out this timing. The peak occurred in the second quarter of 2008. However, as you know, we declared the peak to be a little earlier than that, December of 2007.

**Region:** Would you explain what standards—I know it's on the NBER Web site; it's very clear there—but could you elaborate on what standards you use to determine turning points in business cycles?

**Hall:** Actually, it's not that clear, because these things are always up in the air. [Laughter] There's a certain amount of ambiguity in what we put on the Web site. We haven't resolved some important questions about how this process should work.

**Region:** Why really do we need a committee, a dating committee, rather than relying on a rule of some sort, like two quarters of negative GDP growth? I think you've been on the committee since it began...

**Hall:** I'm the only chairman the committee has ever had, for 32 years.

**Region:** I didn't know you've chaired it the entire time! Well then, you're the right man to ask. Do you think it might be useful for the NBER, in addition to doing what it now does, to also issue something closer to a real-time indicator or signal of recessions—that could be revised for false positives or negatives, along the lines that Óscar Jordà has recommended?

**Hall:** I think we feel that doing something like that, and in any sense making

it official, would somewhat cloud things because there would be enough type 1 or type 2 errors [false positives or negatives]. We're *very* happy to see that type of research be done; we don't claim any monopoly on this point, and it's been very instructive.

Actually, long ago, in the 1980s, we sponsored a project that informally, unofficially put out a recession probability index that Jim Stock and Mark Watson prepared. It didn't work very well in the 1991 recession, so they stopped doing it after that.

And it didn't work for fairly typical reasons. That was the first recession that wasn't accompanied by a decline in productivity, so it looked somewhat different. So their historical relationships weren't as stable as they hoped.

That's one of the main reasons why automatic rules haven't worked. People have done research on the machine approach for years. In fact, when I was a graduate student and took a computer science course, my project was to write software that would automate this. So it's not a new idea. But it's never worked very well.

**Region:** It would have missed the 1981 recession if we'd used the two negative GDP quarters rule.

**Hall:** You mean 1980.

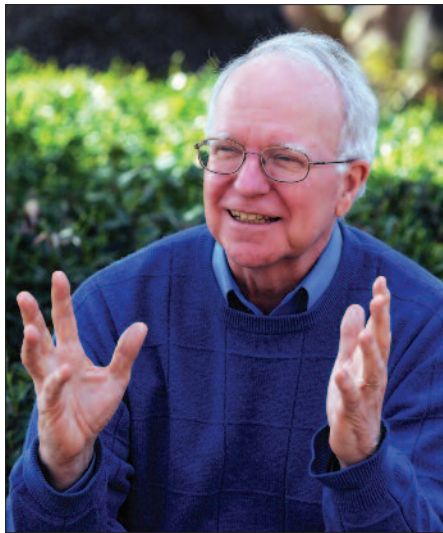
**Region:** Right, 1980.

**Hall:** 1981 was no problem. The 1980 recession was just one quarter. And people have said that the 1980 recession was actually just sort of a prelude to the '81 recession. We say no, but it's been said.

**Region:** It seems it's more of an art than a science then.

**Hall:** It's a classification problem that the world seems to want an answer to, but it has a shifting structure, and dealing with the shifting structure is the issue. We try very hard to achieve historical continuity.

We don't doubt for a second—and I



Historical relationships weren't as stable as ... hoped. That's one of the main reasons why automatic rules haven't worked. ... It's a classification problem that ... has a shifting structure, and dealing with the shifting structure is the issue. We try very hard to achieve historical continuity.

The complication in the 2001 recession is that productivity rose enough to offset employment declines, so we have a very pronounced, obvious recession in employment and what's hardly a recession at all in GDP. ... That's material today because, of course, we're seeing the same thing.

don't think anyone else does either—that we know when there's a recession. In all the data we look at, certainly in the period when we've had reliable data, which is since World War II, there's never been an episode that's somewhere halfway between a recession and a nonrecession. Every recession has been clear. And they all see unemployment shoot up and typically see GDP decline.

We do face issues though. With the most recent revisions of GDP, the 2001 recession essentially doesn't exist. It was a flattening, but as emphasized on our Web site, there are issues of depth, duration and dispersion, but there was neither depth nor duration in what hap-

pened in '01. By the alternative measure of total output, real gross national income, the 2001 recession is quite apparent.

