

Why Are We Still Using Cash?

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by **Stephen J. Dubner**

Produced by **Greg Rosalsky**

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Why is the U.S. printing more cash while other countries are doing away with it? (Photo: 401(K) 2012/flickr)

Our latest Freakonomics Radio episode is called “Why Are We Still Using Cash?” (You can subscribe to the podcast at [iTunes](#) or [elsewhere](#), get the [RSS feed](#), or listen via the media player above.)

It facilitates crime, bribery, and tax evasion – and yet some governments (including ours) are printing more cash than ever. Other countries, meanwhile, are ditching cash entirely. And if Star Trek is right, we won’t have money of any sort in the 24th century.

Below is a transcript of the episode, modified for your reading pleasure. For more information on the people and ideas in the episode, see the links at the bottom of this post. And you’ll find credits for the music in the episode noted within the transcript.

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There are a variety of problems, many of them quite serious, that wouldn’t seem to have much to do with one another. And yet they do. Problems like this one:

MEDIA CLIP: *Authorities say there’s an avalanche of cocaine coming across our borders.*

Problems like this one:

RICHIE DiMASO (played by **Bradley Cooper** in **American Hustle**): *I placed \$75,000 in this briefcase for one Congressman Eric Keshoygan of the 4th District.*

Like this one:

KENNETH ROGOFF: *You’re providing this vehicle that’s facilitating tax evasion.*

And even this one:

CBS NEWS CLIP: It looked like a commando operation The thieves were lowered on ropes onto the roof of the building.

What do high-stakes robbery, tax evasion, bribery, and drug dealing all have in common? One word: cash. So, should we get rid of cash? In the U.S. at least, it won't be easy, in part, because the Federal government is one of its biggest boosters:

ROGOFF: Oh, absolutely there's a big profit incentive.

Some countries, meanwhile, are already well on their way to getting rid of cash.

NIKLAS ARVIDSSON: I believe that in five years it's practically a cash-free economy.

And, in the more distant future, it might not be just cash we've gotten rid of:

JEAN-LUC PICARD: You see, money doesn't exist in the 24th century.

If you go back 40 years to 1976, there was roughly \$80 billion of U.S. paper currency in circulation. Today, there's roughly **\$1.5 trillion in circulation**, nearly 20 times as much, which, on the one hand, would seem to make sense — inflation, right? But on the other hand, why is there so much cash floating around when we've got so many other ways to pay for things? And here's what's even stranger: back in 1976, about 25 percent of U.S. cash was in \$100 bills. And now? Around 80 percent!

KENNETH ROGOFF: How much is that? The average person would be having to carry around 35 or 36 of them in their house or in their wallet. This is for every man, woman, and child.

Ken Rogoff is a professor of economics at Harvard University.

ROGOFF: I work on what's called international macroeconomics. It involves interest rates, exchange rates, trade imbalances.

DUBNER: The sexy stuff, in other words, you work on.

ROGOFF: Not all of it.

So if Rogoff is right, the question is: do you have 35 or 36 \$100 bills in your house or wallet? And even with inflation, how did \$100 bills go from 25 percent of U.S. cash in circulation to 80 percent? And is that a good thing or – well, you've probably already figured out where I'm going with this – is it a bad thing? Let me introduce you to **James S. Henry**.

*JAMES S. HENRY: I'm an economist, attorney, and investigative journalist. And I'm a senior advisor to the **Tax Justice Network** and a senior fellow at **Columbia University's Center for Sustainable Development**, and a **global justice fellow at Yale**.*

When Henry was in grad school in the 1970s, he went home to Minnesota for Christmas to visit his folks. His father was a CPA.

HENRY: And he'd stumbled across this unusual fact that there was more than one \$100 bill outstanding for every man, woman, and child in the United States. And he said, "I've never

seen a \$100 bill. I don't think anybody uses them for retail purchases. We have credit cards, we have checks. You know, where the heck are these things?"

Henry began a long odyssey of looking into this mystery. At one point, he got hold of some data from the Federal Reserve. One duty of the Fed's twelve regional banks is to **supply commercial banks with cash**. Henry could see which regional banks had greater demand for big bills.

HENRY: There were some regions, like the Midwest, that had almost no demand for the \$100 bills.

But Henry and his colleagues discovered a big difference in other places.

HENRY: What we found was the really interesting pattern involving border states like Florida, California and Texas that were basically, it turned out, heavily involved in drug trafficking.

