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The Future of Urban Research: Nonmarket Interactions

MODERN GROWTH THEORY argues that intellectual spillovers—idea flows among individuals that are not mediated by the market—are a linchpin of economic progress. In Paul Romer's seminal work, endogenous economic growth requires increasing returns.[1] Without nonmarket intellectual spillovers or some form of externality, increasing returns and economic competition cannot coexist. In Romer's now canonical model of growth, idea flows are seen as the basis for economic progress; the robust relationship between human capital and economic growth has been taken as support for the importance of these intellectual spillovers.

Social capital theory argues that "social capital, connections, social networks are much more correlated with human happiness than is financial capital."[2] In large surveys such as the General Social Survey (GSS), measures of social connection (such as churchgoing or membership in organizations) are more strongly connected with self-reported happiness than income is. This body of research also claims that nonmarket social interactions (for example, membership in choral societies) are an important factor in determining the success of governments and societies at large. Social ties among individuals are thought to be critical in overcoming citizens' apathy and "making democracy work."[3]

These two large, separate literatures have independently concluded that nonmarket interactions are extremely important. Only an economist could be surprised by such a deduction. The tendency of economists to ignore these

1. Romer (1986).
2. Putnam (1999).
3. Putnam (1993).

interactions has led us to disregard critical segments of the economy. Over the next ten years, I believe that nonmarket interactions will be at the forefront of economic research.

There are isolated examples of research on nonmarket interactions in urban economics, including Alfred Marshall's famous analysis of human-capital transfers in agglomerated areas and Jane Jacobs's discussion of idea flows among innovators in cities. Work on ghettos and discrimination has indeed often addressed the existence of nonmarket interactions.[4] But traditional urban economics, such as research on real estate, has been primarily oriented toward the market.[5] Papers on local public finance often address externalities but treat them usually as mere assumptions and rarely in depth. Even the seminal work of Paul Krugman in part derives its strength from its ability to explain economic agglomerations without resorting to ad hoc external effects.[6]

Nonmarket Interactions and Cities

Nonmarket interactions occur when one individual influences another without the exchange of money. The first kind of these interactions involves voluntary participation of both individuals. Neighbors' doing favors for one another is an example of this kind, and this fits our usual paradigm—there is a cost for one person and usually a benefit for another. In some circumstances, such interactions could be done through the market (that is, you could pay your neighbor every time he lent you his rake). These interactions do not involve cash, mainly because they are sufficiently small and sufficiently common that reciprocity saves transaction costs. Occasionally they are done out of altruism (for example, caring for a sick friend). In some cases there may even be a social stigma attached to using or accepting money for a particular service (for example, donating organs).

In dense urban areas, where the extent of the market is great, these interactions may evolve from nonmarket interactions into market interactions. For example, in a small town a relative may serve as an amateur nurse for a sick

4. Researchers in this area have emphasized ghetto residents' lack of informational access to mainstream society. Taste-based discrimination (as opposed to statistical discrimination) also reflects a nonmarket interaction in which proximity to one group appears to cause psychic harm to others.

5. Urban sociologists such as Wirth (1938) have given these interactions more attention.

6. Krugman (1991).

outpatient because professional nurses are rare. In a large city, this service might more commonly be performed in the context of a market.

The second kind of nonmarket interactions are classic externalities—for example, the positive effects of role models, or acquiring human capital through the observation of a neighbor's successes and failures.[7] In these cases, it takes effort to stop the interactions—that is, unless the influencing party specifically works to stop the other party from observing, the interaction will take place (at no cost to the influencing party)—so it is much less natural to imagine such interactions' being regulated by the market. Often physically proximate individuals create both kinds of nonmarket interactions with one another. For example, my research is improved by the work of my colleagues both because of the actions they take to help my work (reading my papers, talking to me), which impose costs on them, and because I learn by watching them do research.

Spatial proximity (and hence urban density) facilitates the first kind of nonmarket interaction, as proximity makes reciprocal relationships easier to start and maintain. The second kind of interaction even more strongly depends on spatial proximity. In many cases, these effortless transmissions of ideas and values depend on sight or hearing. Even if the affected person has not seen or heard the influential person himself, it is often true that he knows someone who has had this personal contact. Obviously, the ability to see or hear depreciates sharply with space.

Indeed, empirical evidence supports the idea that the effect of this proximity on nonmarket transactions is large. The work of Adam B. Jaffe, Manuel Trajtenberg, and Rebecca Henderson shows the extent to which patent citations decline with physical distance. Survey data show that the correlation between distance (measured in time to arrive) between friends and frequency of contacts is 64 percent.[8]

In nonmarket transactions (particularly of the second kind), individuals rarely receive the full social returns for their actions: these transactions are rife with externalities. When spatial distance deters standard trade, the increase in transport costs will only reduce market transactions that have social benefit equal to or less than those costs. Because of the externalities associated with nonmarket interactions, however, an equal increase in transport costs will reduce social interactions with social returns that may be much larger than the

7. See Wilson (1987).

8. Jaffe, Trajtenberg, and Henderson (1993); and author's calculations from the General Social Survey.

change in costs. This might explain why small differences in the architecture of work environments (the presence of an office lounge, the arrangement of offices in close proximity) might make a large difference to the overall quality of social connection in the organization.

Urban economics needs to increase its focus on nonmarket interactions because they are central to an understanding of causes and effects in cities. The example of Paul Krugman illustrates that a brilliant theorist can explain cities without addressing nonmarket interactions.[9] But it is less obvious to me why one would want to do so. The flow of ideas and values that occurs through face-to-face interaction may be the most interesting feature of cities. Furthermore, the market for space—that is, the real-estate market—also appears to be driven to a large extent by the relative presence or absence of particular forms of nonmarket interactions in different areas. Urban economics cannot continue to make progress toward understanding its basic issues, namely, the causes and consequences of human density, without learning much more about nonmarket interactions.

Since nonmarket interactions are so determined by space, and the spatial organization of economic activities is so determined by nonmarket interactions, the expansion of study into nonmarket interactions is naturally the province of urban economists. This paper first argues that space is crucial in understanding nonmarket interactions. I then identify areas that urban economics must explore in the future. I begin with idea flows and human-capital spillovers in cities. I then discuss peer effects and the importance of architecture. Next is a treatment of the transmission of values. I end by discussing the city of the future. Naturally, this essay is extremely speculative; I hope that there are many topics that will be explored by urban economists that I have not even identified at this point. Throughout this essay, I include empirical facts that are meant to be provocative.

Why Are Nonmarket Interactions So Important for Urban Economics?

In this section, I try to make my case about the connection between nonmarket interactions and urban economics; we cannot understand cities and agglomerations without understanding nonmarket interactions. This connection also occurs because urban economists—specialists in the spatial

9. Krugman (1991).

organization of the economy—are particularly focused on the role of spatial distance, which is so important for nonmarket interactions.

Why Study Nonmarket Interactions?

The central question of urban economics—namely, *Why do cities exist?*—can only be answered by understanding the effects of cities on their residents. And to understand what determines the demand for it, we must understand what urban density does. After all, people form cities because they prefer to live that way: alternative residential arrangements always exist. Only by understanding the positive and negative effects of urban areas can we both explain why cities exist and account for the rise of lower density alternatives to cities (suburbs, edge cities) that has marked the last half century.

The Krugman view of cities maintains that urban areas exist to minimize transportation costs between customers and producers for physical output. The downside of cities, according to this model, is that residents in large agglomerations are far from fixed agricultural resources. While there is certainly some truth in this model, Krugman himself argues that this model is more applicable to the nineteenth century than to the twentieth (let alone the twenty-first). As transport costs have fallen, cities have deindustrialized, and now have less manufacturing than the rest of the country. Lower transport costs mean that these linkages are not very important.[10] A working paper by Guy Dumais, Glenn Ellison, and Edward Glaeser has shown that indeed manufacturing firms do not locate themselves to be close to suppliers and consumers.[11]

Nonmarket interactions are not the only alternative explanation for why cities exist. Alfred Marshall emphasized the role of labor-market pooling in explaining industrial concentration. If firms locate near one another, then workers are insured against firm-specific risk. Firms that are spatially agglomerated may facilitate job shopping, as young workers move from firm to firm to find the best match for them.[12] Indeed, manufacturing firms do choose their location in large part to be close to other firms that use the same types of workers.

However, while this explanation along with transport costs for services can explain the existence of low-density edge cities, they cannot explain the exis-

10. Krugman (1991).

11. Dumais, Ellison, and Glaeser (1997). But Kolko (1999) shows that service firms still locate themselves, in part, to be close to suppliers and consumers. Indeed, cities are generally centers for such service firms. Certainly one benefit of urban residence is the elimination of transport costs for personal services that are difficult to transport.

12. Marshall (1890). Rotemberg and Saloner (1990) have argued that the agglomeration of firms also eliminates problems related to monopsony employers.

tence of dense downtowns or even the renewed interest in denser planned communities (such as Disney's much-studied Celebration). For labor-market pooling to work, workers must be able to change employers without changing residences. This does not in any sense require a dense downtown. A perpetual exurban sprawl works just as well. Employees just need many prospective employers within a reasonable commute.

Indeed, the twentieth century has seen a spreading of cities into lower-density suburbs and edge cities. This spread means that agglomerations are larger—Los Angeles is a lower-density city that creates proximity (at driving distance) to a truly immense number of consumers and producers. The average resident of Los Angeles in 2000 is both living and working within a lower density than an equivalent resident of New York (or most large cities) in 1900. Maybe dense downtowns are simply dinosaurs that are slowly going extinct. Perhaps the future of America lies in agglomerations like the suburbs and edge cities of Los Angeles, which radiate farther and farther out from a downtown of primarily historical interest. I do not think so. While populations of traditional dense cities have not been climbing, property values have been soaring. New York City does not seem like an obsolete agglomeration at this point. Nor does Chicago or Boston. Property values—the ultimate measure of demand for a location—in these areas are extraordinarily high.[13] These values do not just represent a general rise in asset values, as the central-city property values have seen a greater increase than property values in outlying areas. More technically, demand for the densest areas seems to be high.

The demand for dense areas seems particularly strong among the richest residents. During the 1980s the average income of people within three miles of the central business district (CBD) in New York, Chicago, and Boston rose 13 percent more than the average income of people living between three and ten miles from the CBD in the same cities.[14] Indeed, figure 5 shows that income declines with distance from the city center in several older cities when we consider only census tracts within three miles of the city center.[15] My presentation of these data is not meant to deny the fact that the prevailing pattern

13. Populations in New York City and Boston have tended to be stable, in no small part because of extraordinarily difficult zoning environments that make new construction extremely costly. A second reason that populations are stable in these areas is that success often means that the wealthy, who are often single or have small families, have been replacing poorer, larger families.

14. Author's calculations of the 1980 and 1990 U.S. Censuses.

15. In many of these cities, the richest census tracts in the metropolis are closest to the city center.

in the United States is that the rich suburbanize. Rather, my purpose is to suggest that cities continue to be attractive to the rich and that the demand for agglomeration is not clearly decreasing.

