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Urban Competitiveness and US Metropolitan Centres

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Urban competitiveness and US metropolitan centers

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3 The study of urban competitiveness has taken off during the past two
4
5 decades. From the outset there have been different approaches taken to the
6
7 process of describing and determining how competitive individual cities or urban
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9 economies (hereafter, cities) actually are, in relation to each other. We do not
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11 argue that one approach is preferable to any other, but each does offer different
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13 insights to those who have to make decisions about urban economic strategic
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15 policies and initiatives.
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20 Some of the studies are listings of cities in accordance with several
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22 variables that are asserted to be of importance. This is often done with the
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24 analyst making an assumption as to what economic specialization or structure
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26 will be of most importance to a city in the contemporary economic environment.
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28 Recently, the most popular assumption has been that the competitive city must
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30 be a city of high tech or research-intensive production.¹ The cities are then
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32 ranked in accordance with a set of variables that logic and theory suggests ought
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34 to be determinants of a successful city with the preferred specialization.
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39 Another approach has been that of benchmarking in which a set of cities
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41 are ranked in accordance with a large number of variables, without an assertion
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43 as to which specialization is the preferred one. In this approach it is argued that
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45 all of the variables are contributory to a city's competitiveness without priority
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47 being given to one sub-set of them. The most ambitious of these benchmarking
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49 studies is the one that is done by Ni Pengfei of the Chinese Academy of Social
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53 ¹ Peter Maskell and Gunnar Törnquist, *Building a Cross-Border Learning Region*,
54 Copenhagen: Copenhagen Business School Press, 2001; and William F. Lever,
55 "The Knowledge Base and the Competitive City," in Iain Begg, *Urban*
56 *Competitiveness: Policies for Dynamic Cities*, Bristol: The Policy Press, 2002,
57 pp. 11-31.
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3 Science.² Ni uses over 40 variables for 500 cities throughout the world, so it is
4 possible to combine sub-sets of the variables that highlight some specific aspect
5 of the competitiveness, or lack thereof, of any of the cities. An individual city can,
6 of course, be examined in relation to a set of other cities that are similar or of
7 interest.
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15 The final approach is two studies of the competitiveness of a large
16 number of US cities, done by Kresl and Singh, utilizing a third methodology, on
17 two other occasions. The first study was done for an OECD conference on
18 globalization and urban economies (1994)³ and the second was published in this
19 journal (1999)⁴. The first step in their methodology is that of selecting a small set
20 (three) of variables that could serve as general indicators of urban
21 competitiveness, evaluating or ranking the cities included in the study in
22 accordance with this measure of urban competitiveness. In the second step they
23 conduct a regression analysis that generates a set of other variables that explain
24 that ranking. These variables were thereby verified as being statistically
25 significant determinants of urban competitiveness. The third step is that of
26 ranking the cities in the study in accordance with the variables that have been
27 revealed to be determinants of urban competitiveness. It was then anticipated
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47 ²Ni Pengfei and Peter Karl Kresl, *Global Urban Competitiveness Report 2010*,
48 Edward Elgar Publishers, 2010 (forthcoming). Ni Pengfei has done earlier global
49 urban competitiveness reports.

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51 ³ Peter Karl Kresl and Balwant Singh, "The competitiveness of cities: the United
52 States", in OECD (ed.) *Cities and the New Global Economy*, pp. 424-446.
53 Melbourne: The Government of Australia and the OECD.

