INTERVIEW

# Enrico Moretti

**Geographic differences in economic well-being, it seems, have become increasingly salient in American policy and political conversation. These differences are a longtime concern of University of California, Berkeley economist Enrico Moretti. In his research, he has found that the sorting of highly educated Americans — and high-paying jobs requiring a lot of education — into certain communities has led to other communities falling behind. Moreover, they've been falling behind faster economically as time goes on. This pattern, in turn, has been reflected in other socioeconomic differences, including divorce rates and life expectancies.**

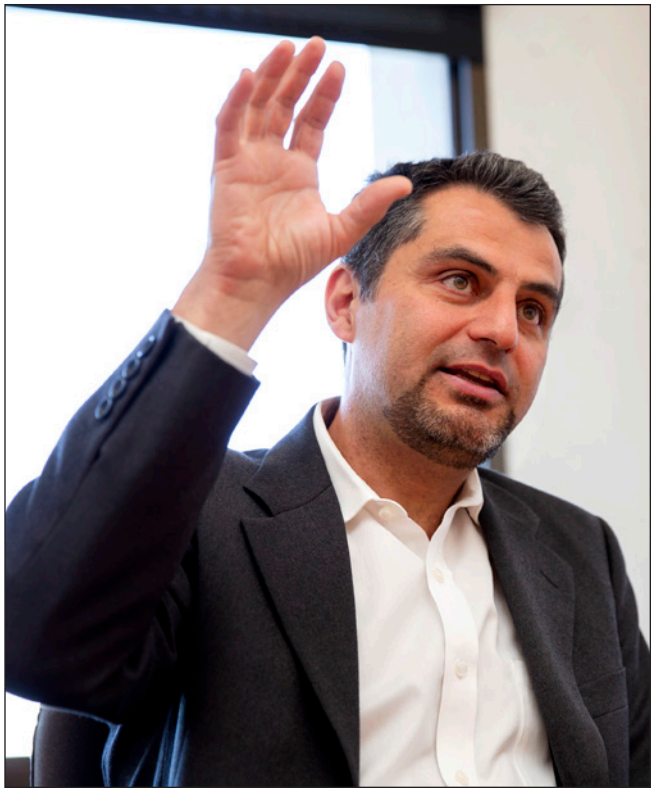
**Moretti's interest in American geographical sorting began during his days as a Ph.D. student at Berkeley, where he arrived after his undergraduate education in his native Milan. At first, he just wanted to fill in some blanks in his knowledge of America. "I started looking at data from the U.S. census," he says. "Just out of curiosity, wanting to know more about this country, I started looking at the different city averages of whatever the census could measure — earnings, level of education of the workforce, the type of industry. I suspected there were big differences, but I didn't know how large the differences were." He went on to write his Ph.D. dissertation on the benefits in terms of higher earnings that less-educated workers obtain from being in a city with a large share of workers with college degrees.**

**Along with a long list of articles on these matters in top economics journals in the time since, Moretti's 2012 book for general audiences, *The New Geography of Jobs*, has received widespread attention (and was on former President Barack Obama's short list of recommended nonfiction books in a Facebook post last summer).**

**Moretti has some experience as a self-described unskilled worker himself, spending a year working with special-needs children as part of the staff of the social welfare department of a town outside Milan. "I was a low-level aide, just being there with the kids, mostly. But it has stayed with me in many ways. It's hard to think of a more consequential type of activity. As much as I think that academic work is important and socially relevant, it is not even close to this."**

**In addition to his current position at Berkeley, Moretti has been on the faculty of UCLA and has been a visiting scholar at Columbia, Stanford, and Yale. He is editor-in-chief of the *Journal of Economic Perspectives*.**

**David A. Price interviewed Moretti in his office at Berkeley in March 2019.**



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**EF: During perhaps the first decade or so of the World Wide Web, there were numerous predictions that geography would disappear or almost disappear as an issue in knowledge work. It seemed as if white-collar workers, if one believed the predictions, would be able to work from anywhere.**

**Moretti:** Yes.

**EF: What happened?**

**Moretti:** It's one of the main paradoxes of our times. The explosion of the internet, email, and cellphones democratizes the access to information. In the 1990s, people thought it would also make the place where the company is located or where workers live much less important.