The new spate of moderate-density planned communities also suggests continued belief in the value of density. Walt Disney's Celebration is built in an area where land is cheap (certainly relative to large urban areas) and where more density has little effect on reducing commuting times. But Disney has created a "walking" town. The stated reason for this development is that high density would lead to more desirable social (nonmarket) interactions among neighbors. Disney's Celebration is in some sense the epitome of the building philosophy referred to as the "New Urbanism." The aim of this philosophy is to produce a comfortable community echoing the perceived neighborliness of a more bucolic past. (The fact that such a past may never have existed is irrelevant.) Lower densities and the greater transport costs facing interactions may be barriers to forming socially pleasant communities, and the planners of Celebration have structured their city accordingly. Of course, we have yet to see whether Celebration will be a long-term success, a model for successful communities elsewhere, or a brief aberration.

The continued preeminence of New York City and the design of Celebration both suggest that the demand for urban density is based on many factors beyond reduced transport costs for market transactions. New York City's growth is significantly based on the strength of the financial industry, which is crammed into two small areas of Manhattan. Physical transport costs are almost irrelevant in this industry—success in finance is based almost entirely on information. By locating in Manhattan, financial firms maintain their access to the continued swirl of information that surrounds the stock market. These information flows deeply concern a financial market, but they are themselves only rarely priced through a market (newsletters and illegally bought insider information are two forms of financial information that is traded). Less information-sensitive elements of the finance industry have left the city; the key to New York's continuing success is that financial firms are willing to pay extremely high costs to be close to this information. Of course, it is possible that electronic interactions will eliminate this role of cities, but as I have argued elsewhere, there are many reasons why this seems unlikely in the near future.[16] Most clearly, the high property values in Wall Street bespeak the continued demand for urban proximity.

16. Gaspar and Glaeser (1998).

Another benefit of urban density is the supply of social interactions outside the workplace. These interactions may, for example, be similar to those that seem to motivate the design of a planned community like Celebration. The designers of Celebration seem to be following the logic of Jane Jacobs, who argued that neighborhood liveliness and safety are desirable amenities that are created in part by neighborhood density.[17] Indeed, the demand for New York (or Paris, for that matter) comes in part from the remarkable social life that is possible in that city. That social life is a function, in no small part, of the population density within the city. Indeed, the fans of Haussmann's Parisian boulevards applaud the magnificent thoroughfares crowded with Parisians. Haussmann's detractors attack the empty wide streets away from the center city, which replaced an older, more human-scale city.

Of course, other forms of nonmarket social interactions are often cited as reasons for the decline of urban areas. Typically, crime and poor education are given as primary reasons for the flight of the middle class to the suburbs. Crime is clearly a nonmarket interaction. If we accept the view of James Coleman's report[18] (and hundreds of later studies) that peer effects are the most important ingredients of learning, then education should be seen as an example of cross-person information externalities. Just as we need to understand nonmarket interactions to understand the continued success of New York, we must understand nonmarket interactions to understand the exodus from less successful cities. Put another way, the strength of the suburbs comes (to some extent) from their ability to create positive nonmarket interactions.

Provocative Facts: Happiness, Money, and Nonmarket Interactions

One of the facts that supports the contentions of social capital theory is that nonmarket interactions appear to correlate more with self-reported happiness than with financial well-being. In this brief empirical section, I report results from the National Opinion Research Center's General Social Survey on happiness and nonmarket interactions.[19] While there are doubts about what these self-reported happiness measures actually capture, the literature has tended to support the view that they have some meaning (even if they are not exactly equivalent to a utility level). The survey uses a one-zero variable, which captures whether individuals say that they are happy. A large number of the sample (88 percent) say yes to this question. Since there is such a small number of

17. Jacobs (1961).
18. Coleman (1966).
19. Data available at (www.norc.uchicago.edu/gss/homepage.htm [March 28, 2000]).

respondents who say no to this, we would not expect there to be very large coefficients.

Table 1 shows results from probit regressions. Coefficients are marginal effects of the variables based on the probit coefficients. The effect of income is large. A one-log-point increase in income (one standard deviation) raises happiness by 3.77 percent (about one-tenth of a standard deviation). The effect of education is also large: college graduates are 6.1 percent more likely to say that they are happy than high-school dropouts are. The effect of city size is small and driven mostly by people in the biggest cities. Holding everything else constant, individuals living in cities are less likely to say that they are happy.[20]

The one direct measure of a nonmarket interaction in this regression—marriage—shows a profound effect on happiness. The 5.8 percent increase in happiness for men associated with marriage suggests that marriage raises happiness more than income does. Although marriage is positively related to happiness, there is no way of knowing (without real exogenous variation) whether this represents happier people getting married or marriage creating happier people. This is generally true about most of the independent variables in this discussion, and this is why these facts are merely provocative rather than in any sense definitive.

The second regression shows that happy people are also those who say that they are more trusting and who are likely to think that others are fair or helpful. While there is no clear causal interpretation, this regression suggests a connection between happiness and one's social attitudes. The third regression shows that happiness is higher for people who socialize with friends, neighbors, and relatives. A one-standard-deviation increase in the variable capturing socializing with friends increases happiness by about one percentage point. It is also true in this data set that membership in nonprofessional organizations increases this happiness measure. The fourth regression shows the connection between self-reported church attendance and happiness. A one-standard-deviation increase in church attendance increases happiness by 2.5 percent.

The final regression shows the connection between one's happiness and the average level of self-reported happiness in a constructed peer group (people in the GSS who live in the same state and share one's education level). It appears that people who live around other happy people are also happier. While there are many issues in peer-effect regressions of this sort (which are dis-

20. Of course, unhappy people may choose to live in the largest cities. This result is robust if we control for how long the respondent has lived in the community.

Table 1. The Determinants of Happiness[a]

Variable	*Happiness indicator (1)*	*Happiness indicator (2)*	*Happiness indicator (3)*	*Happiness indicator (4)*	*Happiness indicator (5)*
Logarithm of income	0.0377	0.0294	0.0386	0.0368	0.0378
	(0.0026)	(0.0033)	(0.0034)	(0.0026)	(0.0026)
Less than 30 years old	0.0538	0.0630	0.0468	0.0575	0.0531
	(0.0065)	(0.0075)	(0.0086)	(0.0063)	(0.0065)
30 to 39	0.0235	0.0294	0.0331	0.0277	0.0232
	(0.0073)	(0.0087)	(0.0090)	(0.0071)	(0.0073)
40 to 49	0.0546	0.0055	0.0106	0.0085	0.0051
	(0.0082)	(0.0100)	(0.0102)	(0.0080)	(0.0082)
More than 60	0.0370	0.0211	0.0435	0.0344	0.0365
	(0.0069)	(0.0091)	(0.0085)	(0.0069)	(0.0069)
Black	–0.0468	–0.0207	–0.0443	–0.0598	–0.0427
	(0.0077)	(0.0088)	(0.0103)	(0.0081)	(0.0076)
Other race	–0.0188	–0.0052	–0.0395	–0.0245	–0.0168
	(0.0139)	(0.0153)	(0.0211)	(0.0143)	(0.0138)
School dropout	–0.0353	–0.0209	–0.0355	–0.0306	–0.0336
	(0.0064)	(0.0077)	(0.0081)	(0.0063)	(0.0064)
College graduate	0.0261	0.0074	0.0283	0.0225	0.0256
	(0.0060)	(0.0080)	(0.0077)	(0.0061)	(0.0060)
Married	0.0371	0.0427	0.0366	0.0329	0.0373
	(0.0072)	(0.0091)	(0.0095)	(0.0072)	(0.0072)
Male	–0.0197	–0.0073	–0.0243	–0.0107	–0.0198
	(0.0074)	(0.0089)	(0.0097)	(0.0073)	(0.0074)
Married*male	0.0215	0.0127	0.0303	0.01825	0.0216
	(0.0089)	(0.0112)	(0.0110)	(0.0089)	(0.0089)
Logarithm of city size	–0.0034	–0.0034	–.0023	–0.0025	–0.0031
	(0.0011)	(0.0013)	(0.0014)	(0.0011)	(0.0011)
Year	0.0011	0.0017	0.0022	0.0013	0.0011
	(0.0005)	(0.0008)	(0.0007)	(0.0005)	(0.0006)
Trust indicator		0.0279			
		(0.0067)			
Thinks people are helpful		0.0304			
		(0.0065)			
Thinks people are fair		0.0470			
		(0.0069)			
Socializes within community			0.0054		
			(0.0014)		
With relatives			0.0055		
			(0.0018)		
With friends			0.0083		
			(0.0019)		
With parents			–0.0007		
			(0.0013)		
In the bar			–0.0038		
			(0.0018)		
Attends religious institution				0.0249	
				(0.0024)	
Mean community happiness					0.4675
					(0.0974)
N	17,216	10,450	10,208	17,091	17,216
Pseudo R^2	0.0632	0.0848	0.0776	0.0725	0.0650

Source: General Social Survey (GSS), 1972–94.
a. Numbers in parentheses are standard errors.

cussed later), it certainly does not seem implausible that happiness declines when one has many market and nonmarket interactions with unhappy neighbors. This evidence is meant to be provocative rather than convincing, and to suggest the importance of nonmarket interactions, relative to wealth, in driving human happiness.

What Urban Economists Can Bring to the Study of Nonmarket Interactions

I have just argued that urban economists must understand nonmarket interactions to understand why people organize themselves spatially into cities and suburbs. At the same time, I also believe that urban economists have particular skills that make them natural specialists in the field of nonmarket interactions. If economics as a whole increases its focus on intellectual spillovers and social capital, it is natural that urban economists should be in the vanguard of such movements. The nonmarket interactions that are of primary interest to the profession as a whole work poorly over long distances. As such, the spatial nature of these interactions means that spatial economists are particularly appropriate students of these effects.

In fact, proving the importance of these interactions requires a geographic focus. Estimation generally involves the assumption that these effects decay spatially. The general method of estimating peer effects involves studying whether behavior in the near neighborhood of particular subjects influences the subjects.[21] If we did not believe that peer influence depreciates over space, then this method of estimation would make no sense.

The underlying point is that many of the nonmarket interactions that are particularly interesting have very high transportation costs. Individuals who are far away from one another lose the ability to influence one another. In the realm of intellectual transfers, it is easy to transmit a particular piece of information. However, when two people are close to each other, they observe an infinitely larger amount of information by watching each other. In cases where people do not know what information they want to transfer, these effects become particularly important.

Added to the problem of high transport costs, it is also clear that most of the nonmarket interactions that we are interested in have substantial externalities. Given this condition, a small increase in distance may have profound social effects. In a market interaction, an increase in transport costs of X dol-

21. As we get more careful in our estimation, the urban economists' particular focus on endogenous choice of neighborhood becomes quite important.

lars will block transactions with social value of X dollars or less. Transactions that bring more than X dollars' worth of value will still take place.[22] With nonmarket interactions involving two individuals (or more), the total social gains may be equal to 2X (or more). So, for example, consider a social exchange that brings each participant 0.9X worth of utility. This exchange will be blocked if the costs of interacting equal X.

