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Saturn and State Economic Development

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Saturn and State Economic Development

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SATURN AND STATE ECONOMIC DEVELOPMENT

TIMOTHY J. BARTIK, CHARLES BECKER, STEVE LAKE, AND JOHN BUSH

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General Motors' (GM) decision to locate its Saturn plant in Tennessee gives an aura of success to Tennessee's economic development policies. The question this poses is whether the Saturn success is generally a good model for state economic development policies.

To analyze this issue, the following article examines three questions. The first is whether the key factors that attracted Saturn to Tennessee can and should be adopted or modified by state governments. Our conclusion is that state policies can influence the location of plants like Saturn, although some policies might prove extremely costly.

The second question is whether the benefits of a project such as Saturn are worth the costs. We will argue that Saturn's location in Tennessee has net benefits for the state and nation. These benefits would have been reduced if Tennessee had provided more costly subsidies. Further, state and national benefits derived from Saturn might be considerably less in a different state.

Finally, a key issue is whether Tennessee and other states should focus their economic development policies on projects such as Saturn. We will argue that while projects like Saturn have net benefits, the main tasks of state economic development policy today should be to improve basic public services and infrastructure and to deal with gaps in capital and labor markets.

WHAT ATTRACTED SATURN TO TENNESSEE

GM stressed Tennessee's location near the center of Saturn's markets as the key to the location decision: "Low freight costs (were) cited by (former Saturn President) William Hoglund as the most important economic factor in the decision."[1]

Another key factor, and perhaps the most important, was Tennessee's lower wage rates—a factor that neither GM nor the state of Tennessee emphasized for obvious political reasons. Even though Saturn's unionized workers would be paid the same regardless of the plant's location, Tennessee's low wage rates will lower the prices that Saturn will pay to suppliers near the plant.

To measure the importance of wage rates, we constructed a computer model of the Saturn location decision.[2] This model begins by examining the Saturn location decision as if only access to markets mattered. The United States was divided into 32- by 32-mile squares that represented possible Saturn locations in the model. We calculated transportation costs from each location to the 42 domestic railheads that GM uses to serve the 48 continental states. Market demand at each railhead was assumed to be proportional to the number of Chevrolet registrations in nearby states. One version of the model used actual 1984 registrations, while another version used predicted registrations for the year 2000.[3]

Tennessee's low wage rates will lower the prices that Saturn will pay to suppliers near the plant.

With 1984 market demand distribution, the optimal "market access" location for Saturn would be near Indianapolis, Indiana. With the year 2000 demand weights, the optimal location shifts toward the southwest—to a location near Terre Haute, Indiana.

We then added labor costs and taxes to the model and simplified the model by only considering sites in Indiana and six surrounding states that had access to rail lines and two highways (i.e., sites that offered some minimal level of market access).

With the addition of labor costs and taxes, the model indicates that Nashville is the lowest cost site of the 130 locations considered.[4] Table 1 presents results for a city in each of the seven states considered, along with results from Minneapolis and New York City. Minneapolis and New York are included because both offered large subsidies to Saturn. Lexington, Kentucky, and Kalamazoo, Michigan, were finalists in the competition for Saturn. The data only reflects normal tax rates and does not include any special tax subsidies.

Table 1 indicates that lower supplier labor costs were the key to Tennessee's ability to capture Saturn.[5] Tennessee offered the lowest labor costs of the states

TABLE 1
Estimated Saturn Costs Per Car

Location	Average cost of Transport to Market	Local Supplier Labor Cost	State and Local Taxes	Total Measured Costs
Nashville TN	$426	$159	$118	$703
Lexington, KY	423	186	106	715
St. Louis, MO	419	172	134	725
Bloomington, IL	417	202	162	781
Kalamazoo, MI	430	244	116	790
Terre Haute, IN	413	209	168	790
Marysville, OH	427	219	169	815
Minneapolis, MN	494	195	—	($689)*
New York, NY	535	184	—	($719)*

*Labor and transport costs only. Tax costs were not available for these states.

with good market access, but other locations were superior on other cost factors. (Labor costs would be even more important in location decisions for firms that do not pay uniform national wages to their own workers).

