

## Selected Articles on Economic Growth by Paul Romer:

### Nontechnical Overview:

1. "Economic Growth," *The Concise Encyclopedia of Economics*, David R. Henderson, ed. Liberty Fund (Forthcoming 2007.) PDF available [here](#).
2. "Post-Scarcity Prophet." (An interview published in *Reason Magazine*.) Available [here](#).

### Journal Articles:

1. "Increasing Returns and Long-Run Growth," *Journal of Political Economy*, Vol. 94, No. 5 (Oct. 1986), pp. 1002-1037. Available on [Jstor](#).  
*My first attempt at modeling growth, derived from my Ph.D. thesis.*
2. "Endogenous Technological Change," *Journal of Political Economy*, Vol. 98, No. 5, "Part 2: The Problem of Development: A Conference on the Institute for the Study of Free Enterprise Systems." (Oct. 1990), pp. S71-102. Available on [Jstor](#).  
*My second model of growth. If you want to read just one article by me on the theory of growth, read this one.*
3. "New Goods, Old Theory, and the Welfare Costs of Trade Restrictions," *Journal of Development Economics*, No. 43 (1994), pp. 5-38. Available on [Science Direct](#).  
*An exploration of the effects that new goods have on welfare economics. The specific application is to the effects of trade restrictions, but the broader question concerns the difficulty we have in leaving behind the comfortable vision of a world in which all change comes from increased quantities of existing goods.*

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## Chapter 19 - Assignment 1: Paul Romer on Economic Growth

Read Paul Romer's article entitled: "Economic Growth" appearing in the *Fortune Encyclopedia of Economics*.

- a. Why does Romer place so much emphasis on the importance of economic growth?
- b. According to this document, why has the rate of economic growth in Japan since World War II been higher than the U.S. growth rate? Why is this likely to decline?
- c. Discuss Romer's views concerning the "limits to growth" arguments.
- d. What point is Romer making with the "milk cow" example?
- e. Do you feel that Romer's suggestion for reducing poverty in India is likely to be successful? Why or why not?
- f. What does Romer suggest should be the direction of applied research in the U.S.?

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December 2001

## Post-Scarcity Prophet

*Economist Paul Romer on growth, technological change, and an unlimited human future.*

Interviewed by **Ronald Bailey**

"One of the 25 most influential Americans," pronounced Time. "His ideas may just revolutionize the study of economics." Newsweek included him in its roster of "The Century Club," a "list of 100 people for the New Century." He is a perennial short-lister for the Nobel Memorial Prize in Economics. His work has been lauded by business guru Peter Drucker and Nobel-winning economist Robert Solow. He is the STANCO 25 Professor of Economics at Stanford University's Graduate School of Business and a senior fellow of the Hoover Institution. He was recently elected a fellow of the American Academy of Arts and Sciences.

As one of the chief architects of "New Growth Theory," Paul Romer has had a massive and profound impact on modern economic

thinking and policymaking. New Growth Theory shows that economic growth doesn't arise just from adding more labor to more capital, but from new and better ideas expressed as technological progress. Along the way, it transforms economics from a "dismal science" that describes a world of scarcity and diminishing returns into a discipline that reveals a path toward constant improvement and unlimited potential. Ideas, in Romer's formulation, really do have consequences. Big ones.

Before New Growth Theory, economists recognized that technology contributed substantially to growth, but they couldn't figure out how to incorporate that insight into economic theory. Romer's innovation, expressed in technical articles with titles such as "Increasing Returns and Long-Run Growth" and "Endogenous Technological Change," has been to find ways to describe rigorously and exactly how technological progress brings about economic growth. As Robert Solow told Wired in 1996, "Paul single-handedly turned [the study of economic growth] into a hot subject."

The 46-year-old Romer, son of former Colorado Gov. Roy Romer, received his Ph.D. in economics from the University of Chicago in 1983, six years after earning a B.S. in physics at the same school. Before joining Stanford's faculty in 1996, he taught at a number of schools, including the University of Chicago, the University of Rochester, and the University of California at Berkeley. He and his wife, Virginia Langmuir, a medical doctor, live in Portola Valley, California, and have two children.

In June, reason Science Correspondent Ronald Bailey interviewed Romer poolside at his house, which overlooks a huge expanse of rolling ranchland owned by Stanford University. For more information on Romer's theories, turn to his Web site, [www.stanford.edu/~promer](http://www.stanford.edu/~promer).