Americans had developed a hearty appetite for illicit drugs, many of which were imported. Most of the drugs that were imported from South America entered through Miami. By the late 1970s, the Drug Enforcement Agency declared that Florida's biggest industry was the **illegal drug trade**, worth roughly \$10 billion a year. James Henry, curious about all those \$100 bills, went to Miami himself and interviewed law-enforcement officials.

HENRY: And they're saying, "Well, this really makes sense when you think about it from our standpoint. The stuff is being sold on the street for tens and twenties. They bring it down here, and they convert it and pay it into the banking system and get larger bills that are easier to ship out." So it was providing the monetary side of the real drug-traffic economy, which was just exploding during that last three, four years of the seventies.

By now, Henry had come to believe that most big bills in circulation were being used for one of two purposes. He had published an article in **The Washington Monthly** explaining his theory. "The first," he wrote, "is profit-motivated crime: illegal gambling, drugs, prostitution, loan sharking, the fencing of stolen merchandise, etc. The second is tax evasion by people who arrange to receive cash income and don't report it." And Henry proposed that the U.S. government should do something about this.

HENRY: Well, I thought it unseemly and probably as a matter of public policy undesirable for the U.S. to basically passively be facilitating this kind of very convenient form of underground activity.

He named his proposal "**Calling in the Big Bills**." It would devalue existing \$100 bills, essentially forcing people with big stockpiles to turn them in for new bills. Henry's idea made a splash in the media and academia, he says, and it contributed to new reporting

requirements for large cash transfers. But it was never seriously considered by policymakers. They just kept printing away.

HENRY: The demand for \$100 bills in the seventies grew at more than 15 percent per year in real terms.

And it hasn't stopped since.

ROGOFF: The growth in cash — how much the government's issued — it's just booming. They don't know where it goes. They don't know who's using it. But they know it's really popular, and they like the money.

They like the money, Rogoff says, because they make money by making money.

ROGOFF: Oh, absolutely there's a big profit incentive. So let's understand: central banks are owned by the Treasury, and it's a little bit difficult to say who's getting the money. But in the United States, we've been earning on the order of four-tenths of a percent of GDP — it's about \$70 billion a year — by printing this stuff. And the Treasury Secretary is very happy about it. The Federal Reserve — it makes them look like a big profit center. That's a little bit of an illusion because you're providing this vehicle that's facilitating tax evasion, which is an order of magnitude larger — let's say 10 times larger — if you did state plus federal. And it's also aiding and abetting crime. And if you took into account the human cost, the enforcement cost, the tax loss, I argue that these easily swamp these visible profits.

DUBNER: I mean, the way you describe the government's role and the government's attitude and their profit incentives, you make them sound like a drug dealer. Like we're manufacturing this stuff, right? We have our own meth lab — it's called the Treasury — and we're distributing it to kind of whoever wants it, no questions asked. And then they take it and do with it whatever they want to do with it — they use it, they sell it, they give it to someone in a suitcase in exchange for something — and we have absolutely no idea what happens to it once it leaves our doorstep. And that doesn't sound like very judicious behavior for a federal government like ours when you put it like that. Am I interpreting your words more darkly than you mean them to sound? Or is it really that bad? Is the government that complicit?

ROGOFF: Well, I try to seem sober, but yes. I basically agree with the tone that you put in that. That's why I refer to it as "reverse money laundering." Because money laundering, you're taking dirty money that you might have gotten through a crime and trying to make it so you can spend it without being noticed and make it clean. And, of course, the central banks take clean money — these \$100 bills — push it out into they don't know where, and of course it ends up as dirty money.

That is just one of several reasons Ken Rogoff believes that cash should be – well, nearly eliminated. Here's how he puts it in his book, *The Curse of Cash*: "[C]ash lies at the heart

of some of today's most intractable public finance and monetary problems. And getting rid of most cash could help more than you might think."

ROGOFF: So the basic idea is to look more closely at the role cash — and here I mean paper currency, very narrowly — plays in our economy.

Rogoff has been thinking about the curse of cash for many years.

ROGOFF: When I wrote my first [paper](#) on this, published in 1998 — it was a very academic, nerdy paper looking at cash demand all around the world and making the point that it's everywhere, it's not just in the United States — and I advocated getting rid of large bills and why it was pennywise and pound foolish to print them.