Despite the low impact of taxes on total costs, tax incentives are a more attractive economic development policy to many states than lowering wages and transport costs. States obviously cannot change their location, so transport costs can only be marginally affected by transportation improvements. State and local labor laws and business recruitment practices can help keep wages low, and in the past many Southern governments have followed a low-wage policy.[6] But using low wages for economic development is contradictory if one believes the purpose of economic development policy is to increase family income.

Tax incentives can affect location decisions when other costs are close between two states. For example, our findings imply that Kentucky could have captured Saturn by lowering taxes by $12 per car, or $5.8 million per year. At a 10-percent discount rate, this annual subsidy is equivalent to a one-time payment of $58 million—a sizable subsidy, but conceivable in today's bidding wars. For other states, poor market access or high labor costs made the required tax subsidy unrealistic. For example, the findings show that New York would not have captured Saturn even by eliminating all state and local taxes, which may explain the failure of New York's financial offer to Saturn.

Tennessee did, in fact, provide subsidies—although state officials often say that Tennessee did not.

TENNESSEE SUBSIDIES

Given these findings, did Tennessee need to provide subsidies? Tennessee did, in fact, provide subsidies—although state officials often say that Tennessee did not. One state official claimed "we didn't give (Saturn) anything other than a good place to make a car." But the state has agreed to provide $20 to $30 million in training for Saturn workers, and $50 million for the Saturn Parkway and other roads.

Road improvements are often considered a normal public service, although a subsidy is provided to Saturn by expediting the improvements. However, job training is likely to be equivalent to an unrestricted cash payment to Saturn. In the past, Tennessee industrial training funds for new and expanding firms have provided very short-term, inexpensive training for Tennesseans, averaging $300 to $500 per trainee. Training frequently is done by the company, and the state just writes a check to cover the cost. Such training is more company-specific than general. Further, in most cases the funds pay for training the company would do anyway, although the funds may encourage expansion and more local hiring because state funds are restricted to training Tennesseans.

As of late 1986, no final agreement had been reached on how Saturn training funds will be used. Sources indicate that Saturn funds may allow the training of non-Tennesseans, a change in state policy. Using all the training funds would be difficult if training were restricted to Tennesseans, particularly because the project has now been scaled back to 3,000 jobs, with laid-off GM workers from the North having first call on most of those jobs.

Even if all workers are eligible, the amount of training funds per worker will be higher than for Tennessee's typical industrial training. Original plans called for $20 million for 6,000 workers, or more than $3,000 in training per worker (six times the usual amount spent for training per worker). Hence, while past state industrial training has compensated firms for training they would ordinarily do, the Saturn training may be different.

Saturn will also receive property tax breaks from local governments. One can argue that these property tax reductions are not a subsidy because Saturn's remaining property taxes exceed the increased public spending caused by the plant.

Many economists argue that local business property taxes should be set close to the cost of providing services. They claim that capital and labor mobility prevent local governments from effectively redistributing income; therefore, local governments should leave redistribution to the federal government and aim instead at efficiently providing services at cost to businesses and households. Whatever the merits of this argument, Tennessee currently requires business property taxes to be higher than business service costs, and thus most Tennessee businesses are paying for household services or to redistribute income to poor households. The Saturn property tax exemption is a subsidy because it exempts Saturn from this general requirement for Tennessee business.

We calculated that Tennessee's training and property tax subsidies lowered Saturn's cost per car by $34.

We calculated that Tennessee's training and property tax subsidies lowered Saturn's cost per car by $34, with $4 of this coming from the training subsidy and $30 from the property tax reduction.[8] This reduction is less than one-third of the $118 per car in state and local taxes that Saturn would pay without these subsidies.

Were these subsidies needed to get Saturn? Our data cannot provide a definitive answer to this question. Other states were close to Tennessee in costs and a complete cost analysis, including the offers of other states, might reveal that the $34 per car subsidy was crucial. Furthermore, Tennessee officials may have felt obliged to offer Saturn a deal similar to that given Nissan, which located in nearby Smyrna, Tennessee, in 1980. Nissan received about the same level of industrial training funds per worker as Saturn and is paying property taxes on the same service cost basis as Saturn.