54
55 ⁴ Peter Karl Kresl and Balwant Singh, "Competitiveness and the Urban Economy:
56 Twenty-four Large US Metropolitan Areas," *Urban Studies*, Vol. 36, Nos 5-6, pp.
57 1017-1027, 1999. This issue was dedicated to urban competitiveness and was
58 edited by Ian Begg.
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3 that city leaders, planners and decision-makers could use this analysis to gain an
4 understanding of the actual strengths and weaknesses of their city or urban
5 economy or city in relation to its competitors. The period studied for the 1994
6 paper was 1977-1987, and for the second (1999) it was 1987-1992. The
7 analysis that is reported in this article is done for the period 1997-2002.
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12 In these two studies the variables Kresl and Singh selected to be
13 indicators were the growth over a five or ten year period of: manufacturing value
14 added, retail sales and a set of professional services. Retail sales indicate the
15 degree to which the city is experiencing growth in population and/or personal
16 income and is considered by non-residents to be an attractive place to come for
17 culture, recreation, shopping and, in general, an urban experience. Professional
18 services are required if the city is to undergo a process of transition to an
19 economy that will be suitable for the coming decades – designers, engineers,
20 financial services, consultants, and so forth. Finally, manufacturing value added
21 was used because during the 1980s and 1990s the revival of manufacturing and
22 its transition from traditional to high technology production, with higher value
23 added, was one of the key elements in a competitive economy.
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44 In the present study we have used the Kresl-Singh methodology but we
45 have reconsidered the use of manufacturing valued added as an indicator of
46 urban competitiveness and have decided to replace it, for two reasons. First, the
47 revival of manufacturing is no longer as central to urban competitiveness as it
48 was in earlier decades and, second, manufacturing is one of the activities that an
49 urban economy could chose to have as one of its principle strategic options – not
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3 all urban economies have to be centers of information communication technology
4 or bio-pharmaceutical activity.⁵ In its place we have decided to use the growth in
5 salaries per employee. Our aversion to using income or employment as general
6 indicators of urban competitiveness is that neither captures accurately what is
7 needed. Measures of income include retirement income, transfers, and other
8 items that do not relate to income derived from productive activity. Employment
9 can be declining in a city in which a traditional labor-intensive industrial activity is
10 no longer competitive but in which a new high tech “activity of the future” is
11 growing but not utilizing sufficient labor to offset the decline in the other sector; or
12 employment could be increasing or constant depending on the strengths of the
13 two elements.
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29 The growth of payroll per employee variable captures wages and salaries
30 from all productive activity, per worker, and its rise over a period of time will give
31 one indication of the degree to which the city or urban economy is experiencing
32 higher productivity and can be considered to be competitive relative to other
33 similar entities. In the environment of today it is not conceivable that union
34 pressures are forcing up salaries in absence of increases in productivity, and
35 often not even then. Thus, the equation used in this study for the measurement
36 of urban competitiveness is as is shown in Figure 1. The period used for the
37 growth of each of the indicators was 1997-2002. Using this equation, the ranking
38 of 23 large US Metropolitan Statistical Areas is presented in Figure 2.
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54 ⁵ For the messiness of this transition to a new economy, see: Willem van
55 Winden, Leo van den Berg and Peter Pol, “European Cities in the Knowledge
56 Economy: Towards a Typology”, *Urban Studies*, Vol. 44, No. 3, March, 2007, pp.
57 525-549.
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Figure 1 – The Indicators of Urban Competitiveness

Urban Competitiveness =

$\% \Delta$ Payroll per employee + $\% \Delta$ Retail Sales + $\% \Delta$ Professional Services

Figure 2 – Urban Competitiveness Ranking of 23 US MSAs, 1997-2002

<u>Ranking</u>	<u>MSA</u>	<u>Score</u>
1	Miami	4.86262
2	San Diego	4.69515
3	Phoenix	4.25141
4	Kansas City	4.09651
5	Atlanta	4.08037
6	New York	4.02490
7	Dallas	3.91852
8	Houston	3.86829
9	Seattle	3.85999
10	Minneapolis	3.82088
11	Denver	3.80705
12	Tampa	3.79711
13	Boston	3.78234
14	Pittsburgh	3.75574
15	Los Angeles	3.72517
16	Chicago	3.70830
17	St. Louis	3.70813
18	Philadelphia	3.67111
19	San Francisco	3.62440
20	Cincinnati	3.61277
21	Detroit	3.55411
22	Milwaukee	3.37481
23	Cleveland	3.30274