These days, Rogoff is well-known in policy circles. He advises the New York Fed; he's the author, along with [Carmen Reinhart](#), of the influential book [This Time Is Different: Eight Centuries of Financial Folly](#), which compared the Great Recession to past financial collapses. But back when Rogoff started his anti-cash crusade, he was a minnow. So he was thrilled when he learned that U.S. Treasury Secretary [Robert Rubin](#) had heard about Rogoff's research on large-denomination bills, and that he had convened a task force.

ROGOFF: And I thought, "Oh great, I'm having policy influence." But he didn't have a task force to get rid of hundreds and fifties. He was saying, "Well, if the Europeans are saying they're going to have a €500 note, maybe we need a \$500 bill." And that's the kind of policy influence I had.

Rogoff, undeterred, kept assembling evidence for why we should cut back on cash.

ROGOFF: It just plays a huge role in crime. There are lots of ways to conduct crime. You can use uncut diamonds; you can use gold coins; you can use cryptocurrencies. But you just can't scale them the same way simply because these other things are not that easy to go spend in the economy. And yeah, crime would go on, people would do stuff. You don't have to cut crime by 50 percent to make this a good idea. If you think of what we spend on cutting crime, cutting crime five percent is a big deal. And this is not a very complicated way to do it. Cash plays a very, very big role in just a whole range of crime: drugs, bribes, extortion, human trafficking, money laundering.

DUBNER: Can you quantify the amount of global bribery every year?

ROGOFF: You know, there aren't great estimates. The World Bank braved estimates in the early 2000s and came up with a trillion dollars a year in global bribery. Another thing which is more complex, but if you look at illegal immigration, that's really driven by cash — that employers are able to pay cash. That provides the magnet that brings people over. I favor much greater legal immigration by the way. But if a nation wants to control immigration, certainly cash plays a big role.

Another problem exacerbated by cash: tax evasion. The U.S. tax gap – that’s the difference between what’s owed and what’s paid in – was, as of 2006, around \$400 billion, or 2.7 percent of GDP. Every time someone gets paid in cash, whether they’re a drug dealer or a plumber or a restaurateur, that makes it a lot easier to avoid paying tax.

ROGOFF: It's not like getting rid of big bills is suddenly going to make tax evasion go away, but the numbers are just staggering for the cost of these things. And if you could cut tax evasion by, say, 10 to 15 percent and cut crime even by a few percent, I argue that would be a big win over the purported gains from these mass quantities of cash that are around.

Rogoff is not arguing for a totally cash-less society ...

ROGOFF: I call it the "less-cash society."

If you accept that cash promotes tax evasion, illegal immigration, all sorts of crime – you might think that Rogoff’s argument is not at all controversial. You might think no one besides drug dealers and dictators — maybe government treasuries – would object. Because cash, as wonderful an invention as it was, and as well as it’s served us for centuries, has come to feel a bit antediluvian in the 21st century. And you’d think we’d be eager to see it go. Alas, if that’s what you thought, you would be wrong.

There are a lot of other people who see cash very differently than a Harvard economist like Ken Rogoff. On Amazon.com, for instance, his book has a [disproportionate share of one-star reviews](#). Here’s a typical one: “Cold, hard cash may allow criminals anonymity, but it also affords honest, law abiding people the [freedom] to live [their] lives outside a shaky and corrupt [bank] system ... Beyond that, why should honest people not be allowed anonymity? The day we go cashless, the government will be able to track your ‘every move.’ ... This is nothing more than sheer propaganda to enable the money powers to steal from ‘the little people.’” Ken Rogoff is not blind to this concern:

ROGOFF: I think the privacy issue is a huge one. And my view is that there's a tradeoff and you have to sort of draw the line between: you don't want to allow big, repeated, anonymous, wholesale transactions by big operations, by big tax evaders. If somebody wants to do something for a few hundred dollars, you totally want to allow that.

HENRY: This is a concern that when I first wrote my piece back in the 1970's I didn't really have. It was a period in which pervasive government spying wasn't such an issue. I guess I have more sympathy now with the idea that many citizens might feel about, "Stay out of our affairs!" We want to have some large bills on hand that no one knows we have — I mean it's not necessarily a bad thing to have some financial privacies.

If you are the kind of person who objects to a less-cash society on privacy grounds, you will almost certainly hate Rogoff’s following argument. He thinks one of the most important

reasons to get rid of most cash is that it would give central bankers more control over the economy.