To me, it's not an issue because that's just looking at GDP. If we look at employment, as I did in a 2007 Brookings paper on the "Modern Recession,"—by "modern recession" I mean one in which productivity rises...

**Region:** And monetary policy is under control.

**Hall:** Monetary policy is stable, exactly. But here I think the key point is about productivity. With rising productivity in a recession, you can see a relatively mild movement in GDP, and there's a long period of GDP growth at the same time that employment is falling.

When people talk about the jobless recovery, it's just another term for productivity growth. That's complicated the process. The complication in the 2001 recession is that productivity rose enough to offset employment declines, so we have a very pronounced, obvious recession in employment and what's hardly a recession at all in GDP.

I'm perfectly satisfied that's a recession because I want to balance the two. To the extent you look just at GDP, though, it would be hard to call that a recession.

That's material today because, of course, we're seeing the same thing. GDP reached a very pronounced trough in the summer of 2009. It's been pretty consistently rising—with one little hiccup recently—since then. So on that standard, we say the trough was in summer of '09 or maybe the fall of '09.

But employment is still declining. We still have not seen a growth month. Everyone is presuming that we will in March—but that'll be the first. You can plausibly make the trough of GDP be in June of '09, but the trough of employment is probably going to be March of 2010. That's a long time.

Not as bad as '01, when the situation was even worse. The trough in employment didn't occur until 2003.

## STOCK MARKET VALUATION

**Region:** Let me ask about the stock market. Roughly a decade ago, you did a lot of work on eCapital, eMarkets and stock market valuation. Your 2001 Richard Ely lecture was an example of that. And you suggested that investors did seem to be fairly estimating the market's value if intangible capital was taken into account. Is that accurate?

**Hall:** Well, I talked about some individual cases where I thought you could tell the story. There was a discussion of eBay in the Ely lecture. On the other hand, if you look at the results in my *AER* [*American Economic Review*] paper, it observes that intangible capital by that measure was deeply negative in the mid-'70s to about 1980. Now, positive eCapital makes a lot of sense, but negative eCapital is a little hard to swallow. So I'd be careful.

There was something weighing down the stock market from basically 1974 to

1990. eCapital turned positive in 1990. So during that period, there was some undervaluation. It was very clear the stock market later decided it was an undervaluation because if you made a stock market investment in 1980 and held it to 1999, you had a very large excess return in the 20-year period. So I think there are still some mysteries.

In spite of the fact that the valuation that we see in the market right now seems to be in a reasonable range, the returns since 1999 have been way below any benchmarks, which suggests that there was some overvaluation then.

## INTELLECTUAL PROPERTY

**Region:** You've thought and written a great deal, in both technical and lay publications, about the economics of computers and software, as well as venture capital and entrepreneurs. That seems natural given that you were born in Palo Alto and have worked here for a long time.

**Hall:** Flora Hewlett, married to the Hewlett of Hewlett-Packard, was my father's secretary when he was a Stanford professor. If only he'd bought one share!

**Region:** You've also devoted some time to studying antitrust economics, and looking at potential for monopoly pricing in upstream supplier markets.

What is your view of the argument that intellectual property, copyright laws and patents inhibit rather than encourage innovation?

**Hall:** First of all, I think that that's only been directed at patents. I don't think there's any feature of copyright law. It protects the expression. There's an infinite space of melodies that composers can compose and once they do, it doesn't inhibit other composers from composing other songs because there's this infinite space. Every expression is completely unique, so when it comes to expression, I don't think there's any real issue. I

## More About Robert Hall

### Current Positions

Robert and Carole McNeil Joint Senior Fellow, Hoover Institution, and Professor, Department of Economics, Stanford University; joined faculty in 1978

### Previous Positions

Massachusetts Institute of Technology, Professor, 1970–78

University of California, Berkeley, Assistant Professor, 1967–70

### Professional Affiliations

President, American Economic Association; President-elect, 2009; Vice President, 2005; Ely Lecturer, 2001

Director, Research Program on Economic Fluctuations and Growth, National Bureau of Economic Research, since 1977; Chairman, Committee on Business Cycle Dating