The idea of *The World Is Flat* by [Thomas] Friedman was indeed that location would lose its importance. Because I can sit in front of a laptop in rural Tibet and have access to the same information that I have if I am in the center of Silicon Valley in downtown Palo Alto, location was expected to matter less for workers and firms.

But what we have seen over the past 25 years is that the opposite is true: Location has become more important than ever before, especially for highly educated workers. The types of jobs and careers that are available in some American cities are increasingly different from the ones available in other American cities.

There's nothing new in the fact that some areas are economically more dynamic than others and offer better labor market opportunities; that's always been the case. What is different today is how large the difference between the most successful labor markets and the least successful labor markets has become and how fast they are growing apart. It's a paradox because it is true that we can have access to a lot of information and communicate easily from everywhere in the world, but at the same time, location remains crucial for worker productivity and for economic success.

> The presence of agglomeration economies and the advantages of geographical agglomeration don't necessarily imply that the same process applies forever. When there are shocks large enough, we see entry and we see exit.

In the first three decades after World War II, manufacturing was the most important source of high-paying jobs in the United States. Manufacturing was geographically clustered, but the amount of clustering was limited. Over the past 30 years, manufacturing employment has declined, and the innovation sector has become a key source of good jobs. The innovation sector tends to be much more geographically clustered. Thus, in the past, having access to good jobs was not tied to a specific location as much as it is today. I expect the difference in wages, earnings, and household incomes across cities to continue growing at least for the foreseeable future.

**EF: Alfred Marshall, as you know, wrote about so-called agglomeration economies as long ago as 1890. Presumably, he was thinking about manufacturing when he wrote about that. Why are the trends you're describing becoming so much more important now? What is different about these "innovation sector" industries?**

**Moretti:** The microeconomic foundations of agglomeration economies represent an area of active research right now. We have a general sense of the magnitude of the economic benefits of agglomeration. We are still trying to empirically assess the relative importance of the microeconomic channels that may generate those benefits. There are three that have been identified in the literature and are likely to play a significant role in practice. The first one is the existence of knowledge spillovers, also known as human capital spillovers: the fact that our human capital depends not only on where we go to school and how much schooling we get, but also on the people who surround us and from whom we learn.

The second one is the matching advantage offered by thick labor markets. In the case of specialized workers, who often have idiosyncratic skills, thick labor markets allow for a better match with firms. For example, if you are a biotech engineer specialized in, say, biofuel and you work in Silicon Valley, where at any moment in time there are a thousand biotech firms looking for biotech engineers, you are more likely to find the one that studies biofuels than if you are the same biotech engineer located, say, in Chicago, where at any moment in time there are fewer biotech firms looking for engineers. A better match means a better career for the workers. At the same time, it is advantageous for firms because it results in higher productivity.

The third channel is the thickness of the market for specialized services. Again, if you are in an area where there are many other firms like yours and they all need a very specialized type of vendor, you are more likely to find it in an area where there's a big agglomeration of firms in the same sector.

All three factors exist in manufacturing, of course. But they are much stronger for firms and workers that engage in innovation.

That is why we see some agglomeration of traditional manufacturing firms, but when we compare it to agglomeration of firms in the innovation sector, the latter is much stronger. I have just finished a new project where I study how locating in a high-tech cluster improves the productivity and creativity of inventors. If you look at the major fields — computer science, semiconductor, biology, and chemistry — you see a concentration of inventors that is staggering. In computer science, the top 10 cities account for 70 percent of all the innovation, as measured by patents. For semiconductors, it's 79 percent. For biology and chemistry, it's 59 percent.