ROGOFF: So right now, interest rates are stuck at zero and there are certainly a lot of economists and central-bank researchers who've argued that at the peak of the Great Recession, it would have been nice if they could have cut interest rates even more than they did below zero, maybe even to minus-two to -four percent, to try to just jump-start the economy, keep inflation up, keep employment up. That's not something you do lightly. It's not something you want to do, but if you have growth collapsing, if you have inflation collapsing, in principle it would work. Why didn't they do it? Why didn't they even really consider it? They didn't do it because there is paper currency, and central bankers rightly worry that if they set interest rates really negative and people thought they would sit there for a long time, there'd be this mad dash into cash which would, first of all, eviscerate the policy, because interest rates wouldn't go down, and second of all, create all kinds of chaos with that much cash floating around.

When **The Wall Street Journal** published an excerpt of Rogoff's book covering this idea, the comments section exploded with charges of statism and worse. "Rogoff is a dangerous apparatchik," one commenter wrote. "He is, in his own underhanded way, calling for a dictatorship. Rogoff would have done well in communist Russia or Nazi Germany." Again, Rogoff is relatively undeterred; he stands by his idea:

ROGOFF: I think that it's always hard to move the status quo. And I think a lot of the casual objections that people have given over the years are pretty superficial when you think about them. Not all of them. I mean there are some deeper ones like privacy, which are trickier, but I think there are answers to those too.

Rogoff's plan for a less-cash society would need to be carried out gradually and thoughtfully.

ROGOFF: So the specifics of my plan are to first phase out large notes over a fairly long period. We'd start with hundreds, then fifties, then twenties. Think of that taking place over 10 to 15 years. I would leave the smaller notes around just because we're still far from solving perfectly some of the problems about what to do in a storm, privacy, small transactions; you want to send Junior to the store for candy and don't want to give them a credit card. I would eventually also phase those out.

Rogoff would eventually replace small bills with coins, again, making it harder to carry large amounts of cash.

ROGOFF: You know, the whole idea is to make it hard carry huge amounts around; to have huge transactions. And a third principle is you absolutely have to provide for financial inclusion to make sure that the poor, which are particularly reliant on small bills and cash,

have other means to do things. Give people subsidized debit cards, they've done this in other countries, I think it's actually rather easy and relatively inexpensive to introduce, someday even smartphones. A lot of the objections — I think if people think it out, maybe they'll feel they're a little less compelling. Everyone feels they have an intimate relationship with cash, and they sort of have an idea off the top of their head, "What if we have a storm and there's no power. How would I pay?" You know, "What if I don't want my spouse to know that I bought something for her?" That kind of thing. Everybody has a question off the top of their head, and if you think about it a little more, these can be answered. But it's something that's very intimate. I think that's one of the reasons you have to move slowly.

At the moment, Rogoff's dream still feels a bit like a dream, at least in America. But elsewhere, forget about a less-cash society; they are rushing headlong toward getting rid of cash entirely.

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If you were not paying attention to the news coming out of Sweden in September of 2009, you might have missed this story:

*NIKLAS ARVIDSSON: A group of very-well organized criminals had decided to **rob a cash depot** in the southern part of Stockholm.*

Niklas Arvidsson is from Sweden.

ARVIDSSON: I'm an associate professor at the Royal Institute of Technology in Stockholm, Sweden.

A cash depot, Arvidsson tells us, warehouses and distributes Sweden's currency: kronor, or, in English, "crowns."

ARVIDSSON: So this was a place where there was a lot of cash.

The thieves were ambitious.

ARVIDSSON: They had stolen a helicopter.

They were good planners. On the roads leading to the cash depot, they laid down spikes to prevent police cars from reaching them.

ARVIDSSON: And they also put fake bombs on the police helicopters. The police actually were scared to use them.

They flew their stolen helicopter to the cash depot just before dawn on the 23rd of September.

ARVIDSSON: And they drilled a hole through the roof, entered the building.

They used explosives and chainsaws to get into the safes.

ARVIDSSON: They got around 40 million Swedish crowns, about US \$5 million.

They loaded the money into the helicopter ...

ARVIDSSON: What they did then, was they actually they dropped the money in a lake. So a boat picked up the money. Then they landed the helicopter away from that area and just left it there and drove away with runaway cars.

Most of the thieves got away.

ARVIDSSON: Some of them were caught. But the money was not recovered and the people they caught, of course, got into jail, but they didn't say where the money is. So the money is still gone.