In many cases, the external benefits from nonmarket interactions are much higher than any of the benefits that accrue to any particular individual. For example, in the construction of a network formed of individuals, each person, by strengthening the connection between himself and his neighbors in the network, provides benefits to every other member of the network. As such, the gap between private and social benefits may be quite large. As I discuss later, this may explain why seemingly trivial differences in physical layouts seem to play a role in the formation of networks. A slight increase in transport costs can reduce everyone's investment, and if there are positive complementarities in investment, then these small changes in the costs of meetings can have a major effect on the functioning of the network. The classic claim is that the introduction of a coffee lounge can change significantly the interaction of an academic department.

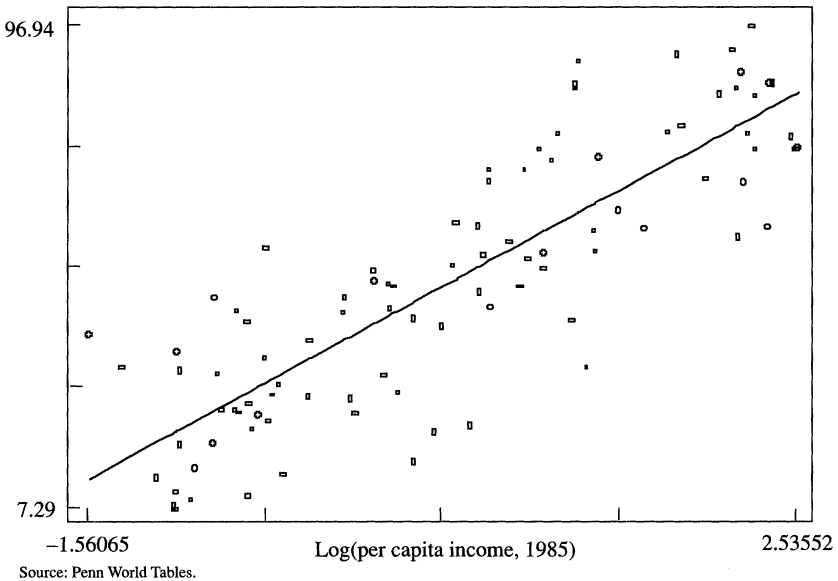
The Transfer of Ideas in Cities

I begin with two preliminary facts and then discuss the prospects for future research on the transfer of ideas in cities.

Figure 1 shows the relationship between urbanization and the level of development. There are very few variables that are as strongly correlated with a country's level of development as its level of urbanization. Naturally, this relationship levels off for very rich countries (where urbanization is close to complete). While there are a vast number of reasons for this relationship (for example, farming declines with development, and the ability to build cities is larger for richer countries), we still do not really understand why this relationship is so powerful.

22. In this case, I am only speaking about classic conditions in which there is one price. In a bargaining situation, it is easy to imagine cases where the social returns that are blocked by transport costs equal to X dollars are worth *more* than X dollars.

Figure 1. Urbanization and Income across Countries



Source: Penn World Tables.

Figure 2 shows the relationship between nonprimate urbanization in 1960 and later economic growth. Nonprimate urbanization denotes the share of the country's population that inhabits all cities except for the largest one. I eliminate the largest city because these cities tend to be political capitals that exist because of the tendency of nondemocratic governments to transfer resources to the capital.[23] The presence of a bloated primate city is not the sign of a healthy urban system. Interestingly, this figure shows a quite significant relationship between the initial level of urbanization and subsequent economic growth. Of course, one explanation for this relationship is the absence of other control variables (though this relationship does survive most basic controls). Alternatively, the presence of cities may be important for generating growth, perhaps through the generation of new ideas.

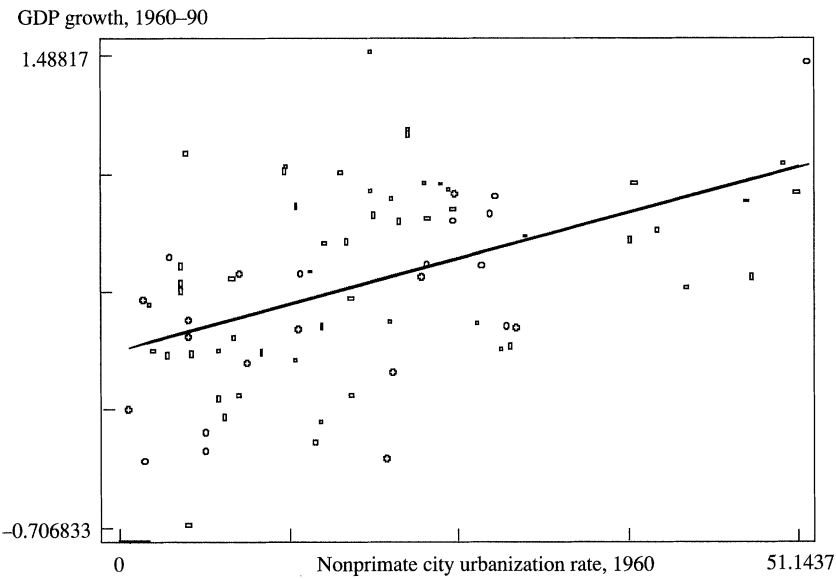
Ideas and Cities

At least since the contribution of Robert Solow, most economists believe that economic growth relies on technological change.[24] In the 1980s Paul

23. See Ades and Glaeser (1995).

24. Solow (1956). A prominent exception is the work of Young (1995), who argues that the growth of Singapore is best understood as the result of accumulation of physical and human capital.

Figure 2. GDP Growth and Nonprimate City Urbanization



Source: Penn World Tables.

Romer argued that this technological change could only create endogenous growth if the benefits of new ideas are reaped by the entire society, not just by the innovator who created those ideas. To combine increasing returns with market competition, Romer required that the increasing returns occurred outside of each firm.

While Romer's paper is certainly theoretically correct, there are many cases where property rights over ideas appear to be respected. After all, patents are enforced. Why is the production of ideas not just like the production of any other commodity? Of course, technological ideas are probably the only items that can be termed a genuine public good. Private ownership and sale of new ideas is sure to be inefficient for this reason. But one could still imagine a world where each new idea was sold and the benefits generally reaped by its creator.

There are many reasons why this is generally infeasible. The market in ideas may function poorly since the transaction has already taken place by the time the purchaser knows what he is buying. By definition, the market for ideas is marked by asymmetric information. As such, ideas are occasionally kept private (for example, the recipe for Coca-Cola), but this is rare. More commonly,

patents serve to protect certain uses of a particular idea. But just as the patent gives the idea's creator property rights over one use of the idea, the patent office makes sure that the idea itself becomes public information, and patents do not generally forbid uses of ideas in areas that do not compete with the original use of the idea. The fact that a market for ideas cannot operate efficiently means both that there will always be too little production of new ideas (since creators of new ideas rarely receive the full social returns of their innovations) and that ideas are rarely kept all that private. Since you cannot sell most ideas, you might as well give them away.

Robert Lucas linked this point with the ideas of Jane Jacobs on the transfer of knowledge in cities. While Alfred Marshall is really the pioneer of the view of the city as a place where knowledge is transferred (as I discuss in the next section), Jacobs deserves credit for putting together the view that ideas come from urban areas. In cities there are many ideas floating around, which makes imitation easier and news of breakthroughs more accessible. Jacobs's model emphasized that new ideas are generally combinations of old ideas. This model has recently been taken up by economists, including Martin L. Weitzman.[25]

Jacobs particularly emphasized the role of urban *diversity* in the formation of new ideas. One way to extend Jacobs's thinking is to say that the size of intellectual breakthroughs is a function of the distance between the old ideas that are combined. Thus a combination of two ideas that both come from nail manufacturing can produce a slightly better nail, but the combination of an idea from nail manufacturing with one from railroads can lead to the industrialization of the nail industry.

While Jacobs's ideas are appealing (and she cites enough examples to indicate that this process sometimes occurs and sometimes is important), without real empirical work in this area it is impossible to understand whether these effects are widespread or particular. Does Jacobs's famous story of the invention of the brassiere (which happened when a dressmaker used an idea from dressmaking in making lingerie) represent the norm, or is it an unusual example? It is an empirically difficult process to turn Jacobs's (or Marshall's or Lucas's) thoughts about the flow of ideas and growth into a body of facts that represents solid social science. First, we must understand the importance of idea flows for economic growth. Work of this kind is difficult, at both the national and the local level.

25. Lucas (1988); Jacobs (1969); Marshall (1890); Weitzman (1998).

The evidence for the importance of knowledge spillovers in growth at the national level is at best indirect. The Lucas endogenous-growth model focused on embodied human-capital spillovers rather than on disembodied ideas.[26] People have found evidence supporting this model by examining the connection between human capital and economic growth (or economic productivity). A very robust relationship between the initial levels of human capital and later growth at the country level[27] is the most direct piece of evidence, but clearly this is not strong evidence for the Romer view. Evidence on the positive effects of foreign direct investment may also suggest the role that idea transfers can play in growth. Again, this may or may not be evidence for the Romer viewpoint. Thus the critical theoretical insight of growth theory has almost no solid empirical foundations in international data.

The evidence at the subnational level is similar. There is a substantial connection between human capital at the city level and later growth. This fact appears to support the importance of idea transfers.[28] Naturally, there are many possible interpretations of these data, some of which do not relate at all to the existence of intellectual spillovers. In the next section I present two facts related to this question and suggest an alternative interpretation.

Other work has attempted to test indirect implications of the Jacobs viewpoint for local growth. In an earlier paper with my colleagues, we presented evidence suggesting that urban diversity and competition is good for growth.[29] J. Vernon Henderson, April Kuncoro, and Matt Turner suggest that the diversity-growth connection is far less clear.[30] In any case, suggestive evidence hardy constitutes a solid empirical foundation. Some researchers have looked for the level effects rather than the growth effects of knowledge spillovers. James E. Rauch shows that wages and rents are higher for individuals in high-human-capital cities (holding individual human capital constant).[31] Again, this is evidence for the Lucas model.

Given that idea transfers may be the linchpin of economic progress, it is clear that we need more than a few stories and some suggestive correlations. Urban economists should play a major role in providing this evidence. At this point, research must concentrate on more direct measures of innovations and

26. Lucas (1988).

27. Barro (1991).

28. For a longer perspective, see Glaeser, Scheinkman, and Shleifer (1995) or Simon and Nardinelli (1996).

29. Glaeser and others (1992).

30. Henderson, Kuncoro, and Turner (1995).

31. Rauch (1994).

idea flows. One example of such evidence is the work of Adam B. Jaffe, Manuel Trajtenberg, and Rebecca Henderson, which documents that patent citations are geographically determined. A patent is much more likely to cite another patent if that patent was taken out by someone living in the same area.[32] While this work is exciting, many of the most important innovations have nothing to do with patents, so this type of work can only capture a very small part of the overall growth process.