This means that the top 10 cities generate the vast majority of innovation in each field. Importantly, the share of the top 10 cities has been increasing since 1971, indicating increased agglomeration.

In a world where all the information is available online, you would expect the opposite to happen, and yet we see more concentration of inventors today, as measured by my data, compared with the early '70s. I think it's because the three channels are particularly strong for these types of workers and firms.

**EF: When you talk about innovators and innovative industries, you mention semiconductors and life sciences. Are there other industries that for you fit in this category?**

**Moretti:** The innovation sector is broad and diverse, and it's not just information technology or semiconductors. Life sciences is a huge part of it, obviously. But there are other parts of the economy that are innovative, from entertainment to finance to marketing.

What they have in common are two things. One is that they make intensive use of human capital. The other one is that they make products, whether goods or services, that are new and unique and hard to outsource, at least in the short run.

**EF: In looking at these phenomena, you've written about what you call the Great Divergence among cities. What is diverging? And should we be worried about it?**

**Moretti:** What is diverging is, on a simple level, where good jobs locate.

The data tell us that since the 1980s, average salaries, especially for skilled workers, have been diverging. The average

## Enrico Moretti

**➤ Current Position**
Michael Peevey and Donald Vial Professor of Economics, University of California, Berkeley

**➤ Education**
Ph.D. (2000), University of California, Berkeley; Laurea (1993), Bocconi University

**➤ Selected Publications**
"Housing Constraints and Spatial Misallocation," *American Economic Journal: Macroeconomics*, 2019 (with Chang-Tai Hsieh); "Who Benefits From Productivity Growth? Direct and Indirect Effects of Local TFP Growth on Wages, Rents, and Inequality," NBER Working Paper, 2018 (with Richard Hornbeck); "The Effect of State Taxes on the Geographical Location of Top Earners: Evidence from Star Scientists," *American Economic Review*, 2017 (with Daniel Wilson); "Local Economic Development, Agglomeration Economies and the Big Push: 100 Years of Evidence from the Tennessee Valley Authority," *Quarterly Journal of Economics*, 2014 (with Patrick Kline); "Real Wage Inequality," *American Economic Journal: Applied Economics*, 2013; *The New Geography of Jobs*, Houghton Mifflin Harcourt, 2012; "Social Learning and Peer Effects in Consumption: Evidence from Movie Sales," *Review of Economic Studies*, 2011

salaries of workers with a college degree or a master's degree in places like San Francisco, New York, Seattle, Boston, Raleigh, Austin, or D.C. have been growing at a much more rapid pace than the salaries for college graduates or workers with a master's degree in other cities. These cities started with higher salaries to begin with but have gained more relative to other cities.

The share of workers with a college degree in the labor force is also diverging, with the most successful cities growing significantly faster. These cities started with a higher share of college graduates, and they have been attracting even more.

Companies in industries that are very advanced and very specialized find it difficult to locate in areas where they would be isolated. Nobody wants to be the first to move to a city because they're going to have a hard time in finding the right type of specialized workers. And it's hard for workers with specialized skills to be first because they're going to have a hard time finding the right job. It's an equilibrium in which areas that have a large share of innovative employers and highly specialized workers tend to attract more of both. It is difficult for areas that don't have a large share of innovative employers and highly specialized workers to jump-start that process. Ultimately, that is what generates the divergence across cities.

To be clear: When I'm talking about cities, I'm referring really to what the census defines as metropolitan statistical areas. The definition includes not one municipality but the entire local labor market. For example, here it would be not just the municipality of San Francisco or Berkeley, it would be the whole Bay Area.