Finally, Tennessee subsidies are modest compared to those provided to auto plants by other states. Kentucky, for example, is providing its new Toyota plant with $55 million to train and subsidize the wages of 3,000 workers—more than five times the "training" subsidy per worker provided by Tennessee. Kentucky also agreed to pay up to $35 million in land costs and site improvements for Toyota.

OTHER LOCATIONAL FACTORS

Tennessee officials also have stressed the importance of various nonquantifiable factors to Saturn's location (*e.g.*, the state's strong work ethic and low-key industrial recruitment approach). In explaining the Saturn success, former Governor Lamar Alexander stated that "several states have a central location, but none has our unique work environment."

Our research supports the view that the Tennessee work ethic helped attract Saturn. Interviews conducted for a previous study indicate that plant managers perceive Tennessee as having high worker productivity. One executive who had managed plants in both the South and North commented that "the basic attitude towards work is so different in the South. Workers in the North are not as flexible as workers in the South, even in a nonunion plant. I attribute this to years of 'fat living' in the North....Our company figures that labor productivity is 15 percent greater in the South compared to the North."[10]

A different work ethic may be particularly important to Saturn because GM officials see a change in labor-management relationships as crucial to the U.S. auto industry overcoming the $2,000-per-car Japanese cost advantage. Although laid-off GM workers will get first priority for Saturn jobs, GM officials may expect Southern cultural attitudes to influence the plant because some jobs will eventually go to Tennesseans, many Northern GM workers who will take Saturn jobs grew up in the South, and the community will reinforce Southern cultural attitudes.

Although a strong work ethic may attract new branch plants, it is difficult for government to affect work attitudes and relationships. But if different work attitudes and labor-management relationships are boosting Japan's growth, U.S. political leaders may wish to consider how to improve these attitudes and relationships.

Tennessee's low-key industrial recruitment may have also helped to attract Saturn. Tennessee focused on quickly providing information to Saturn and on some personal contact by Governor Alexander and other state leaders with top GM officials, while avoiding public relation gimmicks and the creation of special Saturn subsidies.

Tennessee focused on quickly providing information to Saturn and on some personal contact by Governor Alexander... while avoiding public relations gimmicks....

Providing information makes little difference to a company with GM's resources, although it may be essential in attracting the branch plants of smaller companies. But business confidence in state leaders is important because many complex regulatory issues arise during the start-up phase of a new branch plant. Due to the size and complexity of Saturn, GM would want reassurance that the state's political leadership would allow a quick resolution of problems such as environmental permits, zoning ordinances, and tax law interpretation. Losses caused by Saturn project delays could be enormous for GM. The company's confidence in Tennessee state leadership was justified in late 1985 when state leaders quickly acted to resolve a threat by Spring Hill's mayor to annex the Saturn site.

The huge special subsidies offered Saturn by states such as Minnesota and New York, while helpful in a narrow economic sense, may have hurt these states' prospects because of GM's fear of negative public reaction. GM's official explanation of the Saturn location decision says that these subsidies were not considered unless "the incentives were in common use or had been tested in the highest court in the state."[11] GM may also have feared that negative public reaction from special subsidies could create a backlash against GM in the state, increasing future problems. If Saturn had chosen Minnesota, the reported $1.2 billion subsidy (probably less than that in present value) might have caused future regulatory and tax problems. Tennessee's avoidance of

new subsidies, and the state's attempt to downplay the subsidies given, helped avoid negative reaction.

The lowest cost method for states to attract branch plants may be to adopt industrial recruitment techniques attuned to the needs of the company being recruited. Tennessee did this in the Saturn case. The governors of some other states seemed more interested in getting political credit for having tried to attract Saturn.

THE BENEFITS OF SATURN

Are the benefits of Saturn worth the costs?

Political officials and the media often mistakenly assume that the economic benefits of a Saturn-type project are equal to the payroll provided by the plant and its support industries. This benefit measurement would be correct only if Saturn jobs did not displace other jobs (*i.e.*, if the 20,000 Saturn-associated jobs led to a 20,000 increase of employment), and if the new workers employed all placed a zero value on their leisure time. This would be most nearly true if Saturn were located in an area with depression-level unemployment and all hiring were done locally. In a full-employment economy, a Saturn-type project leads to a bidding up of wages, which both displaces some private employment and causes some marginal workers (*i.e.*, workers who are close to indifferent between work at prevailing wages and leisure) to join the labor force. The social efficiency benefits caused by the additional labor demand are zero.