**reason:** In terms of real per capita income, Americans today are seven times richer than they were in 1900. How did that happen?

**Paul Romer:** Many things contributed, but the essential one is technological change. What I mean by that is the discovery of better ways to do things. In most coffee shops these days, you'll find that the small, medium, and large coffee cups all use the same size lid now, whereas even five years ago they used to have different size lids for the different cups. That small change in the geometry of the cups means that somebody can save a little time in setting up the coffee shop, preparing the cups, getting your coffee, and getting out. Millions of little discoveries like that, combined with some very big discoveries, like the electric motor and antibiotics, have made the quality of life for people today dramatically higher than it was 100 years ago.

The estimate you cite of a seven-fold increase in income -- that's the kind of number you get from the official statistics, but the truth is that if you look at the actual change in the quality of life, it's larger than the number suggests. People who had today's average income in 1900 were not as well off as the average person today, because they didn't have access to cheap lattes or antibiotics or penicillin.

**reason:** New Growth Theory divides the world into "ideas" and "things." What do you mean by that?

**Romer:** The paper that makes up the cup in the coffee shop is a thing. The insight that you could design small, medium, and large cups so that they all use the same size lid -- that's an idea. The critical difference is that only one person can use a given amount of paper. Ideas can be used by many people at the same time.

**reason:** What about human capital, the acquired skills and learned abilities that can increase productivity?

**Romer:** Human capital is comparable to a thing. You have skills as a writer, for example, and somebody -- reason -- can use those skills. That's not something that we can clone and replicate. The formula for an AIDS drug, that's something you could send over the Internet

or put on paper, and then everybody in the world could have access to it.

This is a hard distinction for people to get used to, because there are so many tight interactions between human capital and ideas. For example, human capital is how we make ideas. It takes people, people's brains, inquisitive people, to go out and find ideas like new drugs for AIDS. Similarly, when we make human capital with kids in school, we use ideas like the Pythagorean theorem or the quadratic formula. So human capital makes ideas, and ideas help make human capital. But still, they're conceptually distinct.

**reason:** What do you see as the necessary preconditions for technological progress and economic growth?

**Romer:** One extremely important insight is that the process of technological discovery is supported by a unique set of institutions. Those are most productive when they're tightly coupled with the institutions of the market. The Soviet Union had very strong science in some fields, but it wasn't coupled with strong institutions in the market. The upshot was that the benefits of discovery were very limited for people living there. The wonder of the United States is that we've created institutions of science and institutions of the market. They're very different, but together they've generated fantastic benefits.

When we speak of institutions, economists mean more than just organizations. We mean conventions, even rules, about how things are done. The understanding which most sharply distinguishes science from the market has to do with property rights. In the market, the fundamental institution is the notion of private ownership, that an individual owns a piece of land or a body of water or a barrel of oil and that individual has almost unlimited scope to decide how that resource should be used.

In science we have a very different ethic. When somebody discovers

something like the quadratic formula or the Pythagorean theorem, the convention in science is that he can't control that idea. He has to give it away. He publishes it. What's rewarded in science is dissemination of ideas. And the way we reward it is we give the most prestige and respect to those people who first publish an idea.

**reason:** Yet there is a mechanism in the market called patents and copyright, for quasi-property rights in ideas.

**Romer:** That's central to the theory. To the extent that you're using the market system to refine and bring ideas into practical application, we have to create some kind of control over the idea. That could be through patents. It could be through copyright. It might even be through secrecy. A firm can keep secret a lot of what it knows how to do.

**reason:** A formula for Coca-Cola?

**Romer:** Yes. Or take a lot of the things that Wal-Mart understands about discount retailing. They have a lot of insight about logistics and marketing which they haven't patented or copyrighted, yet they can still make more money on it than other people because they keep it closely held within the firm. So for relying on the market -- and we do have to rely on the market to develop a lot of ideas -- you have to have some mechanisms of control and some opportunities for people to make a profit developing those ideas.

But there are other stages in the development of ideas. Think about the basic science that led to the discovery of the structure of DNA. There are some kinds of ideas where, once those ideas are uncovered, you'd like to make them as broadly available as possible, so everybody in the world can put them to good use. There we find it efficient to give those ideas away for free and encourage everybody to use them. If you're going to be giving things away for free, you're going to have to find some system to finance them, and that's where government support typically comes in.