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6 A few things should be noted about this ranking. First, there are some
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8 clear surprises in the placement of many of the MSAs. Favorites of some, such
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10 as Boston and San Francisco, do not fare well, while others such as Kansas City,
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12 and Pittsburgh do unexpectedly well. In the case of San Francisco this is
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14 because the MSA data does not include San Jose-Sunnyvale-Santa Clara, which
15
16 means that Silicone Valley is excluded. This may not meet the requirements of
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18 some researchers, but the result for San Francisco, *per se*, is of interest if one
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20 wants to focus on that urban economy and its own strengths and weaknesses.
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22 Boston is a city that is highly regarded as a city of learning, or a “learning region”,
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24 but the linkage between this activity and overall urban competitiveness may be
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26 far more tenuous than one would assume. Additionally, a highly successful
27
28 research sector may not bring benefits to the majority of the population.
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30 Surprisingly successful cities, such as Kansas City, and Pittsburgh, may be so
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32 because they are emerging from a period of time in which their economy was
33
34 troubled and have been effective in responding to the challenges of that earlier
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36 period. They should be looked at for the keys to their even moderate success.
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38 For example, Pittsburgh has successfully managed a transition from steel
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40 production to electronic instruments and medical technology.⁶
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48 Second, this approach to evaluating cities according to their relative
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50 competitiveness stresses movement over time; that is, successful achievement
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52 of percentage growth in the three indicators – retail sales, professional services
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55 ⁶ For two journalistic comments on this, see: Jared Cohon, "Commentary: How
56 Pittsburgh bounced back," <www.cnn.com>; and "Pittsburgh's Economic Revival,
57 <www.bloomberg.com>.
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3 and payroll per employee. It accepts that this can be achieved via any of a
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5 number of paths or strategies and simply values improving the general economic
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7 situation of the residents of that urban economy.
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11 Third, the ranking does not privilege the economies that are favored by
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13 most of those who advocate policies to enhance the competitiveness of an
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15 individual city or of cities in general – typically prescribing some aspect of high
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17 technology production, learning, creativity, the information-communication sector,
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19 bio-pharmaceuticals, nanotechnology and so forth. Rather it accepts the notion
20
21 that the end result of a competitive city should be that of realizing the aspirations
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23 of the residents of that city – the particular mix of employment, income, leisure
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25 time, degree of income inequality and social exclusion, cultural and recreational
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27 facilities, and general urban amenities to which they aspire.⁷ The competitive city
28
29 can be competitive as a center of specialized manufacturing, logistics, culture
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31 and education, health care, specialized services and so forth, some of which
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33 have a solid linkage to innovation and creative thinking, but would not be
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35 celebrated as such by many consultants in this field.
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40 41 The rise and fall of urban competitiveness 42

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44 One of the enduring questions of strategic planners is whether a city is
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46 dominated by its geographical or regional location. That is, do all cities in a
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48 region rise or fall because of region specific characteristics? This analysis was
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50 done in the Kresl-Singh 1999 study and we present results here from our more
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52 recent analysis. The changes in position for each of the cities for 1992-1997 to
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56 ⁷ This is in conformity with the definition of urban competitiveness of the Global
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58 Urban Competitiveness Project www.gucp.org.
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1997- 2002 is presented in Table 1, with the cities grouped in five US regions: the Industrial Triangle, the Pacific coast, the North East, the South and the Center.

Figure 3 shows the average gain or loss in the competitiveness ranking for the MSAs in each region. The results differ somewhat from those of the earlier 1999 paper. In that paper, during 1977-1987 to 1987-1992, MSAs in the

The Industrial Triangle (Pittsburgh-Milwaukee-St. Louis)

Chicago	+5
Detroit	-1
Cincinnati	-6
Cleveland	-7
Milwaukee	-3
Pittsburgh	+9
St. Louis	+5

The Pacific Coast

Los Angeles	-6
San Diego	+9
San Francisco	-17
Seattle	-6

The North East

Boston	-7
New York	-2
Philadelphia	-3

The South

Atlanta	+2
Miami	0
Tampa	-4

The Center

Dallas-Ft. Worth	+3
Denver	+1
Houston	+10
Kansas City	+13
Minneapolis-St. Paul	+3
Phoenix	+2

Table 1. Changes in competitiveness, major US metropolitan areas, by region, between 1992-1997 and 1997-2002.

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industrial triangle gained 8 positions, on average, where in this study, for 1987-1992 to 1997-2002, they are essentially unchanged; and the center rose by 4 positions while here the gain is 5.5 positions. It was also the case that MSAs in the Pacific Coast, North east and South lost, respectively, 6.5, 11 and 4.5 positions in the earlier study, whereas in the present study MSAs in these three regions are still losers - but by 6, 5 and 1.5 positions, respectively. MSAs on the