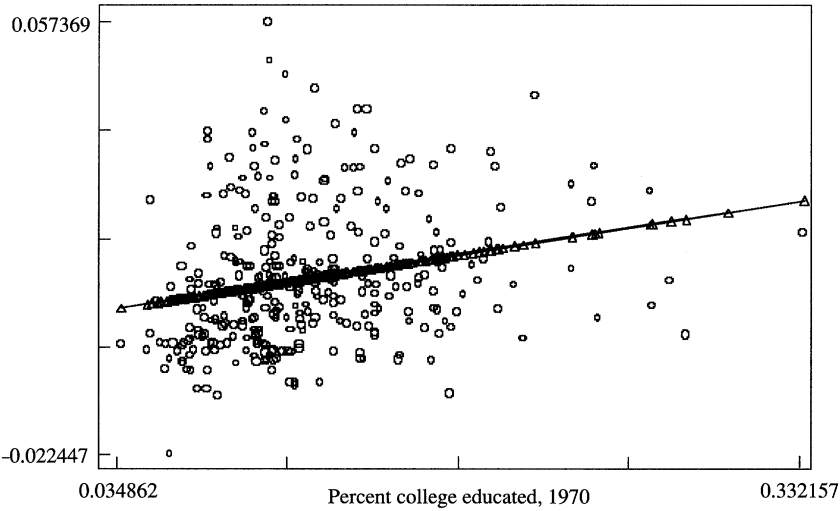
A second example of more direct work is the research done by David B. Audretsch and Maryann P. Feldman.[33] This work looks at new product innovations using a fascinating database. New product introductions are a more direct measure of intellectual progress than employment or population growth, but their work has not yet yielded truly direct evidence on idea flows. Thus we are lacking even the most basic evidence on the size and importance of these flows.

Ideally, we would want to know much more than this basic information. For example, we would like to quantify the importance of intellectual cross-fertilization versus direct idea flows. Is Jacobs right? Are the important ideas the ones that travel across goods and production processes? Or alternatively, do the important idea transfers all come from within one area of production? To some extent, patent-flow evidence can yield some information on this. For example, it is useful to know that the expected importance of an innovation (as measured by the number of citations a new patent will itself generate) is unrelated to the diversity of patents that the new patent itself cites, but we need to know more.

There is also an academic debate about the relative importance of embodied and disembodied ideas. Does the transfer of ideas mainly occur through libraries and through reverse engineering of new products (that is, using disembodied ideas)? Or do the important idea transfers occur because people in one firm move to another firm? The literature on Silicon Valley suggests the importance of intellectual transfers through workers' changing firms.[34] The answer to this question has great bearing on the future of cities. Since moving people spatially is much more difficult than moving products, the notion that idea transfers require people to move makes urban agglomeration more important.

32. Jaffe, Trajtenberg, and Henderson (1993).
33. Audretsch and Feldman (1996).
34. See Saxenian (1994).

Figure 3. Population Growth and Human Capital



Source: Census of Population and Housing, 1970 and 1990.

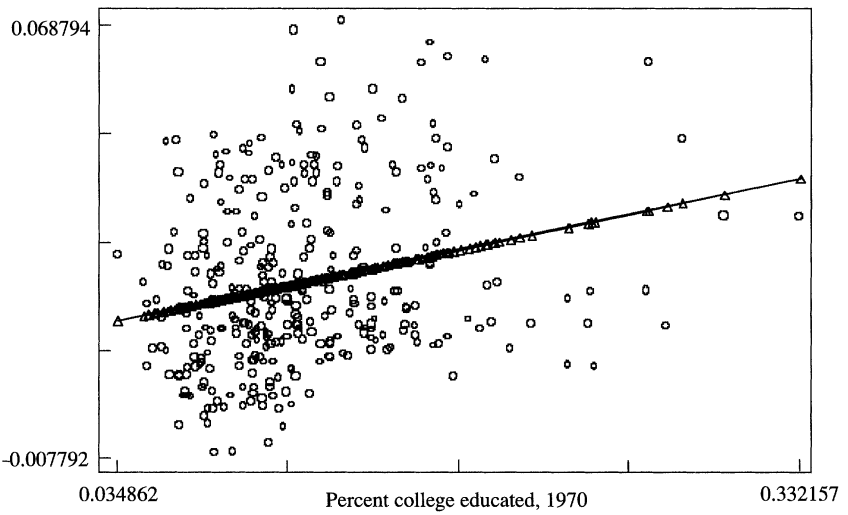
Another critical question is the importance of industrial organization. Monopolies may be either good or bad for intellectual progress. Monopolies will tend to reap more of the social benefits from their innovations since they have fewer competitors who imitate them. Therefore it may be that monopolies invest more in idea production. Alternatively, competitive firms may have stronger incentives to invest. Certainly the empirical facts support the positive view of competition (more competitive areas or city-industries tend to grow faster), but the aggregate nature of this evidence means that it has many possible interpretations.

A final key issue is the role of the Internet. Will it become the primary field within which ideas are moved, or will physical space retain its importance? Again, this is an area of critical importance for the future of the city that needs research.

Formation of Human Capital

Figures 3 and 4 show the relationship between growth at the county level and the initial percentage of college-educated people in that county. Figure 3 measures growth in terms of population growth. Figure 4 measures growth in

Figure 4. Housing Price Growth and Human Capital



Source: Census of Population and Housing, 1970 and 1990.

terms of growth in self-reported housing values. In both cases, there is a robust positive relationship between growth and the initial level of human capital (correlation coefficients are 23 and 25 percent for housing and population growth respectively). These are among the few reliable data about the factors that predict growth at the city, county, or metropolitan-area level.

One interpretation of these data is that better-educated cities produce more innovations and that these innovations in turn attract workers in the future. Alternatively, cities with more educated workers may generate human-capital spillovers that become more valuable over time. As skills have become more important since 1975, it is not surprising that people are now willing to pay more to live in cities that have high-skilled populations. This occurs because people learn from one another, and will learn more when the people around them have more human capital.

Alfred Marshall introduced the idea that learning from neighbors is one reason why industries agglomerate. He argues that in dense agglomerations "the mysteries of the trade become no mystery but are, as it were, in the air."[35] Marshall's ideas ring true to anyone who has ever learned from phys-

35. Marshall (1890).

ical neighbors, either in a classic mentoring relationship or through less formal mechanisms.

Marshall's idea of intellectual transfers and the formation of human capital are connected to the large literature in education research, which documents that peers are more important than anything else. Most research suggests that the benefits of having better peers are more important than class size or teacher salaries. Indeed, the Coleman Report's emphasis on the importance of peer effects was the empirical basis for the massive experiment in social engineering known as busing.

The importance of intellectual transfers in the urban context is less clearly established. I have argued that there is an increase in human-capital accumulation in cities because the age-earnings profile is steeper in urban areas and because migrants receive only small wage increases when they come to urban areas. Migrants' wages rise only over time, but these wage increases stay with them when they return to rural areas. One explanation of this phenomenon is that cities speed the accumulation of human capital.[36] This has been formalized in a model in which learning is faster in cities because the speed of interaction with neighbors is faster there.[37] Again, this is at best indirect evidence for the presence of such transfers.

One critical question is whether these transfers are really nonmarket interactions. When students learn from teachers whom they pay, this is clearly a market interaction. When workers learn from one another within a firm, the firm presumably sets wage scales so as to compensate the teachers and charge the learners. Of course, there is surely some learning that occurs outside of firms, and in many cases firms may not have the wage flexibility to appropriately price the transfer of human capital. Within private schools, at least, the transfer of human capital can also be priced. Schools may charge lower tuition to students who are likely to give human capital and higher tuition to students who are likely to be big acquirers (at least this is a reasonable facsimile of the logic behind college scholarships). Marshall's theory may have been appropriate for an era when connections among firms and workers were weak at best. In the modern corporate era, however, the importance of nonmarket human-capital spillovers is perhaps small.

In this case, we are lacking both direct and indirect evidence on the size and nature of these interactions. There are many forms of indirect evidence that are valuable. The location of industries and people in principle provides

36. See Glaeser and Mare (forthcoming).

37. Glaeser (1999).

evidence about these effects. One of my recent papers shows that human-capital-oriented individuals usually choose to live in cities.[38] But do people choose urban areas on the basis of what they are going to learn? Do firms locate in areas where it is likely that their workers might learn from other workers outside of their firm? We do not even know if the age-earnings slope is steeper in higher-human-capital areas.

Presumably much of the nonmarket human-capital acquisition that is of interest to urban economists occurs for individuals before college, and outside of school. Certainly, parents care about the pool of children that their progeny will interact with both inside and outside of school. Indeed, there is a significant body of anecdotes about children from ghetto environments who, despite going to elite high schools, ended up in jail or dead because of interactions with peers in their own neighborhood.

Again, as valuable as this sort of anecdotal evidence can be, we need much more rigorous evidence on the nature and magnitude of human-capital spillovers. The best form of evidence would connect the acquisition of measurable skills with the presence of these skills in the physical neighborhood. For example, if skill as a computer programmer increased with randomly assigned exposure to other programmers, this would be good evidence for this theory. Of course, this evidence would only confirm the importance of this type of phenomenon in a particular context. Given the rising importance of skill accumulation in the economy and our beliefs about the impact of these skills on growth, the importance of studying how people learn from their peers is high. We know that little about wages can be explained either by measures of innate ability or by formal measures of schooling levels. It seems likely that the bulk of the heterogeneity across individuals has to do with the skills that are acquired outside of school.

These issues also relate to the costs of ghettos to minority youths. The traditional spatial-mismatch hypothesis tended to focus on the physical transport costs of segregated minorities getting to jobs. The modern literature argues that the costs of ghettos lie in human-capital accumulation.[39] According to the skill-accumulation view, there are no benefits that accrue to firms that would move into a ghetto. This model suggests that ghetto residence can be the result of parents' choices in which human-capital accumulation losses for their chil-

38. Glaeser (1999).

39. The traditional view was hard to reconcile with free choice of location by both adult minorities and firms.

dren in ghettos are weighed against lower housing costs in those areas.[40] If ghettos are bad because skills are not accumulated there, proper measurement of neighborhood effects on human-capital accumulation is one part of understanding the negative effects of ghettos on their residents.

Peer Effects and Transfer of Values

In some circumstances, human-capital transfers are called peer effects, especially when they relate to the transmission of values. If crime, drug use, and unplanned pregnancies relate to these types of effects, then understanding these effects is crucial for improving conditions in low-income areas. This idea has long tenure in the economics literature. John Kain suggested that one reason ghettos are harmful for African Americans is that information is not exchanged between young people and working, successful mentors.[41]

For the purposes of this paper, I first duplicate the traditional form of estimating peer effects. The basic methodology involves regressing an outcome on the average level of that outcome among a peer group. The General Social Survey does not really provide information about a peer group, but within its primary sampling units, samples are fairly geographically concentrated. The methodology for sampling means that a surveyor goes to an area and then proceeds geographically through the area until he or she has acquired the right number of responses. While at that point in the survey it is not clear who lives in the geographic area, the data show who is in the same metropolitan area during the same year. For these groupings there is a reasonable chance that these respondents live close to one another. Thus I create an admittedly false peer group composed of those subjects from the same metropolitan area who were surveyed during the same year. In the better work on peer effects, peer groups will be identified more accurately.[42]

In table 2, I examine a variety of outcomes for which it is reasonable to expect there to be peer effects. In forming the peer group average, I naturally exclude the subject. I also control for a battery of reasonable personal attributes that might plausibly lead to a spurious correlation between individual behavior and the behavior of peers.

40. Inner-city neighborhoods also attract the poor because residents do not need to own cars. See Glaeser, Kahn, and Rappaport (1999).