In the next century we're going to be moving back and forth, experimenting with where to draw the line between institutions of science and institutions of the market. People used to assign different types of problems to each institution. "Basic research" got government support; for "applied product development," we'd rely on the market. Over time, people have recognized that that's a pretty artificial distinction. What's becoming more clear is that it's actually the combined energies of those two sets of institutions, often working on the same problem, that lead to the best outcomes.

**reason:** We hear a lot of complaints from academicians about how business and corporations are taking over university research.

**Romer:** I think it's important to have a distinct realm of science and a distinct realm of the market, but it's also very good to have interaction between those two. One of the best forms of interaction is for people who work in one to move into the other.

The people in university biology or biochemistry departments complain when they see somebody go on leave from the university and start a company that's going to develop a new drug. That's not the way it was done 30 years ago. But this is the best way to take those freely floating, contentiously discussed ideas from the realm of science and then get them out into the market process, because the reality is that there are virtually no ideas which generate benefits for consumers if there's not an intervening for-profit firm which commercializes them, tailors them to the market, and then delivers them. You can point to examples where things jump right from science to benefits for the consumer, but that's the exception, not the rule.

**reason:** Do we run the risk of ruining science by involving it too much in the market?

**Romer:** Well, some people would say that everything should be patented. The danger is that if you went that far, you could actually

slow the discovery process down. There are very good theoretical reasons for thinking that market and property rights are the ideal solution for dealing with things, but there are also strong theoretical reasons for thinking that in the realm of ideas, intellectual property rights are a double-edged sword. You want to rely on them to some extent to get their benefits, but you want to have a parallel, independent system and then exploit the tension that's created between the two.

**reason:** What are those theoretical reasons?

**Romer:** It traces back to this multiple use I was describing for ideas vs. single use for things. The miracle of the market system is that for objects, especially transformed objects, there's a single price which does two different jobs. It creates an incentive for somebody to produce the right amount of a good, and it allocates who it should go to. A farmer looks at the price of a bushel of wheat and decides whether to plant wheat or plant corn. The price helps motivate the production of wheat. On the other side, when a consumer has to decide whether to buy bread or corn meal, the price allocates the wheat between the different possible users. One price does both jobs, so you can just let the market system create the price and everything works wonderfully.

With ideas, you can't get one price to do both things. Let me give an extreme example. Oral rehydration therapy is one of those few ideas which did actually jump immediately from science to consumer benefit. It's a simple scientific insight about how you can save the life of a child who's suffering from diarrhea. Literally millions of lives have been saved with it. So what price should you charge people for using it?

Because everybody can use the idea at the same time, there's no tragedy of the commons in the intellectual sphere. There's no problem of overuse or overgrazing or overfishing an idea. If you give an idea away for free, you don't get any of the problems when you try and give objects away for free. So the efficient thing for society is

to offer really big rewards for some scientist who discovers an oral rehydration therapy. But then as soon as we discover it, we give the idea away for free to everybody throughout the world and explain "Just use this little mixture of basically sugar and salt, put it in water, and feed that to a kid who's got diarrhea because if you give them pure water you'll kill them." So with ideas, you have this tension: You want high prices to motivate discovery, but you want low prices to achieve efficient widespread use. You can't with a single price achieve both, so if you push things into the market, you try to compromise between those two, and it's often an unhappy compromise.

The government doesn't pay drug companies prizes for coming up with AIDS drugs. It says they've got to incur these huge expenses, but then if they succeed, they can charge a high price for selling that drug. This has generated a lot of progress and we're prolonging the life of people with AIDS, but the high price is also denying many people access to those drugs.

**reason:** Over the broad sweep of human history, technological progress and economic growth were painfully slow. Why has it sped up now?

**Romer:** It's so striking. Evolution has not made us any smarter in the last 100,000 years. Why for almost all of that time is there nothing going on, and then in the last 200 years things suddenly just go nuts?

One answer is that the more people you're around, the better off you're going to be. This again traces back to the fundamental difference I described before. If everything were just objects, like trees, then more people means there's less wood per person. But if somebody discovers an idea, everybody gets to use it, so the more people you have who are potentially looking for ideas, the better off we're all going to be. And each time we made a little improvement in technology, we could support a slightly larger population, and that

led to more people who could go out and discover some new technology.

Another answer is that we developed better institutions. Neither the institutions of the market nor the institutions of science existed even as late as the Middle Ages. Instead we had the feudal system, where peasants couldn't decide where to work and the lord couldn't sell his land. On the science side, we had alchemy. What did you do if you discovered anything? You kept it secret. The last thing you'd do was tell anybody.