**EF: One can imagine a dystopian conclusion to this story where parts of the country continually grow rich without limit while others become poor without limit. Is there a natural stopping point to the process, or is this a future that we can look forward to?**

**Moretti:** There are two factors to consider. First, in many successful cities, housing and commercial real estate tend to become scarcer and therefore more expensive. This effect reflects both geographical limits and local housing policies that constrain the supply of new housing in many cities. This is an important limiting factor, as firms need to pay workers more just to compensate them for the cost of living.

More generally, I don't think we should think of this as a process that does not allow any entry into or exit from the group of successful cities. Let me give you some examples. On the entry side, two of the most striking examples of local economic success over the past 40 years in the United States are Austin, Texas, and Raleigh-Durham, N.C. Austin in the '80s was not a very thriving economy, certainly not a global center of innovation that it has become today. It was a sleepy provincial labor market that started attracting tech jobs — probably after [Michael] Dell started his company, possibly because of other reasons — and became one of the most dynamic labor market in the United States over the past 30 years.

Raleigh-Durham, just like Austin, wasn't much of a global innovation center in the '60s and '70s. The employment boom associated with the Research Triangle took place over the past 30 years.

Seattle in the '70s didn't have much of a software industry. In fact, outside of Boeing, there was nothing in Seattle that would predict it becoming a global center of innovation. It was Bill Gates moving Microsoft from Albuquerque, N.M., to his hometown that jump-started the Seattle software cluster. Through its success, Microsoft became the anchor for the Seattle innovation sector, a sector that now includes not just software, but also internet, life sciences, and many other parts of the tech world.

These are three examples of cities that entered the group of successful innovation-driven local economies. By contrast, consider Rochester, N.Y. It used to be a major innovation cluster; it accounted for a significant share of U.S. patents in the '80s and early 1990s. Kodak and Xerox were major innovators in the local economy. Then Kodak's main product went out of business because people started taking digital pictures and stopped buying film. Xerox had its own problems and laid off a lot of engineers. As a consequence, Rochester experienced a major collapse in its local high-tech sector and exited the group.

The point I'm making is that the presence of agglomeration economies and the advantages of geographical agglomeration don't necessarily imply that the same process applies forever. When there are shocks large enough, we see entry and we see exit. Agglomeration economies do offer a strong advantage to certain cities, for some periods of time, but they don't imply that this process is deterministically bringing the United States toward complete concentration of economic activity.

**EF: How important are universities like Berkeley and Stanford to the rise of an industry cluster?**

**Moretti:** I think universities do play an important role, but it's more nuanced than a lot of people seem to think. Many observers note that Stanford is in the middle of Silicon Valley and infer that Silicon Valley is located there because of Stanford. Yet there are 330 metropolitan statistical areas in the United States. Most of them have colleges or universities, many have very good colleges and universities, but only a handful of these metropolitan areas have sizable private-sector innovation clusters.

St. Louis has Washington University, an excellent research university, but it doesn't have much innovation outside the border of the university. Ithaca has Cornell, another excellent research university, but there aren't that many private-sector jobs in innovation outside the university. New Haven has Yale, one of the most prestigious universities in the world, and Santa Barbara has UC Santa Barbara, which has several Nobel Prizes and terrific engineering and physics departments, but those cities aren't important centers of private-sector innovation.

As for Stanford: When [William] Shockley decided to relocate from the East Coast and founded the first semiconductor firm in Silicon Valley, Stanford was not a powerhouse in engineering. Stanford was a good university, but there were much better engineering departments on the East Coast. Arguably, the Stanford engineering department *became* one of the leading engineering departments, thanks in part to the rise of Silicon Valley. The growth of Stanford as a research university was as much an effect as a cause of the growth of Silicon Valley.

I do think universities play an important role once a cluster starts developing. It is difficult for cutting-edge high-tech firms to be far from academic research. It's a symbiotic role where universities foster private-sector research and, at the same time, are strengthened by the presence of an innovation cluster.