41. Kain (1968).

42. See, for example, Case and Katz (1991).

The four variables that I consider are membership in organizations, socializing within the community, drinking, and being in favor of racial exclusiveness. In the case of the last variable, I examined whites alone. There are several explanations regarding peer effects for the different variables. The first two variables are presumably standard network variables. When other members of your community are members of an organization, the social network is denser and you may want to join more organizations yourself. Naturally, it takes two to socialize, so we expect there to be a positive relationship between one person's socialization and his or her neighbor's socialization. The stories that lie behind the peer effects for drinking and racist opinions are somewhat different. In these cases, I would imagine that transmission of values across peers is likely to be the most powerful mechanism inducing correlation across these variables.

In table 2, regressions 1–4, we find a positive correlation between peer outcomes and individual outcomes. The two network variables have very similar coefficients. An increase by one in the community average of the variable raises individual outcomes by about 0.4. The taste-for-racial-exclusion effect is larger. The peer effect on drinking is largest.

There are two major sources of bias for these variables. The first source of bias is location-specific omitted variables (for example, a drinking ban) that induce correlations between peer outcomes. The second source of bias is that peers elect to be near one another and that there is significant correlation in unobservables among peers. In principle, the first problem can be mitigated through instrumentation strategies. The second problem is best handled with a natural experiment over neighborhoods like "Moving to Opportunity" (discussed below).

The general instrumental-variables strategy is to use average exogenous characteristics of peers to instrument for the average endogenous characteristic that is used in the regression. In a study by Anne C. Case and Lawrence F. Katz, parental characteristics are used to instrument for children's characteristics.[43] This approach will be a problem if we believe that the exogenous characteristics may themselves have a direct effect on outcomes. Nevertheless, in regressions 5 to 8, I show results using this somewhat problematic methodology. In this case, I use the average marital status, years of education, age, and income of the peer group as instruments for the dependent variable.

In three of the four cases, the peer effects remain significant. In most cases, standard errors increase. Because of the uncertainty over specification, it is

43. Case and Katz (1991).

Table 2. Peer Effects and Individual Outcomes[a]

Variable	*Any membership (1)*	*Socializes within community (2)*	*Drinks (3)*	*For racial exclusion (4)*	*Any membership (IV)[b] (5)*	*Socializes within community[b] (6)*	*Drinks (IV)[b] (7)*	*For racial exclusion (IV)[b] (8)*
Intercept	–1.4588	2.8570	0.6321	0.2074	–0.8884	1.5310	1.3887	0.1871
	(0.2077)	(0.2579)	(0.0583)	(0.0956)	(0.2258)	(0.6867)	(0.1004)	(0.0992)
Logarithm of income	0.2708	–0.0718	–0.0492	–0.0157	0.2911	–0.0582	–0.0061	–0.0162
	(0.0199)	(0.0226)	(0.0047)	(0.0092)	(0.0204)	(0.0236)	(0.0022)	(0.0092)
Less than 30 years old	–0.2747	0.5377	–0.1184	0.1754	–0.2923	0.5276	–0.1222	0.1757
	(0.0603)	(0.0664)	(0.0143)	(0.0258)	(0.0612)	(0.0670)	(0.0147)	(0.0258)
30 to 39	–0.2669	0.1650	–0.9135	0.1381	–0.2957	0.1631	–0.0962	0.1385
	(0.0581)	(0.0646)	(0.0137)	(0.0250)	(0.0590)	(0.0650)	(0.0141)	(0.0250)
40 to 49	–0.1200	0.0169	–0.0545	0.0858	–0.1407	0.0240	–0.0524	0.0858
	(0.0620)	(0.0687)	(0.0147)	(0.0268)	(0.0629)	(0.0692)	(0.0151)	(0.0268)
More than 60	0.0872	0.2301	0.0436	–0.0135	0.0776	0.2326	0.0490	–0.0130
	(0.0597)	(0.0661)	(0.0141)	(0.0259)	(0.0606)	(0.0665)	(0.0145)	(0.0259)
Black	0.1770	0.1365	0.0639		0.1140	0.0899	0.0929	
	(0.0503)	(0.0584)	(0.0119)		(0.0518)	(0.0628)	(0.0126)	
Other race	–0.1885	–0.1586	0.1081		–0.2674	–0.1929	0.1326	
	(0.0916)	(0.1116)	(0.0217)		(0.0936)	(0.0497)	(0.0224)	

School dropout	–0.5301	–0.0106	0.0569	–0.0995	–0.5586	–0.0292)	0.0752	–0.0966
	(0.0429)	(0.0487)	(0.1021)	(0.0196)	(0.0442)	(0.0497)	(0.0105)	(0.0200)
College graduate	1.0275	0.1485	–0.0119	0.2086	1.0643	0.1531	–0.0166	0.2067
	(0.0432)	(0.0490)	(0.0102)	(0.0192)	(0.0442)	(0.0493)	(0.0105)	(0.0193)
Married	–0.1116	–0.2928	0.0638	–0.0024	–0.1183	–0.2944	0.0819	–0.0017
	(0.0387)	(0.0434)	(0.0092)	(0.0173)	(0.0393)	(0.0437)	(0.0096)	(0.0173)
Logarithm of city size	–0.0355	–0.0289	0.0030	0.0123	–0.0346	–0.0197	–0.0061	0.0106
	(0.0081)	(0.0092)	(0.0019)	(0.0038)	(0.0082)	(0.0102)	(0.0022)	(0.0044)
Any membership	0.4197				–0.0196			
(community mean)	(0.0257)				(0.0679)			
Socializes within community			0.3974				0.7316	
(community mean)		(0.0290)				(0.1628)		
Drinks (community mean)			0.8431				0.3840	
For racial exclusion				0.5452				0.6077
(community mean)				(0.0956)				(0.0911)
N	10,194	11,502	10,198	3,886	10,194	11,502	10,197	3,886
Adjusted R^2	0.1649	0.1649	0.2501	0.1537	0.1411	0.0279	0.2096	0.1532

Source: GSS, 1972–94.

a. Numbers in parentheses are standard errors.

b. Columns 5 to 8 include community means for age, income logarithm, marital status, and years of education as instrumental variables.

almost certainly true that the standard errors in this approach understate the true degree of uncertainty about the parameter estimates. Nevertheless, these coefficients seem statistically sizable and probably do reflect the existence of real peer effects for these variables. As this discussion ties to emphasize, understanding the spatial organization of individuals becomes critical for the identification of peer effects.

Individuals may learn skills from their neighbors, but they also learn values and many other things. The peer-effects literature has focused more on negative peer interactions (drug use, out-of-wedlock births, crime) than on learning skills. These interactions may occur because of transfers of knowledge—for example, one person telling a neighbor how to buy drugs—but it seems more likely to me that these interactions occur because of the transfer of values. In other words, an individual is more likely to think that drug use is acceptable if he or she sees physically proximate friends also using drugs.

There has been a significant literature testing for the presence of this form of peer effect by examining the correlation of one person's behavior and the behavior of physically proximate friends. Case and Katz show a correlation among peers for a wide range of behaviors.[44] Katherine O'Regan and John Quigley use tract-level data to show how peer behavior in a person's tract influences his or her own behavior.[45] In my paper with Bruce A. Sacerdote and José A. Scheinkman, we argue that the extremely high variance in crime rates over space can best be understood as evidence for the presence of social interactions that create covariance among individuals in propensity to commit crimes.[46]

As mentioned above, all of this research is problematic because of the choice of neighborhood. If there is a correlation in intrinsic individual attributes within neighborhoods that occurs because of endogenous neighborhood choice, then the above phenomena would appear without the presence of peer effects. Indeed, William Evans, Wallace Oates, and Robert Schwab claim that properly dealing with the endogeneity of peer groups eliminates one study's estimate of peer effects.[47]

The best piece of work in this literature is a paper by Lawrence Katz, Jeffrey Kling, and Jeffrey Liebman.[48] They use the "Moving to Opportunity" experiment, a randomized study in which some people are induced to move

44. Case and Katz (1991).
45. O'Regan and Quigley (1996).
46. Glaeser, Sacerdote, and Scheinkman (1996).
47. Evans, Oates, and Schwab (1992).
48. Katz, Kling, and Liebman (1999).

out of high-poverty areas. They find that male children who move into low-poverty areas are much less likely to have disciplinary problems. They also find that depression and asthma decline for those who leave the ghetto. The important element of this research is that it provides a situation in which seemingly identical families are randomized into different neighborhoods. While this offers a means of cleanly estimating neighborhood effects, since many attributes of neighborhoods (beyond peers) differ, the experiment does not really pin down peer effects. To truly estimate peer effects, one would need an experiment where individuals were randomized among groups where only peers differed.

But beyond the simple measurement of peer effects, the goal must be to determine the channels through which these peer effects operate. Different channels tend to imply radically different policy responses. For example, if studies proved that peer effects work primarily through information, then policy actions could be aimed at providing *different* information. If peer effects work through preference formation, then policy alternatives become much more difficult and one must consider fairly massive education projects to changes these preferences.

Furthermore, the information-versus-preferences question may imply a different kind of need for policy intervention. If individuals are taking actions because their preferences lead them in that direction, then there is no a priori need for policy intervention (except for the externalities related to the actions). If individuals are taking actions because their peers have given them misinformation, then the individuals can themselves be made better off by information-based policy interventions. My own suspicion is that most peer effects work through preferences rather than information, but this opinion is based on very little data.

It would be difficult to distinguish the various channels through which peer effects operate without special surveys. Knowledge can presumably be elicited by surveys. Preferences are harder to measure, but techniques are being developed that involve using real-stakes games that may permit the measurement of factors such as risk aversion and time preference, two types of preferences that may possibly be influenced by peer effects.

These techniques involve confronting subjects with real choices involving monetary costs and benefits. For example, time preference is measured by testing a subject's willingness to forgo cash today relative to cash in the future. The taste for vengeance is measured by putting subjects in a situation where they have been wronged and then measuring their willingness to pay in order

Table 3. City Size and Social Capital[a]

Variable	*Cities with population over 1 million*	*N*	*All other U.S. cities*	*N*
Number of organization memberships	1.5027 (1.8779)	728	1.7039 (1.7949)	10,850
Number of close friends	4.9753 (6.6838)	81	7.5980 (11.04)	1,346
Frequency of visits to friends	4.0821 (1.4215)	73	4.0448 (1.5033)	1,272
Trust indicator	0.321 (0.467)	1,737	0.423 (0.494)	23,040
Thinks people are fair	0.483 (0.500)	1,687	0.625 (0.484)	22,895

Source: GSS, 1972–94.
a. Entries are sample. Numbers in parentheses are standard deviations.

to punish the individual who has done them wrong. Taking experiments to neighborhoods to measure preferences is one possible new route for empirical work in this area.

Social Capital

Table 3 shows the connections between city size and five different measures of social capital. The first column shows the means of the variables for people who live in cities with more than one million inhabitants. The second column shows results for people who do not live in cities with more than one million people.

The first measure reflects the number of types of nonprofessional organizations to which the respondent belongs.[49] This is among the most standard measures of social connection. This measure is 1.5 for people in big cities and 1.7 for people outside big cities. This difference is quite statistically significant, but the economic significance is not huge.