**reason:** How did the better institutions come about?

**Romer:** That's one of the deep questions. There's some kind of political process, some group decision process, which leads to institutions. If you go back to what I said a minute ago about the advantages of having many people, you can see that there's a tension here. There are huge benefits to having more people and having us all interact amongst ourselves to create goods and to share ideas. But you face a really big challenge in trying to coordinate all of those decisions, because if you have large numbers of independent decision makers who aren't coordinating their actions appropriately, you could get chaos. Think about millions of drivers with no rules of the road, no agreement about whether you drive on the left or the right.

So where do these institutions come from? It was a process of discovery, just as people discovered how to make bronze. They also discovered ways to organize political life. We can use democratic choice as an alternative to, say, a hereditary system of selecting who's the king. What's subtle here is, How do those discoveries get into action? It's not like a profit motive in a firm that brings software to market. There was a process of persuasion when somebody discovered that, hey, this would be a better way for us to organize ourselves. So we had political and economic thinkers -- Locke, Hobbes, Smith -- who managed to persuade some of their peers to

adopt those institutions.

So institutions came from a combination of discovery, persuasion, adoption -- and then copying. When good institutions work somewhere in the world, other places can copy them.

**reason:** Many economic historians are critical of New Growth Theory. Economic growth is a modern phenomenon, yet it appears that New Growth Theory should apply equally to the Roman Empire or Ming China as well as the modern world.

**Romer:** I think that's a caricature of the theory. New Growth Theory describes what's possible for us but says very explicitly that if you don't have the right institutions in place, it won't happen. If anything, it was the old style of theory which made it sound like technological change falls from the sky like manna from heaven, regardless of how we structure our institutions. This new theory says technological change comes about if you have the right institutions, which we have had.

**reason:** So what's the crucial difference between Ming China and modern economies today?

**Romer:** Ming China was very advanced. It had steel. It had clocks. It had movable type. Yet it was far from generating either the modern institutions of science or the institutions of the market.

The market and science differ in their treatment of property rights, but they're similar in that they rely on individuals who are free to operate under essentially no constraints by authority or tradition. It took a special set of historical circumstances to persuade people that things could work if you freed people, within certain institutional constraints, to pursue their own interests. This is where Ming China was very far away from modern notions.

Part of the answer to this big question about human history has been the acceptance of relatively unfettered freedom for large numbers of

individuals. It's something we just take for granted, but if you described it in the abstract to the people of 50,000 years ago, they would never believe it could possibly work. They were conditioned to systems where there was the head man or the chief, and as numbers got at all large, there was a sense that you had to have somebody with kind of dictatorial control. It was a deep philosophical insight and deep change in the whole way we viewed the world to tolerate and accept and then truly celebrate freedom. Freedom may be the fundamental hinge on which everything turns.

**reason:** You often cite the combinatorial explosion of ideas as the source of economic growth. What do you mean by that?

**Romer:** On any conceivable horizon -- I'll say until about 5 billion years from now, when the sun explodes -- we're not going to run out of discoveries. Just ask how many things we could make by taking the elements from the periodic table and mixing them together. There's a simple mathematical calculation: It's 10 followed by 30 zeros. In contrast, 10 followed by 19 zeros is about how much time has elapsed since the universe was created.

**reason:** Of all those billions of combinations, the vast majority are probably going to be useless. So how do you find the useful ones?

**Romer:** This is why science and the market are so important for this discovery process. It's really important that we focus our energy on those paths that look promising, because there are many more dead ends out there than there are useful things to discover.

You have to have systems which explore lots of different paths, but then those systems have to rigorously shut off the ones that aren't paying off and shift resources into directions which look more promising. The market does this automatically. The institutions of science could tip either way. In American science, we have vigorous competition between lots of different universities, which leads to a kind of marketplace of ideas. You can think of other institutions of

science that aren't nearly as competitive. In the national laboratories, people are in the worst case civil servants: They're there for life, and there's always more funding for them.

**reason:** Does New Growth Theory give us some new insights on how to think about monopolies?

**Romer:** There was an old, simplistic notion that monopoly was always bad. It was based on the realm of objects -- if you only have objects and you see somebody whose cost is significantly lower than their price, it would be a good idea to break up the monopoly and get competition to reign freely. So in the realm of things, of physical objects, there is a theoretical justification for why you should never tolerate monopoly. But in the realm of ideas, you have to have some degree of monopoly power. There are some very important benefits from monopoly, and there are some potential costs as well. What you have to do is weigh the costs against the benefits.

