The portions of this talk that does not come from outside Rice are the result of a collaboration with Dagobert Brito, Rice Economics Dept.
My children will be better off than I am.

Has this American Dream faded?

Raj Chetty, Stanford Economics has been exploring this question.

The next three figures are his and his colleagues.

In all that he does, he takes inflation into account.
Corrected for inflation, with each succeeding decade of birth, children born after the great depression, children have gradually been losing the expectation that they will be wealthier than their parents.

Fig 1a
The fraction of children better off than their parents was very high for kids born in 1940. This fraction declined over the years. By 1980, this became a 50/50 chance for kids.

Figure 1b
Values: 92% in 1940 to 50% in 1984
Growing inequality

Total income to 10% divided by total income to bottom 90%


This is IRS data conveniently packaged by Piketty. Note that you don’t have to worry about effect of inflation on this ratio. What happened in the late 1970’s that caused this?
The present administration wants to attack the first factor.

Unless you want to tax or outlaw robots, there is nothing that can be done about automation.

Note that without automation the U. S. will surely fall behind the rest of the developed world.
Wages are clearly lower in Mexico and China. The Mexico number seems accurate, the China final numbers seem a little high. U.S. workers with wages more than $20 per hour cannot compete with wages like this.
U. S. industrial production has grown constantly while employing fewer workers.

The increased U.S. manufacturing productivity comes from extensive introduction of robots.

It is unlikely that any new manufacturing facility in the U.S. will not be extensively automated.
Horses faded in importance remaining in value for limited purposes.

Automation allows capital to substitute for labor.

The industrial revolution allowed capital to substitute for the muscles of horses and men,

But

the machines needed the brains of men to operate them.

Automation is now substituting for both muscles and brains.

This is irreversible
Over the last eight years, automation of work has spread to all sorts of back office jobs through first the extensive use of computers more recently augmented by big data.

Example: Search engines make legal research much less labor intensive.

The next big labor displacement will be displacement of drivers through driverless cars probably starting with long distance trucking.

There are about 1.8 million “big rig” drivers currently making over $19 per hour (Bureau of Labor Statistics).
A more nuanced version of what he said is that in the U.S. currently about 17% can compete with computers. In Finland with about the best results in the world on testing, about a 1/3 of the people in their 20’s and 40’s should be able to compete with very near future computer technology.
We have considered the possible differences between the abilities of computers and people. In closed field operations such as chess and go, computers are better than the best individual. In less structured situations, programming computers for every eventuality is challenging. Driving is the current frontier challenge for computers. Even for the best programs imaginable, it seems inevitable that on occasion the vehicle’s computer will have to phone home for help.
Our models indicate that Type A’s will prosper while Type B’s suffer.

• Because they cannot be replaced by computers, Type A’s will be a scarce factor in the economy. Market economies reward the scarce and needed.
• As people are displaced by automation, they enter the labor market increasing the competition for jobs.
Are there enough people who can be educated to do the jobs that require scarce skills?

Argued in the book, *The race between education and technology*, that the educational system is at fault for not producing enough skilled workers.

There is evidence to the contrary.

At least in the very highest skill levels

*Authors: Claudia Goldin, Lawrence Katz

This is Elliott’s general belief.
Let’s look at a couple of examples.
Consider the fate of economics Ph.D.’s who choose to enter academia. A threshold for tenure is equivalent in *American Economics Review* or equivalent (the blue line). This graph shows the number of publications vs. the percentile of the graduates. These numbers indicate that Harvard produces about 5 successful academic economists per year, the top 30 about 41, and the bottom 131 about 22.
The spike at about $170,000 represents the new hires into the big firms. There most will work 70+ hour weeks for a half-dozen years until let go after they fail to make partner.

Source: Data extracted from the National Association of Law Placement website, [http://www.naip.org](http://www.naip.org) for year 2011.
Robots will work cheaper than labor otherwise they would not be employed.

If you cannot develop the advanced skills necessary for a Type A job, why try?

Replacement is a difficult question. I don’t know about Rice specifically but the elite universities generally enroll about as many kids in the top 1% of family income as they enroll of the bottom 50% of family income.

Good question?

Good questions?

It is hard to figure out what one would want government to do.