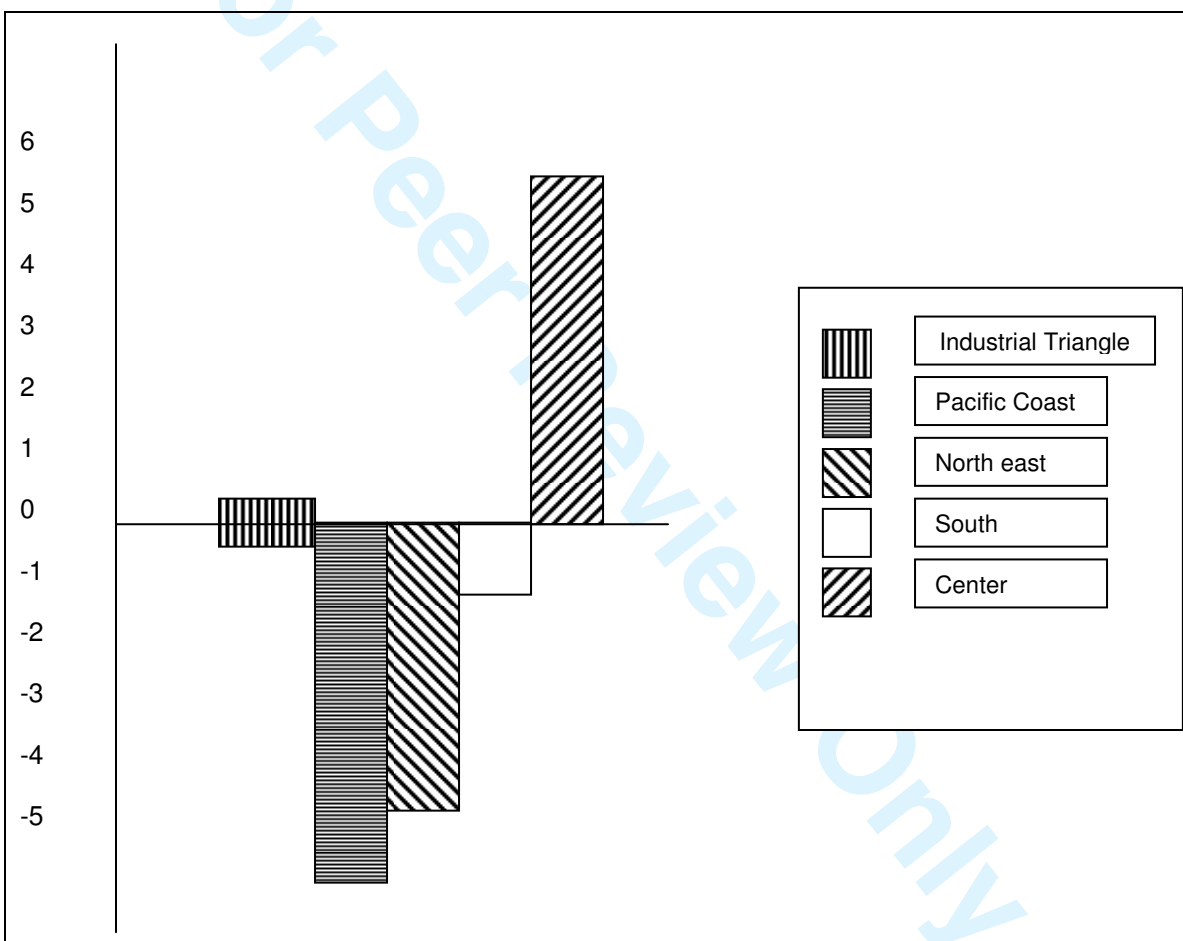


Figure 3. Regional winners and losers; changes in competitiveness ranking, between 1987-1992 and 1997-2002.

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3 two coasts and in the South continue to be lacking in competitiveness, the Center
4 still surges and the Industrial Triangle is holding its own. The regional
5 advantages and disadvantages have become less extreme for the 1987-1992 to
6 1997-2002 period than they were for 1977-1982 to 1987-1992. Of course, the
7 earlier period was marked by a major shock (the petroleum price hikes) and the
8 recovery from it, whereas the later period was relatively tranquil.
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17 Determinants of urban competitiveness

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20 Rankings do give some cities bragging rights but are not all that
21 interesting analytically. However, once we have this ranking we can then move
22 to the more important part of the analysis, that of ascertaining the specific
23 determinants of urban competitiveness; that is, the answer to the question: "Why
24 is city 'x' more competitive than city 'y'? A regression analysis was conducted
25 with the results given in Figure 4. These variables have been demonstrated
26 statistically to be determinants of urban competitiveness. The t-ratios are given
27 for each variable; as shown by the p-values, six variables are significant at the
28 .05 level of confidence, one at the .10 level. (For analysis of variance see
29 Appendix #1)
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43 The signs for all of the determinant variables are positive. "Labor
44 force/finance, insurance and real estate/labor force," and "labor force/research
45 centers" are seemingly perverse as the results indicate that neither the FIRE
46 component of the labor force nor research centers in relation to the labor force
47 are positive for competitiveness. This does not come as a surprise as in the first
48 study, in 1994, a variable that was similar to Labor force/FIRE, Engineering,
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administrative, research and management (EARM), had the same impact on competitiveness. That study was for the period 1977-1987. It was concluded at the time that this was emblematic of the widespread understanding that the US