Unfortunately, that kind of balancing test is sensitive to the specifics, so we don't have general rules. Compare the costs and benefits of copyrighting books versus the costs and benefits of patenting the human genome. They're just very different, so we have to create institutions that can respond differentially in those cases.

**reason:** You have written, "There is absolutely no reason why we cannot have persistent growth as far into the future as you can imagine." Your Stanford colleague, the biologist Paul Ehrlich, disagrees. He believes that economic growth is an unsustainable cancer that is destroying the planet. How would you go about convincing people like Ehrlich that they are wrong?

**Romer:** Paul seems singularly immune to being convinced. He has been on the wrong side of these issues, so I wouldn't set that as my standard of persuading anybody. However, if I took a neutral observer who might listen to me and Paul, there's a pretty easy way to explain why I'm right and why Paul misunderstands. You have to

define what you mean by growth. If by growth you mean population, more people, then Paul is actually right. There are physical limits on how many people you can have on Earth. If we took peak population growth rates from the '70s at 2 percent per year, you can only sustain that for a couple of hundred years before you really run into true physical constraints.

**reason:** I would remind you that Ehrlich said that there would be billions of people dying of starvation in the 1980s.

**Romer:** He got the potentials wrong and the time frame wrong, but it's absolutely true that population growth will have to come to zero at some point here on Earth. The only debate is about when.

Now, what do I mean when I say growth can continue? I don't mean growth in the number of people. I don't even mean growth in the number of physical objects, because you clearly can't get exponential growth in the amount of mass that each person controls. We've got the same mass here on Earth that we had 100,000 years ago and we're never going to get any more of it. What I mean is growth in value, and the way you create value is by taking that fixed quantity of mass and rearranging it from a form that isn't worth very much into a form that's worth much more. A canonical example is turning sand on the beach into semiconductors.

**reason:** What do you make of the recent protests against globalization?

**Romer:** When we were describing the broad sweep of human history, we talked about how hard it was for people to get used to the idea of freedom. There was another kind of adjustment that we had to make as well: We had to get used to the idea of the market, and especially market exchange among anonymous strangers. People often contrast this with the institutions of the family, where you've got notions of sharing and mutual obligation. Many of us have a deep psychological intuition rooted in our evolutionary history that makes us feel warmly toward the family and suspicious of large,

impersonal, anonymous market exchange. I think that emotional impulse is part of what some of the environmental ideologues draw on when they attack the whole market system and corporations and modern science and everything.

This is a case where human psychology that was attuned to a hunter-gatherer environment is just a little bit out of touch with a new world that's much more interconnected, much more interactive, and in many ways a much more satisfying and rich human experience. You can idealize life in a hunter-gatherer society, but nobody wants to go through the frequent death of a child -- a very common experience for almost all of history that has been reduced a phenomenal degree within human memory.

**reason:** How would you convince protestors of the benefits of globalization?

**Romer:** First, just look at the facts. The protestors are amazingly ignorant about what has happened in terms of, say, life expectancy. Life expectancy for people in the poorest countries of the world is now better than life expectancy in England when Malthus was so worried about it.

Then you look at the variation of experience between the poor countries that have done best and the ones that have done worst, and try to see what the correlations are. Which countries did best? Was it the countries that adopted the market most strongly, embraced foreign investment, and tried to adopt property rights? Or was it the other countries?

The evidence again is clear. One of the untold stories about the '80s and '90s was the really dramatic turnaround in the developing world that took place on this issue. If you track the legislative history on foreign investment, you see a colonial legacy, even as late as the '70s, where developing countries have laws designed to keep corporations out. Then there's this dramatic turnaround as they saw

the benefits that a few key economies received by inviting in foreign investment. It's not the people from the developing world who are making the argument that Nike is a threat to their sovereignty or well-being. It's people in the United States. The people in the developing world understand pretty clearly where their self-interest lies.

**reason:** What about boosting economic growth in developed countries?

**Romer:** For Europe and the United States, I think we need to be thinking very hard about how we can restructure our institutions of science. How can we restructure our system of higher education? How can we make sure that it has the benefits of vigorous competition and free entry, especially of those bright young people who might do really different kinds of things? We should not assume that we've already got the ideal institutions and the only thing we need to do is just throw more money at them.

