

Keynote speech to

## The Texas Lyceum meeting on the State of Innovation

At the Baker Institute for Public Policy, Rice University, Houston, Texas

By Dr. Edward J. Egan

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Ladies, Gentlemen, and distinguished guests, I am Ed Egan it is my distinct pleasure to welcome you to the second day of the Texas Lyceum's meeting on the State of Innovation.

This morning's program is sponsored and hosted by the McNair Center for Entrepreneurship and Innovation, based here at Rice University's Baker Institute for public policy.

I would like to thank the Lyceum's committee, especially Mr. Alex Cestero, Mr. Sanjay Ram, Ms. Reda Hicks and Ms. Kathryne Hillier; the Baker Institute, especially Ambassador Djerejian and our wonderful event staff; and Dr. Anne Dayton, the McNair Center's Research Manager, for making this all possible.

We have a wonderful morning ahead of us, with talks from renowned scholars and practitioners, panel discussions on energy innovation, civic innovation, and space and federal innovation, and a series of Ignite presentations. This afternoon, the Lyceum's meeting will continue in the Texas Medical Center where it will focus on Life Science innovation.

First, though, I want to take this opportunity to frame your thoughts.

Texas Lyceum members are more likely to be future Texas statesmen and stateswomen than any other group. Some of you in this room will one day be charged with making a difference. This being an election year, perhaps soon.

You face a monumental challenge. The U.S. economy had a structural break in around 1980, and since then America growth and prosperity have increasingly come from the innovation economy.

Today, high-technology firms account for around 20% of the U.S. economy, and around half of all U.S. economic growth. Some estimates attribute as much as 80% of the remaining half of economic growth to technology too, through improvements in

automation, information and analysis, communication, and understanding. The five biggest firms, measured by market capitalization, are now more often than not all tech firms.

Some states have increasingly prospered in this new world, but Texas isn't one of them. Texas has continued to savor the old economic winds of oil and gas, ports and transport, and abundant land. It has built few sails to catch the new winds of high-technology, high-growth business. Worse still, it has few homegrown sail makers and, at the state level, is not working to build its capabilities.

To the extent that innovation and entrepreneurship are mentioned by state-level politicians, I expect that you will hear three things:

First, Texas is a low regulation state and that attracts new businesses.

There's some econometrics to support this, at least for some samples of certain types of firms. But the data seems to tell the opposite story for high-growth high-technology firms, most likely because of an omitted variable. Low regulation states tend to be those with low policy capabilities. Doing nothing doesn't impede, but it doesn't help either.

Second, Texas has the highest immigration of any state... or sometimes "more Californians come to Texas than Texans go to California".

But who is coming? 40% of Texas' immigration is international. The other 60% is disproportionately low-skilled workers with incomes just above the poverty line. Cashiers, cooks, truck drivers, and material movers are among the most common occupations of domestic migrants. Yes, there are some entrepreneurs, some innovators, some STEM workers, too. Just proportionately far fewer than go to the so-called "high-cost of living" states.

And third, Texas has a fantastic innovation triangle. Sometimes this triangle is for medical innovation and features Houston, Dallas and San Antonio. And sometimes that triangle is for startup firms and features Austin, Houston, and Dallas.

Well, no. For medical innovation, the Texas Medical Center is the largest TREATMENT center in the world. It drastically underperforms on innovation, and data on Dallas' medical institutions suggests that they aren't doing any better.

For startups, Austin is a force to be reckoned with! It was the 6<sup>th</sup> best city for venture capital in the country in 2016. But Houston, the largest city in the state and 4<sup>th</sup> largest in the country, came in 39<sup>th</sup> and Dallas faired only a little better.

What these three statements have in common, aside from enough spin to stabilize a gyroscope, is that they disclaim the need for policy.

Everything is great, they say, so why take costly action? Everything is not great. Texas faces being left to vagaries of the price of oil, and shut out of America's new engine for economic growth.

To the extent that there is current spending on entrepreneurship and innovation, it goes towards playing a game of beggar-thy-neighbor, where even the winners are cursed. Facilities from Amazon, Facebook and GM all opened in Texas last year. Presumably Texas bid the most for them. It's unclear if the net value for the state from winning these auctions is currently positive.

A better strategy is to learn to farm startups. Homegrown firms are loyal! And a base of them changes the auction math: we will have to pay less for outsiders and would get more back from synergies and spillovers.

The first step towards this is building policy capabilities; to understand the cost-benefit tradeoffs of different ways to fertilize the soil. These capabilities can be built in partnerships with academia, non-profits, and for-profits, where they should persist across legislatures.

The City of Houston has made marked in-roads in this in the last two years. The changes in the city's startup ecosystem are palpable. A local non-market institution has finally closed its doors, a new fund-of-funds is being designed, and city task forces are exploring innovation districts, seed accelerator programs, and data science centers. With a decade of compounding of the likely results, Houston's startup scene could be competitive with that of other major U.S. cities.

Bigger picture and longer term solutions need state and federal investment. From 2006 to 2015, the average U.S. state grew its real venture investment by around 120%. (Texas's declined by 19% over the same period, but let's not dwell on that.) New York grew a staggering 577%. Could Texas do the same?

A second step is surely to leverage what we have: Oil and gas and medical treatment. The challenge will be in breaking down their boundaries. Both industries are characterized by what economists call "closed innovation". They don't play well with the other children.

They are huge industries, which is both a challenge and an opportunity. It's easy to find an oil firm based here in the city that has annual revenues greater than the entire

U.S. venture capital sector. Perhaps a stubbornly low oil price will help; necessity being the mother of invention.

For medical innovation, greater support for, and much greater local capture of, NIH and NSF grants (particularly their SBIR and STTR variants) would likely have a material impact. But that in itself won't be enough.

We need to change the calculus, probably through both carrots and sticks, to make engagement in innovation and with startup firms a priority for our local incumbents.

The third step is to address the deeper issues. Texas has some great educational institutions, including the University of Texas and Rice. But, with the exception of Austin, it has low numbers of university students per capital in each of its major cities.

Education isn't the only important infrastructure category: transport, power, communications, crime and corrections, government itself... they all matter. U.S. News and World report put Texas at 38<sup>th</sup> out of U.S. states for overall infrastructure for 2017, and 49<sup>th</sup> for physical infrastructure.

I have a colleague here today who is fond of reminding me that I can suggest anything I like to the state legislature, as long as it doesn't involve an appropriation. There are certainly lots of low- or no-cost things that we can do to harness the power of the markets.

But ultimately, the only way for Texas to become a master of the new economic winds is to invest in the future. As you'll see in the talks and panels today, we have the start of so much potential on so many different fronts. What we need, is men and women of courage and conviction to recognize that now is time to act, and to lead Texas in to the new era of innovation-based productivity.

Thank you.

Speaking of such men and women, it is now my distinct pleasure to introduce Mr. Brad Morrison, the 2018 president of the Texas Lyceum, and Ms. Reda Hick, the meeting co-chair.