The second measure is the self-reported number of close friends. This number is 7.6 outside of big cities and 5.0 inside big cities. This different is significant both statistically and economically. People in big cities appear to have fewer people that they refer to as close friends. Of course, given the ambi-

49. Thus people who are members of fraternal organizations only, but are members of five such organizations, will have a value of one for this variable. Unfortunately, the General Social Survey does not allow us to count the total number of organizations to which an individual belongs, only the number of *types* of organizations.

guity over what a close friend is, this variable is difficult to interpret. The third variable reflects the frequency of visiting one's closest friend. Here there is a difference between the big cities and elsewhere, but the difference is small.

The fourth and fifth variables reflect self-reported measures of trust and how fair one believes others to be. In other research, I have found that these variables are more correlated with one's own trustworthiness than with one's tendency to trust others.[50] In many cases, these variables are much higher outside big cities, where people appear to be more trusting and more likely to think that others are fair. Perhaps this reflects the greater presence of opportunistic behavior in cities.

These topics bring us to the next area of major research for urban economists: social capital. The literature that has followed Putnam in studying social capital has been among the most prominent in economics.[51] In this paper, I use the term *social capital* in Putnam's sense to refer to networks. This literature has argued that the level of social connection among individuals can play a major role in government efficiency,[52] economic growth,[53] and happiness itself.

Very little in this literature has suggested that there is a connection between space and social capital, except insofar as the substantial differences across different areas are a major topic of research. There is a rich sociological literature that seeks to explain the effects of urban density on the degree of connection among individuals.[54] Yet economists have barely studied the topic.

One specific topic for research is the connection between cities and network formation. The raw correlations mentioned above have been observed, but very little is known about why big cities apparently have less organization membership than smaller towns. It seems entirely possible that urban residents simply form different types of networks. On the other hand, cities may genuinely have less membership because opportunism is more common in urban areas. If cities facilitate social flight, then it may be easy for urbanites to behave opportunistically and escape punishment. This may cause a level of misbehavior that stymies that growth of social capital. Good research on the role that cities play in creating social connection appears to be important.

An even more broad-ranging topic is the more general connection between physical space and the formation of social connection. It is obvious (but hardly

50. Glaeser, Kahn, and Rappaport (1999).
51. Putnam (1993).
52. Putnam (1993); LaPorta and others (1997, 1999).
53. Knack and Keefer (1997).
54. See Wirth (1938).

proven scientifically) that spatial organization plays a major role in determining the social connection of neighborhoods and offices. The New Urbanism, which provided the philosophical basis for Celebration, takes as given the point that medium-density areas, not low-density areas, will lead to more connection and better networks. Of course, the New Urbanism is presently a philosophy, not a proven viewpoint. It may well be that Celebration will be no more successful in forming a spatial utopia than many earlier exercises.

Given the previous discussion of urban social problems, it seems surprising that higher density is thought to increase social connection, but it is likely that the New Urbanists have in mind a nonmonotonic relationship between social connection and density. At low levels of density, social networks cannot exist because transportation costs between people are too high. At high levels of density, individuals do not form bonds because they are too mobile and find it too easy to take advantage of one another and just move on. According to this view, the optimal level of density for the generation of social capital is somewhere in between the low density of rural areas and the high density of New York City.

In spite of these raw correlations, next to nothing is known about the role that density really plays in the forming of networks. At best, the relationship between city size and memberships has been established, and this may be a reflection of selection into cities, not the effect of cities. More important, even if a true relationship between city size and social capital is observed, how this relationship actually operates remains a mystery. My hope is that future urban economists will be able to understand more clearly how density effects network formation.

Architecture

Table 4 shows the relationships between living in apartment buildings and a few related outcome measures. I divide the population into three groups: those who live in single-family dwellings, those who live in multifamily dwellings with fewer than five units, and those who live in apartment groups with more than five units.

The first three rows look at the connections between apartment dwelling and socialization with friends and neighbors. Individuals who live in apartments are much more likely to socialize with their neighbors than individuals who live in single-family dwellings. However, this socializing appears to drive

Table 4. Building Structure and Social Connection[a]

Variable	*Lives in single-family dwelling*	*N*	*Lives in multifamily dwelling with fewer than 5 units*	*N*	*Lives in multifamily dwelling with more than 5 units*	*N*
Socializes with friends	3.9926	10,443	4.2839	2,205	3.9420	466
	(1.5975)		(1.6281)		(1.7606)	
Socializes with relatives	4.5216	10,440	4.3852	2,204	4.3447	467
	(1.6056)		(1.6656)		(1.6557)	
Votes in local elections	0.7143	1,369	0.5445	303	0.5365	82
	(0.4518)		(0.4988)		(0.5017)	
Meets local representatives	0.3499	1,383	0.2574	303	0.2650	83
	(0.4771)		(0.4379)		(0.4440)	
Afraid to walk alone at night	0.4027	10,543	0.5051	2,215	0.6866	501
	(0.4904)		(0.5000)		(0.4643)	

a. Entries are sample. Numbers in parentheses are standard deviations.

out socializing with relatives. The effect of apartment size on socializing with friends appears to be nonmonotonic; dwellers of smaller multifamily units are most likely to socialize with friends. These results are robust and become strong to the inclusion of control variables (such as income, education, and family structure) and are not just the result of richer people living in houses.[55]

The next two variables look at the connection between housing structure and local politics. It appears that individuals in apartment buildings are less likely to work to influence local politics. They are also less likely to vote in local elections. Interestingly, apartment buildings appear to build some forms of social capital (the connections among neighbors), but they reduce the amount of involvement in local politics.

The final variable shows the connection between apartment dwelling and fear of crime. The connection is strong and positive. Victimization data suggest that this fear has at least some basis in fact. Surveys routinely show that residents of multifamily dwellings are much more likely to be victimized (in street crimes, not in burglaries).[56] For some reason, the presence of single-family detached dwellings seems to be negatively correlated with criminal victimization. These results are true if we control for a wide set of individual characteristics and available neighborhood variables.[57]

One important relationship is the connection between social capital and density. However, there are many other ways in which physical space could relate to the formation of social networks. The existence of public spaces is often said to play a major role in creating interactions, especially among people who do not have natural reasons to interact. These public spaces may be traditional squares or piazzas. They also may be commercially handled coffee shops and bars. In the latter cases, nonmarket interactions are mixed with market transactions (for example, a bar owner is able to charge more for drinks because he offers a meeting place).

Housing infrastructure may also be important. Since owners of single-family units generally do not delegate their relationships with neighbors or the government, they may tend to develop stronger networks than residents of multifamily units. In large apartment buildings, the owner or the co-op board will take on the work of dealing with neighbors and the public sphere. This could in principle lead to a less-connected citizenry. My own work in this area

55. As shown in Glaeser and Sacerdote (1999).

56. For details, see Glaeser and Sacerdote (1999).

57. Of course, it is always possible that the connection between building size and crime may be spurious. Since we cannot control for everything, it is always possible there are other features of the neighborhood that cause street crime.

has not tended to find such clear effects, but there are many limits to the preliminary work that I have done.

More generally, although urban economics has addressed the distribution of individuals across cities and within cities, it has said almost nothing about the physical architecture of urban areas. Casual observation suggests that the physical environment in which we live can play a major role in determining our social connection, vulnerability to crime, and perhaps even our overall level of utility. Yet economists have made few attempts to study the impact of physical buildings.

A barrier to such work is the absence of evidence on physical infrastructure. At best, standard data sets only tell us the smallest facts about the places in which people live. There are very few data that give a detailed picture of the physical environment surrounding people. The best data on physical environment (the American Housing Survey) have so few questions on outcomes that it is impossible to apply it to many architectural questions. A major step forward would be to ask a much wider range of survey questions during at least one year of that survey.

Political Economy, Altruism, and Crime

Table 5 shows the connection between city size and attitudes toward redistribution. Again, I have divided the sample into those living in cities with more than 1 million inhabitants and those living in smaller areas. In this case, I consider variables relating to support for redistribution.

The first column shows that people in big cities are more likely to support the presence of a social safety net. This is a general phenomenon that holds with many variables asked in greater numbers of years. People in large cities tend to favor higher levels of redistribution and to say that the government is spending too little. This holds even if the sample is restricted to only the wealthier residents of the city, and if controls are introduced for income and other variables. The second row simply reminds us that urbanites are much more likely to be Democrats. Again, this holds true even if only the wealthier urban residents are studied. The third row shows that white people in large cities are less likely to object to a family member's marrying a black person. It appears that urban residents are more likely to be sympathetic to other races and more likely to support transfers to the poor. The fourth row shows that urban residents are much more frightened. As I discuss below, one reason that

Table 5. City Size and Opinions[a]

Variable	*Cities with population more than 1 million*	*N*	*All other U.S. cities*	*N*
Agrees with government social welfare	0.8589 (0.3503)	78	0.7259 (0.4462)	1,277
Voted for Democrats in 1988	0.6338 (0.4830)	183	0.3681 (0.4823)	3,420
Objects to a family member marrying a black person	0.3428 (0.4780)	70	0.5951 (0.4910)	1,240
Afraid to walk alone at night	0.6896 (0.4629)	915	0.41137 (0.4921)	12,344

Source: GSS, 1972–94.
a. Entries are sample. Numbers in parentheses are standard deviations.

urban residents might be more likely to support transfers to the poor is that they believe these transfers will make crime less likely.

One possible explanation for the concentration of poverty in America's cities is that urban governments appear to be more supportive of the poor than the governments of suburbs. This support shows up in public housing, health, and redistribution expenditure. Suburbs show their lack of support with zoning laws and perhaps also through policing strategies that are less sensitive to poorer citizens. There are many possible explanations for the differences between city and suburb governments. City governments have fixed resources to tax, so it is possible to redistribute in the city. Suburbs have less market power, and attempts to redistribute simply lead to a quick exodus of the wealthy. Cities have fewer homeowners, and homeowners have the strongest incentives to fight antipoverty redistribution.

Most important for our purposes, it appears that cities also have voters who are more likely to believe in spending on the poor. There are two natural explanations for this phenomenon. First, urban proximity among the rich and the poor may lead to greater altruism of the rich for the poor. Second, urban proximity among the rich and the poor may lead to greater fear of crime by the rich. The desire of the urban rich to redistribute may simply be a response to greater fear of criminal activity and the belief that redistribution may reduce the incentives to engage in crime.

Understanding criminal behavior has been a major topic of research for economists. But there has been less spatial analysis of crime than is still needed. Indeed, little is really known about the effects of spatial organization on criminal behavior, despite anecdotal information on concepts like defen-

sible space and aggregate studies like my own on the connection between crime and city size. Elsewhere, I have tried to connect criminal behavior with architecture. But there is very little direct evidence on the way that urban density affects the nature of criminal activity. Pressing questions include both how physical structure determines crime and why crime is so much higher in cities.

Far more adventurous is the attempt to understand how spatial proximity affects altruism and other behaviors. A pathbreaking work in this area is by Erzo Luttmer, who shows that proximity to welfare recipients of one's own race tends to increase support for welfare. Proximity to welfare recipients of another race tends to decrease support for welfare. While this work is important, it is also very indirect. Essentially, Luttmer regresses survey evidence on support for welfare on metropolitan-area segregation measures.[58]

There are several ways in which this work might be improved. First, more tangible outcome measures might be substituted for a survey question about support for welfare. Questions about charitable giving might be helpful. Experimental evidence on the willingness to forgo cash if it is given to the poor might be useful. Second, the work could contain better measures of the spatial proximity among the rich and the poor, and this proximity would ideally be the outcome of exogenous variation, not endogenous location choice.