Unfortunately, I think a lot of countries have a long way to go to catch up to the state where we are in the United States -- and I'm not that happy about where we are in the United States. Many European countries simply have not recognized the power of competition between institutions. So they have monolithic, state-run university systems. That stifles competition between individual researchers and slows down the whole innovative process. They also need to let people move more flexibly from the university into the private sector and back. This is something that many countries watching venture capital start-ups have become aware of, although they've been slower to get their institutions to adjust.

**reason:** In your recent paper on doing R&D, you said you think it would be possible to raise the growth rate from its average rate of 1.8 percent between 1870 and 1992 to 2.3 percent.

**Romer:** Well, I was trying to set a goal. When you're thinking about the future, you never really know what we're going to discover, but I think there's a reason to set for ourselves an ambition of trying to

raise the rate of growth by half a percent per year. The United States achieved about 0.5 percent a year faster growth than the U.K. did since 1870, so we've got a historical precedent for creating institutions which lead to better innovation of the market and strengthen science significantly. We should aim for that kind of improvement again.

**reason:** Why would that be important?

**Romer:** As you accumulate these growth rates over the decades, we get much higher levels of income. That lets us deal more effectively with all the problems we face, whether it's making good on commitments to pay for people's health care as they get older, preserving more of the environment, or providing resources so that people can have time to be out of the labor market for a certain period of time -- when they're raising kids, say, or when they want to take an extended sabbatical.

Income per capita in 2000 was about \$36,000 in year 2000 dollars. If real income per person grows at 1.8 percent per year, by 2050 it will increase to \$88,000 in year 2000 purchasing power. Not bad. But if it grows at 2.3 percent per year, it will grow to about \$113,000 in year 2000 purchasing power.

In today's purchasing power, that extra \$25,000 per person is equal to income per capita in 1984. So if we can make the choices that increase the rate of growth or real income per person to 2.3 percent per year, in 50 years we can get extra income per person equal to what in 1984 it had taken us all of human history to achieve.

One policy innovation, for example, that would boost the growth rate would be to subsidize universities to train more undergraduate and graduate students in science and engineering. Also, you could give graduate students portable fellowships that they could use to pay for training in any field of natural science and engineering at any institution the students choose. Graduate students would no longer be

hostage to the sometimes parochial research interests of university professors. Portable fellowships would encourage lab directors and professors to develop programs that meet the research and career interests of the students.

**reason:** What's next in New Growth Theory? Any conceptual breakthroughs on the horizon?

**Romer:** Because the economics of ideas are so different from the economics of markets, we're going to have to develop a richer understanding of non-market institutions, science-like institutions. This is going to be a new endeavor for economics.

**reason:** Do you think that there is a big role for economic historians in helping uncover this richer theory?

**Romer:** History is an absolutely essential body of evidence, because you can't make inferences about long-run trends using year-to-year or quarter-to-quarter data.

**reason:** There is a growing movement against technological progress around the world. Why is there this negative reaction to technological progress and what can we do about it?

**Romer:** You're a big believer in turmoil and creative destruction when you're early in life, because you can knock down the old and create your new thing. Once you achieve a certain level, you tend to get very conservative and try to slow the gales down, because they might blow you over. So I think we have to seriously commit ourselves to maintaining space for new entrants and for young people. That's one way to keep the process going. Another is to do what scholars have always done: to proselytize, to dissect incoherent arguments.

I think we'll be able to maintain this dynamic of progress that was unleashed a couple centuries ago. There will be small setbacks and a lot of noise and complaining, but the opportunities and the benefits

are just too great to pull back.

**reason:** Could anything stop economic growth and technological progress?

**Romer:** Even if one society loses its nerve, there'll be new entrants who can take up the torch and push ahead. Mancur Olson talks about Caldwell's Law, the idea that no nation has remained truly innovative for very long. Look at Italy, and then Holland, and then the U.K., and then the United States. The pessimistic interpretation is that nobody can keep the process going. The optimistic interpretation is, Yes, you can, but somebody else comes along and the progress moves from one place to the next.

We've seen individual societies where conservative or reactionary elements suppress the changes. What has protected us in the past is that there were other nations that could try new paths. You didn't have the same political dynamic everywhere at once.

If in the far future we reach a situation where there really is truly global political control -- if multinational institutions grow more powerful over economic affairs so that there is imposed uniformity across all nations -- then there'd be a loss of diversity. And if the reactionary elements got in control of those institutions, there'd be no room for the new entrant, the upstart, to adopt new ideas. But that's a pretty distant and unlikely prospect.