Saturn is likely to have its largest economic effects on the Nashville metropolitan area, which is by far Tennessee's fastest growing area.

The characteristics of Saturn and its location imply that the Saturn-associated payroll is unlikely to be a good benefit measure. While Maury County, where the plant is to be located, has had high unemployment (about 8.4 percent in 1985), it is by no means the highest in the state. Further, Saturn is just south of Williamson County, which for the last few years has had the state's lowest unemployment rate. Saturn is also likely to have its largest economic effects on the Nashville metropolitan area, which is by far Tennessee's fastest growing area. Finally, most Saturn workers will be laid-off auto workers from the North.

Thus, several factors prevent the Saturn-associated payroll from fully benefitting Tennesseans: some portion of Saturn's jobs will displace other private sector jobs as wages increase in middle Tennessee; some of the new jobs will go to unemployed migrants from the North (providing employment benefits to them and not to current Tennessee residents); and of the remaining net new jobs going to Tennesseans, some proportion is likely to go to workers who have a relatively weak attachment to the labor force and thus could be said to have relatively small benefits from employment.

Another claimed benefit that helps mobilize political support for projects such as Saturn is the increase in land values caused by these projects. We examined 1985 land sales within eight miles of the Saturn site and found that the average price per acre increased from $1,890 before the Saturn announcement to $5,229 afterwards.[12] If we simply assume that all land within that radius of Saturn increased by this amount, we get a total increase in land values of $431 million. A slightly more sophisticated analysis, which incorporates

differences in land value increases at various distances from the Saturn plant and the proposed Saturn Parkway, estimates an aggregate land value increase of $722 million within eight miles of Saturn. While some of this land may not be suitable for development, one would assume that land value effects extend beyond eight miles. Thus, it seems safe to assume that Saturn has raised land values near its site by between $500 million and $1 billion.

While this increase is obviously a benefit to the original landowners, it largely represents a transfer of wealth from other groups in society. The resulting rent increase hurts renters living in Maury County. The land value increases paid by migrants to Maury County will be matched by land value decreases in the areas from which the migrants originate. To the extent the migrants come from outside Tennessee, this transfer of land values is a net benefit to current Tennesseans, but from a national perspective the land value changes cancel out.

It seems safe to assume that Saturn has raised land values near its site by between $500 million and $1 billion.

The most important economic benefit of Saturn is not the change in land values or in the number of jobs, but the change in the types of jobs in Tennessee. By actively pursuing the Saturn plant, the state has essentially followed an "industrial policy" of seeking to alter the structure of Tennessee's economy. The Saturn plant will increase the proportion of higher wage, higher-skilled jobs, in contrast to Tennessee's traditional reliance on low-wage manufacturing. Further, while the Saturn plant and its spinoffs involve some job skills, they are the types of jobs in which much on-the-job training can be done. As Saturn's initial Northern workers leave due to normal employment turnover, Tennessee workers with relatively low formal job skills will have a good opportunity for entry-level positions through which they can develop job skills.

One concern about Saturn is that it will increase the volatility of the economy in middle Tennessee, making it more sensitive to national economic cycles. Assuming that the Nashville area continues its rapid growth, the 6,000 Saturn jobs (as originally planned) would increase the transportation equipment industry's total employment in the Nashville area from 3.1 percent of nonagricultural employment today to 3.9 percent in 1990.[13] If one assumes that 5,000 additional jobs would be created in automotive supply industries, and all those jobs were officially classified in the transportation equipment industry, the transportation equipment industry share for Nashville in 1990 would be 4.9 percent. The recent scaling down of the Saturn project implies 1990 shares of 3.5 percent (without suppliers) and 4.0 percent (with suppliers).

While these shares exceed the national share of 2 percent, the transportation equipment industry would still provide less than one-twentieth of Nashville's employment. The 4.9 percent share compares with Detroit's share of 12.1 percent and Flint, Michigan's share of 30.1 percent. Nashville is obviously still far from becoming another Detroit or Flint. Therefore, the increased volatility caused by Saturn can be managed by state and local governments. Concern about volatility would become more serious if other major auto manufacturers located in the Nashville area.