Arvidsson says the heist had a profound effect.

ARVIDSSON: This really took Sweden with a big surprise, I think. To us it was the things we had seen in Hollywood movies but never thought could happen in reality.

It was also the most dramatic of a string of armed robberies in Sweden – not just banks but retail shops, even city buses were being robbed. The lure of cash was obvious.

ARVIDSSON: And this intensified this debate. This made many people say that enough is enough. We can't have cash anymore. It's not safe.

Arvidsson has spent years studying payment systems in general, and particularly how to get rid of cash. When it comes to money, Sweden has been on the leading edge for a long time.

ARVIDSSON: The Swedish Central Bank in the 1660s was one of the first central banks that actually issued paper money by the state.

In the 1970s, Swedish banks were an early adopter of information technology, which changed how companies paid workers.

ARVIDSSON: So they talked with the industry and decided together that wages and salaries were to be paid directly into bank accounts instead of being paid out in cash.

By the 1990s, with debit and credit cards so prominent, Swedish banks began to phase out checks.

ARVIDSSON: The banks issued fees on checks and that basically killed the whole check service in Sweden. So today we don't use checks at all.

Arvidsson says Sweden's progress on electronic payments had stalled by the mid-2000s, especially after the global financial crisis. Then came the wave of robberies.

ARVIDSSON: This caused a lot of trauma for the people working in these buses, in these retail shops, and in these banks. So the unions started to think that, "Well, should our employees really have to suffer this?"

Swedish unions began to campaign for currency reform.

ARVIDSSON: They started something they called Cash Free Now. They stationed people next to ATMs, for instance, in Sweden and started to talk with normal people that just wanted to withdraw cash from the ATMs. Started to inform them about the risks of cash and so on.

The Swedish government, meanwhile, decided to [phase out the 1,000-krona bill](#), its largest denomination; it's worth a bit more than US\$100. But Arvidsson says the private sector has been more aggressive. Banks, for instance, have been shutting down ATMs. *ARVIDSSON: So it increasingly became more and more difficult to access cash.*

The banks also created a mobile-payment service called [Swish](#). It's a smartphone app that lets you transfer money almost instantly.

ARVIDSSON: So the money is actually transferred within two seconds from one bank account to another.

This feature, known as real-time clearing, is vital to replacing cash. We've been talking about various disadvantages to cash, relative to electronic payments, but think of its advantages: cash is portable, it's fungible, it's instant. Niklas Arvidsson says that Swish has replicated these advantages so well that cash itself isn't as necessary.

ARVIDSSON: One way of measuring how much cash we use is cash in transit in relation to GDP. And for Sweden that number is less than two percent. I think the corresponding figure for the U.S. is about seven percent. And for the EU/EURO area it's even higher — around nine percent or so. And it could actually be that this number is a little bit old. I think because the decrease of the use of cash is so quick now. Just the last year the amount of cash in circulation decreased by over 10 percent. So the decrease is very rapid now.

So rapid, in fact, that Arvidsson believes Sweden — the first European country to issue government-backed paper currency — may be the first one to get rid of it.

ARVIDSSON: I believe that in five years, or somewhere around that, it's possible, it might even be likely, that we are in a situation where the use of cash is so little that it's sort of practically a cash-free economy.

In its push to minimize cash, Sweden is hardly an outlier. The rest of [Scandinavia is moving in the same direction](#) for all the reasons we've been hearing, including Ken Rogoff's and James Henry's arguments that cash is much more useful to criminals than anyone else.

It's also happening elsewhere in Europe — [France](#) and the [Netherlands](#) in particular — and all over Asia. [Singapore's central bank](#) is pushing commercial banks to do away with cash; [South Korea wants to become a cashless society](#) by 2020 and has a plan that

even when someone uses cash to make a purchase, the change they get would be deposited into the customer's electronic account.

What all these countries have in common is a long and robust history of electronic payment technology, which certainly helps if your goal is to phase out of cash. They're all also relatively rich and relatively small. But what about a country without that history, a country that happens to be very large and that has a lot of poor people?

NANDAN NILEKANI: India is actually in a unique place to leapfrog on payment technology and make the economy depend less and less on cash.

Nandan Nilekani is an Indian billionaire who co-founded the IT consulting firm [Infosys](#). His 2008 book *Imagining India* offered a roadmap for India to thrive in the 21st century.