These topics are extremely important, and they may require further collaboration between economists and the social psychologists who have made more thorough studies of the formation of preferences. Ideally, this is another area in which urban economists will extend their reach. Without work of this kind it will be impossible to fully understand the political economy of cities (or nations, for that matter).

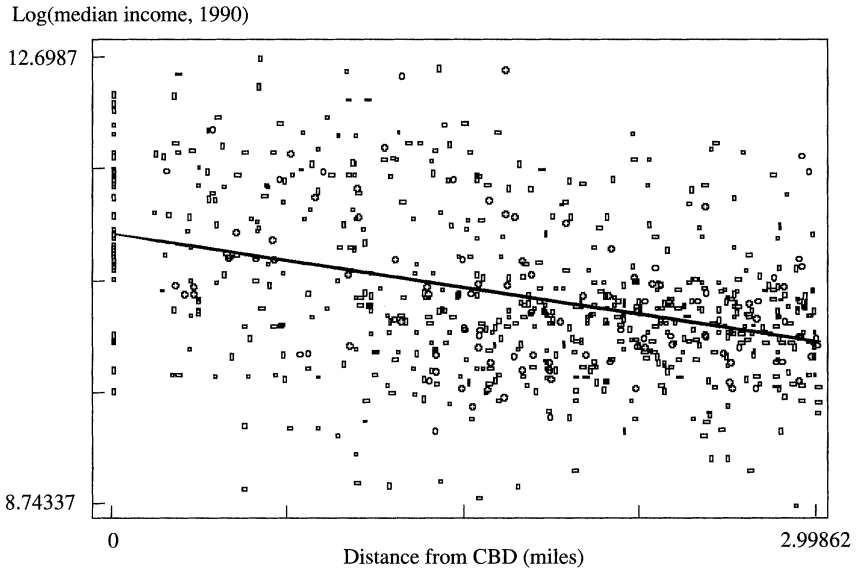
The Consumer's City

In this section, I briefly discuss the future of the city and nonmarket interactions.

Figure 5 shows the relationship between distance from the central business district (CBD) and the logarithm of median income for four traditional metropolitan areas by census tract within three miles of the CBD. For all four of these metropolitan areas this relationship is strongly negative. Richer people live closer to the CBD. This relationship levels off and then disappears farther away from the CBD.

58. Luttmer (1998).

Figure 5. Income and Distance from the Central Business District (CBD) in Boston, Chicago, New York, and Philadelphia



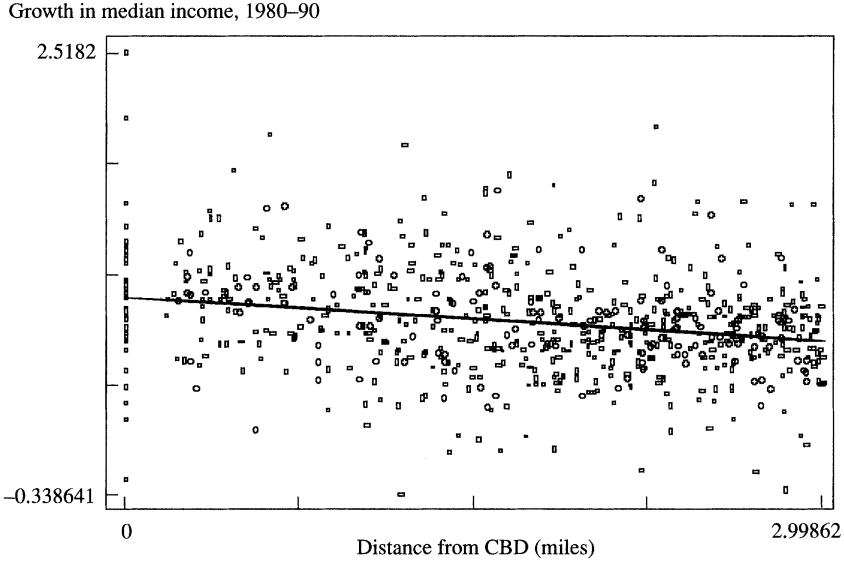
Source: Census of Population and Housing, 1990.

In figure 6, I show the relationship between the change in income and distance to the CBD for the same subsample of U.S. tracts. There is a significant positive relationship between income growth and proximity to the CBD. This relationship is strongest in New York City and Chicago in the 1980s.

The previous fact shows that richer people moved closer to the center of cities in the 1980s. The popular press appears to suggest that this trend has, if anything, increased in the 1990s. The *Boston Globe* repeatedly reports on new urban homesteaders—wealthy people choosing, because of the attractions of urban life, to move into gentrifying downtown areas that were previously much poorer. (Of course, these media blasts must be taken with significant skepticism.) While the mainstay of New York City's resurgence is the financial industry, a second factor is the strong appeal of New York as a center for consumption.

If the productive edge in cities weakens, then it may be that this role of the city as a center for consumption may be the driving force for urban growth in the future. Given the increasing wealth in America, this force may not be a bad one to rely on. If city living is a luxury good and rich Americans are get-

Figure 6. Income Growth and Distance from Central Business District in Boston, Chicago, New York, and Philadelphia



Source: Census of Population and Housing, 1980 and 1990.

ting richer, this may continue to cause urban renaissances throughout the country.

These cities are not attracting the rich because of cheaper manufacturing goods. There are little differences in these prices over space, and generally the large land costs involved in retail trade in cities mean that traded goods are usually more expensive in cities. The amenities of urban life do often come from less expensive and more available services in cities. There already exists a rich literature on the role of urban markets in increasing the division of labor and the range of available products. These standard market forces are one reason why cities are appealing as centers for leisure activities. Public amenities such as museums and theaters are another classic market-related reason for the popularity of some cities.[59] Indeed, some cities are attempting to use big infrastructure projects as attempts to increase their desirability as consumption centers.[60]

59. To the extent that these institutions have large fixed costs, big-city crowds enable these more impressive institutions.

60. We still do not know if these will be generally successful, or what is needed to make such projects work.

It also may be true, however, that density itself is attractive. Gary Becker has argued that restaurants attract customers because of their crowds as much as because of their food.[61] It seems to be appealing to many people to live close to (if not directly on) bustling city streets. Young single people in particular flock to cities because urban density makes for thicker matching in the marriage market. Finding an appropriate mate is generally thought to be much harder in rural Iowa than in Manhattan. These effects of density fall outside of standard market transactions (although they can certainly be understood with the apparatus of neoclassical economics), and they appear to be major forces influencing the future of urban areas. Urban economics must try and understand these forces if it is to understand the future of cities.

Conclusion

I have argued that economics as a whole is moving into the area of nonmarket interactions. These interactions are probably at least as important as standard market transactions in producing human happiness and possibly as important in determining economic growth as well. Most of the nonmarket interactions that are of interest to urban economists have a profoundly important spatial component. The borrowing of information, the transfer of values, and the formation of networks appear to take place primarily at short distances. The formation of cities both affects these nonmarket interactions and is affected by them. As urban economics moves forward, an understanding of our own topic will require that we center much research on the size and nature of these interactions. I also believe that a spatial orientation will be crucial for making progress on these important topics, and so urban economists should be especially well equipped to lead the way.

61. Becker (1991).

Comments

Vernon Henderson: Edward Glaeser argues persuasively that a significant portion of future urban research will be focused on the role of nonmarket interactions. I have taught my students for the past twenty-five years that urban economics distinguishes itself from the rest of economics by its focus on the causes and consequences of close spatial proximity, with key aspects of the phenomenon involving externalities. That the future holds more of the same is reassuring.

Traditional approaches in the urban literature tend to view cities as necessary evils. The conventional wisdom is that spatial proximity is needed in order to exploit scale externalities, such as localized information spillovers, in production, but that this proximity breeds almost exclusively negative externalities on the consumption side. The list includes congestion, pollution, noise and health externalities, crime, discrimination, and other antisocial behavior. A considerable portion of the urban literature has examined the dimensions and policy prescriptions to deal with these negative nonmarket interactions.

What is refreshing about Glaeser's perspective is the focus on the positive aspects of close proximity. Apart from information spillovers in production, his paper examines human-capital spillovers, peer-group effects, social capital, and altruism as they relate to spatial proximity, density, and urban scale. Second, he looks beyond traditional issues of how urban economics might quantify the magnitude of damages or gains from aggregate scale externalities or human-capital spillovers.

Following, for example, the theoretical models of Masahisa Fujita, Robert W. Helsley and William C. Strange, and Gilles Duranton and Diego Puga, which spell out the microfoundations of scale externalities, Glaeser joins the call for urban economists to investigate microfoundations of externalities

empirically.[1] In the 1990s such an agenda for economists has been supported by both the National Science Foundation and the MacArthur Foundation. The work of Adam B. Jaffe, Manuel Trajtenberg, and Rebecca Henderson on patent citations initiates the practical inquiry about the nature of information flows.[2] Whom do firms learn from and how do they learn? Do they learn by trading employees back and forth in the labor market, through the gossip by buyers and sellers who come to the firm, through the local social circuit, and so on? Or, as another example, in an urban endogenous-growth model by Duncan Black and J. Vernon Henderson, local human-capital accumulation both enriches static information spillovers and leads to more innovation.[3] Can these two effects be disentangled?

This agenda is a difficult one for the obvious reasons. Nonmarket transactions are difficult to observe, unlike market ones. So we can get snapshots of a process such as citations for patents, but these represent only a small fraction of the flows of ideas. We can try to make indirect inferences. Are productivity benefits of scale closely related to spatial proximity? Do they relate to turnover in the labor market? Do they relate to frequency of socialization? There are doubtless other connections that could be drawn. But all these are items that are difficult to measure and they raise difficult identification issues in econometrics. As Glaeser points out, in identifying the beneficial and harmful effects of different types of peer groups, we need to control for the endogeneity of the groupings. And moreover, we have so far only investigated productivity gains for manufacturing, when in fact it is tradable services that are drawn to the largest metropolitan areas. We understand little about externalities among service activities.

Glaeser turns to a variety of phenomena economists rarely study that are of great interest. He looks at happiness indexes, socialization, and political preferences as they are affected by external opportunities to socialize. The reasons why we would expect city size and density—spatial proximity—to be related to, say, socialization are well articulated. Table 2 contains results on city size and aspects of socialization, with the required demographic controls, yielding weak associations. But in tables 2–5 there seems to be a general indication that aspects of socialization may decline, or at least not increase to the extent expected, as city size and density rise. It seems odd that socialization should not be substantially affected as the opportunities to socialize increase.

1. Fujita and Ogawa (1982); Helsley and Strange (1990); Duranton and Puga (1999).
2. Jaffe, Trajtenberg, and Henderson (1993).
3. Black and Henderson (1999).