**EF: Much has been written about "coolness," of appealing to a bohemian creative class, as a development strategy for cities. The idea is attracting educated workers and their companies by trying to foster a certain cultural feeling. How effective is that?**

**Moretti:** Much has been written about it. There are scholars who have suggested that coolness is a recipe for local economic development. I tend to be a little bit skeptical of that simplistic recipe. If you look at the history of U.S. cities, coolness often follows economic prosperity. In other words, the types of amenities that college graduates and other workers with high-level schooling tend to appreciate are often the effect of having a lot of them around and of having a lot of disposable income to be spent in an area rather than the ultimate cause of economic growth.

I'm not saying cultural amenities don't play a role, but I think it's hard to see examples of cities where the mayor decides to increase the coolness of the city and as a consequence the city becomes a thriving local economy with thousands of good jobs. I think it is more typical to see areas where economic growth is followed by improvements in local amenities — whether it's restaurants, museums, entertainment, or quality of life. It's an equilibrium. Empirically, improvements in cultural amenities tend to be as much an effect of economic growth as a cause.

**EF: Do you think the rise of two-career couples and especially assortative mating among the highly educated has contributed to the divergence among cities' paths?**

**Moretti:** It plays an important role. There is good research that shows that larger labor markets have an advantage over medium-sized and smaller labor markets because larger labor markets offer more job opportunities for both members of a couple — and this is increasingly valuable as assortative mating increases.

In a world in which only one member of a couple works, a larger city offers some advantages, but in a world in which both members of the couple work and both members are looking for professional jobs, a larger labor market is particularly attractive.

The more specialized the skills of the two members of the couple, the more city size matters. If they are not very specialized, size matters but not as much; if they are both very specialized, the empirical evidence suggests that larger cities are significantly better for their careers. It's not impossible for such couples to locate in small- or middle-sized cities, but it may be costly in terms of wages and earnings.

**EF: A lot of your work looking at the divergence of cities has been looking at the U.S. context. Is this a global phenomenon? Have you seen the same thing in your native Italy, for example?**

**Moretti:** It's a global phenomenon. It emerges most clearly in the United States given the size of the country, its geographical differences, and the fact that U.S. cities are more spatially separated than ones in Europe. But the same economic forces are also at play in European countries. Notably, we also see similar political dynamics.

Take the United Kingdom, for example. The same political polarization that we observe in the United States, with the deep divide in voting patterns between heartland states and coastal states, is clearly present in the United Kingdom. The polarization of the Brexit vote tightly follows the economic divide between the most advanced local labor markets in London and other parts of southern England on one side and the declining communities of the U.K. rust belt on the other side. We see a similar economic and political divide in France, where there are growing differences in labor market opportunities between the largest cities, especially Paris, and small- and medium-sized communities. Just like in the United States and the United Kingdom, the economic divide in France results in a growing political divide, with the yellow vests being the most recent and visible manifestation.

We see a large economic divide in Italy as well. The difference between cities like Milan, Bologna, and the industrial areas of the northeast, on the one hand, and southern regions, on the other, has been growing. Unlike in the United States and the United Kingdom, in Italy and France geographical differences manifest themselves mostly as differences in local unemployment rates rather than differences in average wages. That's because of the labor market institutions: In Italy and France, wages are largely set by collective bargaining and therefore can't vary much across cities. But unemployment rates do.

Geographical divergence is also taking place in developing countries. Consider, for example, the way that China or India have developed in the last 20 years. Shanghai and Beijing essentially look like western cities in terms of productivity, salaries, and standard of living. By contrast, the western part of China has grown but by much less than coastal cities. The same is true when you look at India. Bangalore is India's Silicon Valley, and in many respects its labor market is not very different. At the same time, the state of Bihar has grown but much less, and it has an economy that looks a century behind Bangalore. Overall, I think the economic forces we see in action in the United States are also in action in many countries, including those at different stages of development.