Nilekani was asked by then-Prime Minister **Manmohan Singh** to set up a modern identification system for Indian citizens, along the lines of how the U.S. introduced the Social Security Card back in the 1930s.

NILEKANI: They needed an ID for everyone to sort of keep track of their contributions and the entitlements through their lifetime. And fundamentally India was at a similar point, where millions of people are getting benefits, but because they didn't have a strong ID system, there's a lot of wastage, leakage, and corruption.

The new system, called [Aadhaar](#), led to a billion people getting an official ID in just over five years. But it's more than just a Social Security Card; it's a technology platform with biometric identification that among other things helps individuals and institutions seamlessly transfer money to one another.

NILEKANI: So when government gives any kind of subsidies or entitlements, they can electronically route it into the bank account of the recipient using Aadhaar. And today, that system has done over a billion transactions already, in the last three years. Now that's the first step, because when money comes into somebody's bank account, it's already sitting in an electronic account, and therefore it is cashless. But today, because the rest of the economy's cash, people go to what is called a business correspondent, who is an agent of the bank, and remove physical paper cash out of their accounts. Now if there's a way that we can get them to retain their money in their accounts and transact cashlessly, then automatically the route to the cashless society starts.

Nilekani has been trying to make this happen as an advisor to the [National Payment Corporation of India](#). It's a non-profit set up by Indian banks to modernize their payment system.

NILEKANI: They've launched many payment systems for retail payments, ATMs, mobile payments, and all that.

Now they're working on the [Unified Payment Interface](#), or UPI.

NILEKANI: UPI is a way to leapfrog on mobile payments. And it is designed for instant debit and instant credit, which means that, let's say that I am paying a merchant 5000 rupees at a shop. I say "pay 5000," and automatically my account gets debited in real time, and the merchant's account gets credited in real time. Now, this by the way, this system, such a system, doesn't really exist for example in the U.S. It's a big deal.

It's a big deal, Nilekani says, because it's fast, secure, flexible, and cheap.

NILEKANI: We're building a system for every bank to talk to every other bank, do an instant payment, instant debit and credit, with very low transaction cost. This system doesn't exist anywhere else in the world. Sending and receiving money from your mobile phone will be as simple as sending or receiving a text message or an e-mail. And we think that with India's growing smartphones — already India has 200 million smartphones, expected to grow to 700 million, 1 billion people with the Aadhaar number — and the government pushing everyone to get a bank account as part of financial inclusion, all these things are coming together to create, sort of a tipping point, which we think will lead to a dramatic surge in cashless transactions.

India has a massive [underground economy](#), by some estimates as big as half a trillion dollars a year.

NILEKANI: Once you have a digital trail, obviously it's far more difficult to do money laundering or avoid paying taxes. But I think the biggest thing in favor of going cashless is that now my digital behavior of payments I can now harness to get a loan. And I think that's a huge thing. Typically loans are given against assets, and these people don't have any assets. But once you have their payment history, then you can give loans against the cash flow because you know that they have a certain earning capacity, and therefore you know that they can pay the loan back. So I think — I see that credit, affordable and convenient credit, is the killer app of making this country cashless. And I think that benefit will start overriding everything else. But having said that, you know, this is not a one-year kind of project. This is a project that will run over decades. I still believe it will be many, many years before we go to truly cashless in a large country and disparate country like India with a billion people. Whereas certainly in a smaller country like Sweden or Estonia, which had just a few million people, which are highly homogenous and well-educated, they can probably do the transition much faster.

According to a [recent report](#) by the Boston Consulting Group and Google, in developed countries, cash "contributed to just 20-25 percent of overall consumer payments." In India, that number is 78 percent. But, the report notes, that number is falling fast in India, and non-cash transactions should overtake cash within about seven years or so. So if current trends continue, most countries will become increasingly less reliant on cash. But what about

getting rid of money entirely? If science-fiction is any guide, that will happen, but not for a few centuries.

SAADIA: Money is incredibly useful. It's probably one the greatest inventions.

Manu Saadia mostly writes about the future.

SAADIA: I just published [Trekonomics: The Economics of Star Trek](#).

The [original series of Star Trek](#), which began as a TV show 50 years ago and inspired several movies, was set in the 23rd century. They used a currency called Federation credits.

SAADIA: The name Federation credits and credits is what every science fiction universe uses. They all call it credit. In Babylon Five – it's credits. In Star Wars, they talk about Empire credits.