However, a key determinant of the extent of socialization may be missing in the empirical work: the length of residence in the community. Larger cities may have more life-cycle turnover. Center cities and apartments are characterized as residences of highly mobile people, such as young professionals without children. By virtue of short tenure, these individuals have had less chance to develop social networks and have less incentive to invest in building nontransportable social capital. Controlling for these aspects, it may be found that being in cities enhances socialization, in contrast to what tables 2 and 3 seem to suggest.

Using tables 3 through 5, Glaeser attempts to determine whether socialization, voting behavior, prejudice, and fear of crime are related to city size and nature of dwelling-unit type (single-family homes versus apartments). These tables contain simple pair relationships—city size and average socialization, for example. It is unclear why Glaeser did not try simple regressions or probits for all the relations, as in table 2. These would be much more compelling.

Forecasts for urban work. Urban economics is taking on increasing visibility in developing countries and in development economics. About 85 percent of the world's urban population will be in developing countries twenty years from now (and the world will be 60 to 65 percent urban) according to the World Development Report 1999/2000.[4] The extent of urbanization differs by region and hence the issues differ correspondingly. Latin American countries typically are fully urbanized. The focus in these is on institutional and political reform at the local level, to manage populations growing in size and income. As income has increased, countries have increasingly decentralized public-expenditure responsibilities in response to both local and regional demands and increasing difficulty in meeting public-sector needs from a centralized system. With local public-sector growth, two issues become critical: how to design local governmental structures (a) to get the right incentives for good local governance and (b) to buffer the the national government from financial instability. For example, what should be the length and ceiling number of mayoral terms? Under what institutional arrangements is privatization of public service delivery an improvement over public provision?

In sub-Saharan Africa over the past thirty years, there has been rapid urbanization accompanied by little economic growth. This presents a puzzle: How is this possible, given the close connection between urbanization and GDP per capita? To what extent is it that the rural migrate to urban areas because

4. World Bank (1999).

conditions in rural areas have deteriorated due to civil wars and declining infrastructure provision and services that make agricultural production unprofitable? To what extent are public-sector incomes fueled by revenues from the sale of primary products drawing extended families into the city? But as people have moved to the cities, why has there not been industrialization and growth? Is it that the small population sizes of African countries and lack of transport infrastructure for intercountry trade make specialization difficult, so the intra-industry scale benefits of urban-area specialization cannot be exploited?

In South and East Asia there has been rapid urbanization and income growth, but this has taken place despite the limits of outdated institutions that were designed for rural or colonial societies and that have inadequate technical know-how in the local public sector. Many Asian countries have very high degrees of urban primacy, which hinder widespread economic growth and foster poor living conditions both in primate and nonprimate cities. A key issue is how to develop hinterland cities. What is the role of interregional transport investments and decentralization of government responsibilities and allocations, in an orderly decentralization process, such as South Korea has experienced over the past two decades?

Within cities, inadequate institutions affect the operation of housing markets. Poorer neighborhoods (*bustees, kampongs*) where there may have been generations of family residence have insecure title and tenure. Often these neighborhoods are in key downtown areas. As industrial jobs have moved to peri-urban areas, John Kain's spatial mismatch problem arises.[5] Residents cannot sell their houses to new land uses and move to the suburbs where jobs are. And developers cannot buy up land in these neighborhoods and provide much-needed mixed-use modern commercial development. Both traditional residents and local economic development suffer. One might ask why the government does not reform land markets and grant titles to families who have had possessory rights over land for many years, let alone for several generations.

Robert P. Inman: Edward Glaeser's provocative paper offers just what the field of urban economics needs as we start a new century of research on cities. If there has been a theme to the past century of urban research, it has been the power of markets to allocate resources efficiently in competitive spatial economies. Henry George, Alfred Marshall, Harold Hotelling, and Charles Tiebout have each provided us with important insights as to how markets work to ensure economic efficiency in urban economies. Yet for all the benefits of

5. Kain (1968).

competition in spatial economies—and surely they are enormous; witness the value of real estate in New York, London, Paris, Miami, San Francisco, San Jose—it is not hard to see inefficiencies as well. Dirty air, crime, trash-strewn lots and crack houses, disruptive students undermining the education of more serious classmates, congested roadways, and homelessness are common to most cities. Each is an example of an externality not efficiently priced through the marketplace. Glaeser's paper asks us to turn our attention to the activities that occur outside the marketplace and to the nonmarket mechanisms that set their levels and distributions. He argues that urban economists have a comparative advantage in such research—at least among economists—because spatial proximity is so crucial to understanding so many of these nonmarket interactions. As Glaeser points out, productive people work near other productive people, community-directed residents associate with other community-directed residents, and happy people live near other happy people.

To understand nonmarket interactions in urban settings, Glaeser stretches our thinking with provocative facts that standard competitive urban models will not easily explain. Much of what is important in these nonmarket settings involves bargaining, sorting, and multiple ("tipping") equilibria. Glaeser emphasizes the importance of social capital—measured by joining groups, having friends, trusting others—and finds that such capital appears greater in smaller cities. He speculates that smaller cities permit more familiar interactions, more knowledge about the true motives of others, and thus stronger informal networks. Stronger networks ought to better internalize the various externalities associated with urban living. He notes that city architecture, as it affects the formation of networks, is likely to be important as well. Stairways lead to more familiarity than elevators, and front porches, sidewalks, and open space to greater interactions still. Social capital is lowest among residents of high-rise apartments, higher in multifamily dwellings, and highest in neighborhoods of single-family homes. (Although I do wonder about the residents along Philadelphia's exclusive Main Line; one would also want to control for city density in such analyses.) Finally, Glaeser suggests that not only does familiarity breed trust but it may also breed empathy for the poor. This may in part explain why large cities spend more per taxpayer on poor families than do small cities; Glaeser stresses crime control as another plausible motive, too. A more direct test would compare charitable giving for poverty relief across city sizes.

To be sure, Glaeser means his paper to be a first look at, not a last word about, the importance of nonmarket interactions in cities, but it leaves a strong

impression. First, agglomeration economies are important, and for the most part the land market allocates those advantages efficiently. One important consequence, however, is large cities. Second, the resulting urban density creates a variety of external (nonmarket) interactions among residents. Third, nonmarket institutions in the guise of social capital—or networks—have arisen to manage these nonmarket interactions. Fourth, these nonmarket institutions work best when residents trust one another. Fifth, successful networks based upon trust are most likely to be found in smaller cities.

It is hard not to be intellectually stimulated by these conclusions. In my own case, that means thinking anew about the role of city government as another nonmarket institution, in addition to Glaeser's private networks, that might resolve this tension between the economic advantages of large cities and their nonmarket, often negative social consequences. Given Glaeser's analysis, what structure of government might work best in our large cities?

First, the city government should encourage, not undermine, the economic advantages of production and consumption agglomeration. This means providing the required public infrastructure for firms to function efficiently: roads to move goods and customers, public transit to move employees, pipes and tunnels to move water and waste, and communication networks to move ideas and facilitate dealmaking. Accomodating all relevant agglomeration economies will typically require geographically large infrastructure networks. Since the marginal costs of using such networks are likely to be sufficiently below average cost, government provision or regulation will be required. The financing of infrastructure's fixed costs can be done by average-cost pricing, general taxation, or (ideally) land taxes. The reach of infrastructure taxation should encompass the geographical domain of the agglomeration economies. Large governments each covering a metropolitan area and providing infrastructure and using broad-based taxation will be required here.

Second, city government must provide a social network for internalizing the negative externalities of agglomeration and urban density. It can do so directly by actually providing the governance structure for the network: a board of directors, election rules, and the assignment of responsibilities and taxing powers. Or it can charter, and perhaps regulate, freestanding private networks that meet criteria for democratic governance. Direct provision of networks is city government as we now know it, while the "charter and regulate" strategy generalizes today's efforts to privatize public education. In either case, Glaeser's empirical analysis recommends small networks. While Glaeser studies only private networks, his conclusion that smaller is better has a firm basis in what

we also know about public networks. The extensive literature on the efficient provision of public services shows that governments can finance and produce police and fire protection, K–12 education, recreation, libraries, health care, charity, and santitation with networks of 10,000 to 20,000 people, the equivalent of a good-sized city neighborhood. These neighborhood governments should be assigned resident-based taxation (on property or income) and user fees to pay for services, most efficiently collected as part of a piggybacked tax structure administered by the metropolitan government. There may be some spillovers across neighborhoods—police and fire services and poverty transfers and services are the most obvious examples—but those externalities can be handled with cross-neighborhood agreements enforced and financed by the metropolitan-level government. To protect the use of voluntary agreements as the basis for metropolitan governance, supermajority approval for metropolitan spending and taxation seems appropriate.

The institutional structure for this efficient city looks a good deal different from the tax and governance structures now in place in most U.S. cities. Indeed, most U.S. cities now seem to offer the worst of both worlds, as they are neither large enough to efficiently finance and provide infrastructure nor small enough to efficiently deal with the social externalities of urban density. Urban economic historians can probably explain why today's city boundaries lie where they do—in 1854, modern Philadelphia, for example, was formed as a merger of small neighborhoods to provide infrastructure services—but the interesting question for today's urban scholars is *Will these boundaries change?* The forces now holding city boundaries in place are largely redistributive. The suburbs do not want to be taxed to support regional infrastructures now provided by the city. City public employees do not want to lose their monopoly control over service provision to city residents. And city politicians servicing the majority of poorer neighborhoods do not want to lose access to the tax base of the city's rich minority.

This redistributive but inefficient equilibrium cannot survive in a world of mobile capital, labor, and customers. Redistributive cities and regions with inadequate infrastructures will lose firms, talented labor, and market sales to their more efficient competitors. Already these competitive pressures are being felt, and alternative public governance structures are beginning to emerge, albeit slowly, in response. Recent metropolitan-area-wide initiatives are almost exclusively for new infrastructure provision and financing (for example, regional transit systems in Atlanta, Boston, Dallas, Philadelphia, San Francisco, and Washington, D.C.; regional water and waste management in

Chicago, Denver, Hartford, and Seattle). Feeling competitive pressure for mobile residents from suburban ("neighborhood") governments, many large U.S. cities are now sanctioning business improvement districts (BIDs), charter schools with parent-controlled boards, and neighborhood councils as alternative, neighborhood-based governmental structures for local service provision. "America's mayors"—Rendell, Giuliani, Goldsmith—understand these pressures and have been applauded for their ability to introduce fiscal and institutional reforms.

The likely losers in this competitive process are today's urban poor. As Glaeser points out, the redistributive budget of large U.S. cities is declining steadily, and there is no reason to expect a reversal of this trend. In my own work examining the politics of fiscal policy in Philadelphia, I found that the large increase in black and Hispanic representation on the city council in the 1980s led not to an increase in city-financed income, housing, or health care transfers to the very poor but to increased services in the previously ignored minority working-class neighborhoods: police patrols, trash pickup, recreation facilities, and expanded library hours. Minority legislators do what white legislators do: they service their median constituent. And they have been reelected; John Street, for example, a black council member first elected in 1980, is Philadelphia's newly elected mayor. The shrinking city poverty budget is likely to shrink still further as competition forces cities to adopt the more efficient neighborhood form of governance. If the poverty gap is to be filled, it will have to come from voluntary agreements at the metropolitan, state, or national levels of government.

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