A second concern is that these jobs may not be viable in the long term if the U.S. auto industry fails in its efforts to become more competitive in the world market.

On the whole, for Tennessee the higher wages and job skills resulting from

Saturn are worth the risks of greater economic instability and possible long-term decline in the auto industry. The same conclusion might not hold for other states that sought Saturn. For example, Michigan might be wise to diversify away from the auto industry, and Minnesota does not face a low-wage problem.

From a national perspective, many analysts argue that state competition for branch plants such as Saturn is a zero-sum game: Tennessee's gain is Kentucky's loss if the total number of branches is fixed. But this argument ignores the likely increase in the total number of new branch plants nationwide if competitive pressures force state and local business taxes lower. Further, the social benefits from a plant like Saturn might not be the same for all possible locations. From a distributional point of view, the national interest might best be served by a Saturn plant location in a below average income state such as Tennessee.

...economic development strategy of branch plant recruitment is becoming inadequate in today's economy.

STATE ECONOMIC DEVELOPMENT POLICIES

Tennessee should be proud of the Saturn success. However, the economic development strategy of branch plant recruitment is becoming inadequate in today's economy. Fewer new manufacturing branch plants are being located in the United States, and the average size of new plants is smaller. As one Tennessee state official said, "The golden days of industry leaving the North and moving South are over."[14]

Economic growth is shifting to services, particularly business and financial services, which created more than one-third of all new U.S. jobs between 1979 and 1984. Research increasingly supports the view that small businesses create a higher proportion of new jobs than their share in employment. Firms with fewer than 20 employees created 39 percent of U.S. new jobs between 1976 and 1982.[15]

Further, simply recruiting branch plants does not deal with the growing regional disparities in many states. For example, Tennessee has a dual economy: while Nashville booms, 47 of Tennessee's 70 nonmetropolitan counties had greater than 10 percent unemployment in 1985.[16]

Even in recruitment, the factors attracting branches are changing as the United States shifts to research-intensive production that requires skilled labor. Research resources available at universities are becoming more important to some companies, while other companies are more interested in whether skilled workers will be attracted to the area's amenities.

As a result, states are supplementing branch plant recruitment with other policies. Twenty states have venture capital funds for new small business. Twelve states have sponsored entrepreneurship training programs. Thirty-three states have high-tech promotion programs. Twenty states have enacted "enterprise zone" legislation. And many states have expanded funding for education.[17]

Given the increasing complexity of economic development policy, 17 states now have a written economic development strategy to guide state actions. Whether a state adopts a written strategy or not, most states need some type of policy process that provides information on the state economy, encourages

a long-term commitment to economic development, coordinates the different elements of the strategy, encourages new ideas, and provides for evaluation. This policy process should encompass a wide variety of state interests—government officials, business, labor, commmunity groups, universities, and the media. Broad participation can help create new ideas and encourage political support for economic development.

State strategies require goals. In addition to industrial recruitment, states should focus on three goals: improving basic public services; dealing with gaps in the markets for capital, labor, and knowledge; and helping residents in distressed areas.

Current evidence suggests that roads and education are the key public services for economic growth. Both require increased taxes, which discourage growth. To maximize the growth benefits of expanded public services while minimizing the needed tax increases, states should seek to increase the productivity of public services as they are expanded. According to a recent report, Minnesota is one state that has followed this strategy of high levels of highly productive public services.[18]

Current evidence suggests that roads and education are the key public services for economic growth.

States also may want to deal with gaps in capital markets. Given the traditional regulation and lack of competition in financial markets, financial institutions tend to avoid high-risk investments, such as in small business, even if the expected return (including the risks) is above alternative investments. Government venture funds are one option. An alternative approach is to get the private sector interested in new ventures through encouraging greater competition in financial markets and allowing some risk pooling. In 1977, Massachusetts granted a tax cut for the insurance industry in exchange for having it set up a $100-million investment fund for businesses unable to get conventional financing. The Massachusetts insurance industry reportedly has been surprised by the good performance of the fund's investments.[19]