To Saadia, the fact that most science-fiction writers resort to the generic term “credit” shows they weren't thinking too deeply about the future of money.

SAADIA: Because if you get into the details you would try to call it something else.

But in a 1986 Star Trek film, something interesting happened.

SAADIA: So in [Star Trek IV: The Voyage Home](#), the crew of the Enterprise has to travel back to the 20th century to rescue, to bring a bunch of whales into the future to save Earth, because Earth is under attack by a probe that is trying to communicate with whales. It sounds ridiculous, and it kind of is. But there is this famous scene in a restaurant where Captain Kirk, always the ladies' man, is trying to convince the biologist to let him take the whales. And she takes him to a pizza joint in San Francisco. And at the end of the meal when the bill comes, she has to pick it up because obviously Captain Kirk doesn't have money, and they don't have money in the 23rd century. So it's played for comedy here and it works really well because the actors are fantastic. But it's also the pivotal moment, I think, to me, for the economics of the future.

Saadia says that what began as throwaway jokes about a future without money became the entire social and economic foundation for the next installment of Star Trek – [The Next Generation](#) – which takes place in the twenty-fourth century.

SAADIA: None of the behaviors that we normally associate with market economies have currency in the 24th century.

There's also no poverty or famine; there's an abundance of everything. This is largely thanks to the miracle machine known as the replicator.

SAADIA: And the replicator is a machine that can materialize anything you ask of it, on the spot. It is largely a metaphor for automation and robotics. The replicator is the last machine. There is no better machine than the replicator. The other thing about the replicator is that it

is a public good. So what that means is that it is non-excludable and nonrival. Anybody can use it, and nobody can put any kind of toll or barrier to its usage. And your usage of the replicator doesn't prevent anybody else from using it as well.

As utopian as that sounds, Saadia argues that it's not necessarily impossible, based on a reading of the present.

SAADIA: Some sectors of the economy today — technological sectors of the economy — are no longer relying on monetary exchange. I mean one of the most striking examples of that is the GPS, the Global Positioning System. This is something that costs society about \$1 billion a year to operate, so basically it's nothing. And it creates an amount of value that is absolutely incommensurate to its annual cost. And it's also free to use by everybody. There are more than 3 billion GPS receivers active in the world at any one time. So you can see a non-monetary part of the economy develop alongside the regular monetary part of the economy, the market economy. So I think that where there is no scarcity, there's probably no need for money. That's how I see it. I believe that the use for money will become less and less prevalent.

In the meantime, in the real world, we're still talking about doing away with physical money.

SAADIA: I find money fantastic. I am a complete fan of all the various types of bills that you can find in the world.

In this regard, Manu Saadia is not alone.

NILEKANI: I think Indian currency is quite colorful.

ARVIDSSON: We're actually launching new bills and coins in Sweden. So now it's not kings and royal people. It's famous Swedish people.

NILEKANI: Indian currency has all of the major Indian languages on it.

ARVIDSSON: I mean, they are beautiful. Yes, indeed.

Even Sweden, the country that seems to be winning the race to a cashless future, has reservations about getting rid of cash. Niklas Arvidsson again:

ARVIDSSON: We made a study about two years ago where we interviewed 1,000 Swedes that were a representative sample of the entire population of Sweden. And there, two-thirds said that they think that cash is a human right. So there was very strong sentimental feeling towards cash. It is a human right to access cash. While at the same time we see that no one is, or fewer and fewer today, are using cash. This is an interesting paradox. I think there's something related to that cash is a symbol of the state of Sweden, and people like that. We like when the national team in ice hockey or football play the games. We feel like Swedes. And it seems like it's the same with cash. We feel like Swedes when we see Swedish cash, even though we do not use it.

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Here's where you can learn more about the people and ideas in this episode:

SOURCES

- [Kenneth Rogoff](#), Professor of Economics at Harvard University and author of *The Curse of Cash*
- [James S. Henry](#), an economist, attorney, and investigative journalist with positions at Yale University and the Tax Justice Network
- [Niklas Arvidsson](#), Professor in Industrial Dynamics at the Royal Institute of Technology in Stockholm
- [Nandan Nilekani](#), co-founder of Infosys and former Chairman of the Unique Identification Authority of India
- [Manu Saadia](#), author of *Trekonomics*

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- Christopher Norman, "Lights"
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- The Kingmakers, "A Good Song" (from *The Kingmakers*)
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- Vicki Hansen, "India Upbeat"
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