Member, National Academy of Sciences, since 2004

Member, Advisory Committee, Congressional Budget Office, since 1993

Member, Oversight Panel for Economics, National Science Foundation, 1989; Advisory Panel for Economics, 1970–72

### Honors and Awards

Fellow, American Academy of Arts and Sciences, Econometric Society and Society of Labor Economists

Hall of Fame, *Money* magazine, with co-author Alvin Rabushka for their book *The Flat Tax*

### Publications

Author of *Forward-Looking Decision Making: Dynamic Programming Models Applied to Health, Risk, Employment, and Financial Stability* (Princeton University Press, 2010), *Digital Dealing: How eMarkets Are Transforming the Economy* (Norton, 2002), *The Flat Tax* (with Alvin Rabushka, Hoover Institution Press, 2d ed., 1995) and *The Rational Consumer: Theory and Evidence* (MIT Press, 1990), among other books. Widely published in academic journals, with research focused on employment, technology, competition and economic policy

### Education

Massachusetts Institute of Technology, Ph.D. in economics, 1967

University of California, Berkeley, B.A. in economics, 1964



Patents shouldn't last forever. The idea of a finite patent life, which is currently around 20 years, does seem to be an important part of the design.

The result of that is that the great majority of innovations ultimately benefit workers in the form of higher wages rather than any permanent stream of monopoly profits going to owners.

think almost everyone believes in a pretty powerful IP rights regime for expression.

When it comes to the things that patents protect, then the patent regime has to do the things that the patent regime claims to do. The patent has to be original; it has to be an innovation. And there the standard of obviousness comes in.

If what's happening is that people are somehow able to figure out what the obvious next logical step is and somehow get a patent on that and then collect royalties from that patent even though it doesn't really make any contribution, then there's something wrong with the patent regime. But I don't think there's any very good evidence that that's actually what's happened.

People make fun of a lot of the patents that the patent office issues, but they don't matter. There's only a much smaller set of patents that have ever attempted to be enforced and have

caused any problems. On the other hand, the patent system has generated some very substantial rewards to some true innovations.

You know, it's all in the details. I don't accept a broad condemnation of the patent system. I don't join any of these people who say there shouldn't be any business process patents or there shouldn't be software patents. Some good ideas are implemented in software.

What is a good idea, and what everyone stands by, I think, is the notion that patents shouldn't last forever. The idea of a finite patent life, which is currently around 20 years, does seem to be an important part of the design.

The result of that is that the great majority of innovations ultimately benefit workers in the form of higher wages rather than any permanent stream of monopoly profits going to owners. If that weren't true, you'd see a huge amount of innovation value capitalized in the stock market, but you don't, and that's proof. Consistent productivity growth and corresponding real wage growth is demonstration that the benefits ultimately of innovation are going to workers. So it's a great thing.

## THE STATE OF ECONOMICS

**Region:** The past few years seem to have brought about a crisis of confidence in the economics profession, with critics suggesting that macroeconomics has failed in some fundamental way. It's a topic addressed by [Minneapolis Fed President] Narayana Kocherlakota in our *Annual Report* this year. Do you agree that the macro profession failed the nation during the financial crisis?

**Hall:** I don't. There are two parts to the issue. First, did macroeconomists fail to understand that a highly levered financial system based in large part on real-estate debt was vulnerable to a decline in real-estate prices? No way. Many of us pointed out the danger of thinly capitalized banks. We had enthusiastically backed the idea of prompt corrective action in bank regulation, so that banks

would be recapitalized well before they became dangerously close to collapse. We watched in frustration as the regulators failed to take that action, even though they had promised they would.

Second, did macroeconomists fail to understand that financial collapse would result in deep recession? Not at all. A complete analysis of that exact issue appears in an extremely well-known and respected chapter in the *Handbook of Macroeconomics* in 1999, written by Ben Bernanke, Mark Gertler and Simon Gilchrist. Depletion of the capital of financial institutions raises financial frictions to levels that distinctly impede economic activity. In particular, credit-dependent spending on plant, equipment, inventories, housing and consumer durables collapses. That chapter is an excellent guide to the depth of the current recession.

**Region:** Thank you for a great conversation.

—Douglas Clement  
March 16, 2010