One rationale for the traditional government subsidies for education and job training is that these programs address gaps in labor and capital markets. Unique difficulties are faced in investing in "human capital" (compared with physical capital purchases) because human capital, unlike a car, cannot be repossessed. A similar rationale can justify training programs for entrepreneurship skills. Interviews with people working to assist entrepreneurs suggest that many have no knowledge of how to put together a business plan. Currently, a number of small-scale programs in entrepreneurship training are being conducted in the United States.[20]

Finally, some observers see a gap in support for applied research that falls between basic research traditionally sponsored by government and product development undertaken by firms. The argument is that private firms underinvest in applied high tech research because the ideas are difficult to patent and the fields are changing so rapidly that patents would have limited value. In response to this perceived gap, some states are setting up applied research centers. Michigan, for example, has set up centers in robotics, biotechnology, and electronics.[21]

Perhaps the most difficult issue is what to do about distressed areas within a state. While seeking to prevent inevitable economic decline seems futile, so

does inducing people to leave those areas. Solutions to regional economic development may need to have two components: providing good education and retraining to those who want to leave the area, while seeking to build on whatever comparative advantages the area possesses.

In a previous study, Tennessee was given good marks for its industrial recruitment, Better Schools, and 1986 roads programs.[22] But Tennessee lacks an organization or process that would encourage the long-run continuation and improvement of these efforts. Further, Tennessee's efforts in small business, high-tech, service industries, and applied research are minimal compared to some other states.

Therefore, Tennessee would benefit from a broadening of its economic development policies and efforts to bring different groups together around economic development issues. While Saturn does not preclude these policy changes, success often breeds complacency. We hope that the Saturn success will not distract Tennessee officials from the more fundamental aspects of economic development policy, and that other states do not take Saturn as their sole model for an economic development strategy.

■ ■ ■ ■

NOTES

1. *Business Week,* August 1985.
2. For more details on this model, see Steve Lake, "Summary of Progress on the Saturn Location Decision" (Working Paper, Vanderbilt University, 1986).
3. Small car demand weights would be preferable, but were not available. Distance was assumed to be proportional to air miles. Some experimentation with trying to use actual rail distances did not change the results.
4. The tax costs are taken from Table 3 in James Papke, "The Taxation of the Saturn Corporation" (Working Paper, Purdue University, 1985). The marginal state tax rates reported by Papke were converted into tax costs per car by first multiplying GM's $3.5 billion investment in Saturn by the pretax rate of return of 25 percent assumed by Papke to get average annual Saturn profits; these profits were then multiplied by Papke's tax rates to determine an annual tax cost for Saturn. Then—to derive a tax cost per car—the annual tax cost was divided by an assumed Saturn annual production rate of 480,000 cars. The local supplier labor cost per car is derived by assuming 20 hours of local supplier labor used per car, and multiplying this by the statewide manufacturing wage rate. We feel 20 hours is a conservative estimate of the amount of local supplier labor. This corresponds to assuming about 5,000 supplier jobs will locate in middle Tennessee to serve the 6,000 Saturn jobs, as 5,000 supplier jobs times 40 hours per week times 50 weeks per year, divided by 480,000 cars, is about 21 hours per car. GM has claimed there will be 14,000 support jobs created for Saturn, although this apparently includes some retail and other spinoff jobs. A study of the Nissan plant estimated one supplier job for each Nissan job. See U.S., Department of Transportation, *Pilot Case Study: The Decision By Nissan to Build a Light Truck Assembly Plant in Smyrna, Tennessee* by Richard Springs (Washington, D.C.: U.S. Government Printing Office, April 1981).

   Also, GM is estimated to purchase 50 percent of its parts, components, and materials outside the company. See Robert Cole etal., eds., *The American and Japanese Auto Industries in Transition* (Ann Arbor: University of Michigan Center for Japanese Studies, 1984), p. 30. Some of these suppliers will be some distance away, but the supplier industries should be much more labor-intensive than GM. Finally, we were unable to derive reliable figures on the cost per mile of car deliveries. But the uniform national delivery

charge for many GM cars is around $500, so we worked backwards to get a figure of 60 cents per ton-mile.