**EF: In America, statistics indicate that we have become less willing over time to relocate in pursuit of economic opportunity. Why do you think that is?**

**Moretti:** Geographical mobility in the United States has been declining. Americans remain more mobile than Europeans, but they are less geographically mobile than they were 30 years ago.

Propensity to move collapsed during the Great Recession. Since then, it has recovered slightly, but the long-run trend has been clearly downward. College graduates remain more mobile than high school graduates and high school dropouts by a vast margin. But in general, all groups in this country have become less mobile. I don't think we have determined the exact reasons yet. It's an important open question.

On the one hand, lower mobility could in principle be a positive development if it reflects stronger attachments to communities or better information about job opportunities elsewhere. In the past, there were probably a lot of errors in mobility decisions. Since one had to move to a city to find out what jobs were there, some workers probably had to move repeatedly before finding the right job. Today, internet job sites provide much more information on job openings in other cities and probably lower the amount of misdirected mobility.

On the other hand, lower mobility could be a negative development if it reflects outside constraints, such as credit or housing constraints. If you think about the places that in the '50s and the '60s were thriving in the United States — Detroit, for example — they were places where the average family could move and quickly find affordable housing. Today's boom towns, whether San Francisco or Boston or D.C. or Seattle, are quite different in this respect: Housing is much more constrained and expensive. This makes it harder for the average family to relocate there. I'm not saying this is the only factor or the main factor, but I suspect housing may be an important factor.

**EF: In February, as you know, Amazon stated that it will not build a headquarters in New York City as it had originally announced in November 2018. Was this a bad outcome for New York? Or can there be too much of a good thing for a city that's already prospering?**

**Moretti:** Forgoing Amazon had a cost for New York in terms of missed diversification. The tradable sector of New York City — the type of jobs that engage in producing services sold outside New York City — is historically heavily dependent on finance. Diversification of the New York labor market is a good thing for the city because it is too dependent on one sector.

The cost to New York is represented not only by the 25,000 forgone Amazon jobs, but more importantly, also by the forgone agglomeration effects Amazon could have brought to New York. By having Amazon in New York, the city could have attracted more internet and software companies. My work suggests that the indirect agglomeration benefits would probably have been even more important than the direct effect of adding 25,000 new jobs inside Amazon. Overall, the city has forgone a large number of good jobs, not just within Amazon but from an entire ecosystem that could have formed around Amazon. Keep in mind that while finance still offers excellent average salaries, over the past 10 years, salaries in tech have grown more than salaries in finance.

The New York economy, of course, will survive. Without Amazon, it might grow less and might be less diversified. But it remains a thriving regional economy with strong fundamentals.

An important related question is what does this mean for the national economy as a whole. Those 25,000 Amazon jobs are going to locate somewhere else in the United States, so from the national point of view, those jobs are not lost. However, from the national point of view, there are aggregate advantages stemming from the concentration of high-tech employment. In a new paper I just finished, I find that by concentrating geographically, high-tech firms and workers become more productive and more innovative, which has aggregate benefits for the national economy. In particular, if you take the current location of inventors in the United States, which is now very concentrated in a handful of locations, and you spread it across all cities, to the point where you equalize the number of inventors in each city, the U.S. aggregate production of innovation in the United States would decline by about 11 percent as measured by number of new patents. Thus, the concentration we observe in tech employment has drawbacks in the sense that it increases inequality across cities, but at the same time, it is good from the point of view of the overall production of innovation in the country. I see this as an equity-efficiency trade-off.

**EF: As you know, within regional economics, there are long-running disagreements about the roles of so-called place-based and people-based policies. What do those**

**terms mean to you, and where would you put yourself on that continuum?**

**Moretti:** Traditional government aid is people based, in the sense that the government targets some individuals or families for transfers: welfare payments, food stamp, housing assistance, or other forms of aid. The growing divergence in economic fortunes of U.S. communities has increased the political demand for place-based policies, where entire communities are targeted for aid, not just specific individuals.