5. Multiplying the Nashville vs. Kalamazoo cost advantage of $87 times 480,000 cars per year yields a Tennessee cost advantage of $42 million per year. It is reassuring that this estimate from a crude model is not grossly different from an estimate by a "reliable source," that "General Motors saved more than $100 million annually by locating its Saturn plant in Tennessee instead of Michigan. . . . Taxes, wages, transportation costs, and workers' compensation premimums are all lower in Tennessee, accounting for much of the savings. . . ." See *Nashville Banner,* September 11, 1985.
6. See James Cobb, "The Southern Business Climate: A Historical Perspective," *Forum for Applied Research and Public Policy* 1 (Spring 1986): 94-101.
7. *State Government News,* September 1985.
8. The $4 per car figure for training is derived by assuming a 10 percent discount rate, which makes the $20 million one-time payment equivalent to a $2 million annual payment, and then dividing this annual subsidy by 480,000 cars. The $30 per car figure comes from a very complex calculation. We calculated property taxes on the $3.5 billion plant to be $23.8 million, based on effective 1983 property tax rates in Maury County on business real and personal property, reported in Tennessee Taxpayers Association, *The 1984 Annual Survey of State and Local Government in Tennessee.* We assumed that one-third of the building was put up in each of the years 1986, 1987, and 1988, and all the equipment installed in 1989 (this seems close to the original plan). We assumed 5 percent inflation. We then calculated the discounted present value of the time series of annual subsidies (*i.e.*, the annual differences between full property taxes and those due under the agreement between GM and Maury County). A 10-percent real discount rate was used to get the present value, and then used again to get the average annual value of the subsidy, which works out as $14.4 million per year (or $30 per car times 480,000 cars).
9. *Nashville Banner,* July 27, 1985, p. A1.
10. Timothy J. Bartik, *Tennessee's Economic Development: A Case Study* (Nashville, Tenn.: Report to the Committee for Economic Development, 1986), p. 30. Available as Vanderbilt University working paper, 1986.
11. GM Memo, undated.
12. For more details on this study, see John Bush, "Spring Hill Land Prices Following the Saturn Announcement" (Working Paper, Vanderbilt University, December 1985). The number of observations is 33 sales before the announcement and 44 sales afterwards.
13. The Nashville MSA and Maury County are here combined into the "Nashville area." Figures for Nashville and Maury County come from Tennessee Department of Employment Security, *Annual Averages: Tennessee Labor Force Estimates,* 1981-85 (Nashville: State of Tennessee, 1986). We assumed that both Nashville and Maury County will grow between 1985 and 1989 at the same annual rate as Nashville grew from 1979 to 1985, about 2.5 percent. Figures for Detroit, Flint, and the United States come from the U.S. Bureau of Labor Statistics.
14. Bartik, p. 107.
15. U.S., Small Business Administration, *The State of Small Business, 1986* (Washington, D.C.: U.S. Government Printing Office, 1986), p. 21.
16. Tennessee Department of Employment Security, *Annual Averages.*
17. Data on state activity comes from Thomas Anton and Rebecca Reynolds, "Old Federalism and New Policies for State Economic Development" (Working Paper, Brown University, 1986); Corporation for Enterprise Development (CFDC), *The Entrepreneurial Economy* (Washington, D.C.: CFED, June 1986); Eisinger, "The Rise of the Entrepreneurial State in Economic Development," (Working Paper, Brown University, 1986.
18. Ted Kolderie and William Blazer, "A Quality Public Sector as a Strategy for Economic Growth," (Minneapolis, Minn.: Report on Minnesota prepared for Committee for Economic Development, 1986). Available as University of Minnesota Working Paper, 1986.
19. Ron Ferguson and Helen Ladd, "Economic Performance and Economic Development

Policy in Massachusetts," (Boston, Mass.: Report for Committee for Economic Development, 1986). Available as Kennedy School of Government Working Paper, 1986.
20. For reports on some of these initiatives, see the June 1986 edition of *The Entrepreneurial Economy,* the monthly newsletter of the CFED.
21. John Jackson, "Economic Development in Michigan: Choosing an Economic Future," (Lansing, Mich.: Report for Committee for Economic Development, 1986). Available as University of Michigan Working Paper, 1986.
22. Bartik, *Tennessee's Economic Development.*

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