There's a debate among economists on whether government aid should focus on individuals and families or whether it should extend to entire communities, over and above what specific individuals in those communities may already receive.

In economic terms, one key question is whether there are regional externalities in the process of local economic development that are important enough that we should target entire communities. I don't think we have a full answer yet.

Pat Kline and I have studied the largest place-based policy ever attempted in the history of the United States: the Tennessee Valley Authority. The TVA is an example of a "big push" policy designed to lift the economy of an entire region, a region that at the time was one of the poorest and least-developed in the country. The TVA started under FDR in the 1930s and continued through the 1950s. It used federal funds to bring roads, electricity, and public investment to an area that didn't have any. We find a good economic return on that investment. We conclude that FDR's idea of jump-starting economic development in such an underdeveloped region with a coordinated big push was a success.

However, I would not expect that adopting the same policy in the economically distressed areas of today — the Rust Belt, for example — would have the same effect because we're starting from a much different level of economic development. Building new roads or new power plants might have worked for the Tennessee Valley in the 1930s since it did not have any, but it will not necessarily help the economically weak regions of the country today.

Today, the question of how to jump-start economic development in regions that are struggling has a much less obvious answer than it did when FDR was thinking about the Tennessee Valley in 1930. It is not easy for the federal or state governments to engineer successful industry clusters in areas that don't have one.

**EF: In research with Chang-Tai Hsieh at the University of Chicago, you found that regulations of the housing supply in high-productivity cities reduced U.S. economic growth by more than a third from 1964 to 2009. How could local regulations in a small number of cities have such an enormous effect on the economy?**

**Moretti:** The reason relates to what we were discussing earlier. Labor productivity is vastly different across U.S. cities: Some cities have very high productivity, while others have very low productivity. The same worker can be more productive or less productive depending on her location.

What has been happening in the United States over the past 30 years is that the cities that have high labor productivity have also adopted increasingly restrictive land-use regulations that limit the amount of new housing that can be built. One extreme example is the Bay Area, where labor productivity and wages are among the highest in the nation. Many workers would like to move here to access those high wages generated by the high labor productivity. But most cities in the Bay Area have decided to severely constrain the amount of new housing that gets built.

I'm not talking about limits to developing parks, hills, or green fields, which should be preserved. I'm talking about limits to housing that could be built on empty parking lots near downtown San Francisco, near train stations in Silicon Valley, or in underutilized industrial space in the urban core of the region. It is a political decision that local voters have adopted. Its ultimate effect is to severely constrain the number of outside workers who can have access to high-paying jobs in the region. These cities have essentially built a wall around their borders that makes it very hard for outside workers to access the region's high productivity.

In the paper, we estimate that the costs that these land-use restrictions have imposed on the rest of the nation in terms of forgone GDP, employment, and earnings are high. We find that more flexible housing policies in high-productivity areas would have large benefits for the U.S. economy as a whole.

**EF: You've analyzed the importance of word of mouth in driving the success of movies. What drew you to that question and what did you find out?**

**Moretti:** Part of my research agenda has to do with social interaction and the role that social interaction plays in economic outcomes. We have been discussing forms of social interaction that determine the economic success of local communities.

Another form is represented by social interactions that determine the success of specific products. What drew me to that specific research question was the fact that a movie is a type of product known as an experience good: You don't know its quality in advance. You have some expectation about its quality, but its true quality is revealed only after you have consumed it. Thus, social interactions are potentially important. Experience goods are quite common.

In my research, I looked at surprise successes — movies that the public liked more than the market expected. I tracked the effect of those positive and negative surprises on future sales. And I found that for this type of experience good, social interaction can play a major role in determining which product succeeds or fails.

Movies that are ex ante almost identical but differ slightly in terms of how much the public ends up liking them can have vastly different sales thanks to social interaction, which magnify the small initial difference. It's not unlike the story about the divergence of cities, if you think about it. **EF**