Figure 4 – The Determinants of Urban Competitiveness

$$\text{Urban competitiveness ranking} = -3.199 + 1.139 x^1 + 0.000085 x^2 + 0.040 x^3 + .028 x^4 + 0.002 x^5 + 0.040 x^6 - .002725 x^7 + 0.003 x^8$$

Predictor	t	p
Constant	-1.61	0.130
MVA02/97	3.63	0.003
Hospitals 98	3.32	0.005
% BA BS 25+	3.21	0.006
Labor force/FIRE	2.84	0.013
Culture	2.66	0.019
100-F100	1.73	0.107
Labor Force/RC	.913	0.377
Transport.	2.49	0.026

R-Sq = .833 R-Sq(adj) = .738

where: x^1 = growth in manufacturing value added, 1997-2002; x^2 = hospital beds in 1998; x^3 = percentage of the 25 and older population with a BA or BS degree; x^4 = labor force/finance, insurance and real estate employment; x^5 = the number of cultural institutions; x^6 = 100 minus the percentage of firms with 100 or more employees; x^7 = transport infrastructure; and x^8 = labor force/university and government research centers.

economy was, if anything, over-managed. Periodic reports of cutbacks in administrative staff by large firms suggest that a similar situation is found in subsequent periods. The other negatively related determinant, labor force/RC, reflects that while research may be done in one urban economy, the production of goods and services, as was noted with regard to Boston, takes place in another. The current results also indicate that the most competitive cities are not those in which the economy is dominated by large firms employing hundreds or thousands of workers, but rather by an industrial structure that is dominated by

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3 smaller firms (the percentage of firms with fewer than 100 employees), the much
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5 lauded “start-up” and “spin-off” firms that are typically focused on some niche
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7 activity both in traditional sectors, such as steel production, or in the newer high-
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9 tech sectors.⁸ Large firms in the United States have been reducing their work
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11 force for many years in the effort to cut costs and to meet the challenges from
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13 goods produced elsewhere. It is also interesting to note that in our first (1994)
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15 study being located in the South was a determinant, whereas in the current study
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17 this was not a factor of significance – the Pearson coefficient of correlation
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19 between it and the competitiveness ranking was only .491. Finally, in the second
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21 (1999) study conducted, using data for the period 1977-1992, the percentage of
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23 the 25 or older work force which had a university degree had a negative sign, but
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25 in the current study this indicator of the education of the labor force has become
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27 a significant and positive factor. This is reflective of the transition of the US
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29 economy from basic manufacturing to niche manufacturing and high level
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31 services.
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39 The transportation infrastructure has become important for urban
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41 competitiveness, whereas it was important only for the relatively skilled EARM
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43 (engineering, accounting, research and management) component of the labor
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45 force in the 1999 study. The city’s endowment in cultural institutions has been a
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47 determinant of urban competitiveness in each of the three studies, partly
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49 because it attracts visitors to the city and partly because it is important in
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56 ⁸ Leonel Corona, Jérôme Doutriaux, Sarfraz A. Mian, *Building Knowledge*
57 *Regions in North America: Emerging Technology Innovation Poles*, Cheltenham
58 (UK), Edward Elgar, 2006, ch. 2.
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3 attracting and retaining educated/skilled workers.⁹ Even if these workers are too
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5 occupied to participate in cultural activities, they demand it for their children.
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7 Health care, in the form of hospital beds per 100,000 residents, has emerged as
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9 a significant determinant for the first time.
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13 Finally, the growth in manufacturing value added is shown to be a
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15 determinant of urban competitiveness. This variable indicates that the
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17 manufacturing sector is expanding or that it is moving from low to high value
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19 added activities, presumably related to increasingly technology-intensive
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21 production.
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25 We have been able to do a regression analysis of the determinants of the
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27 percentage of the population, 25 years of age and older, that has attained a
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29 university education. The results of this analysis are presented in Figure 5.
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31 These results indicate to us that to achieve a high percentage of residents with a
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33 university education, the city must ensure that these individuals will be assured of
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35 personal safety through a low level of crime activity. City leaders must also work
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37 to ensure adequate opportunities for leisure activities, including recreational
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39 structures and cultural events. Finally, the transportation system must satisfy the
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41 needs of the educated work force. The less civilian employment determinant
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43 represents a scale indicator, and it tells us that large urban economies with their
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45 large civilian employment do not have a competitive advantage over smaller
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52 ⁹For the impact of cultural activities on US cities, see: *Arts Economic Prosperity*
53 *III: The Economic Impact of Nonprofit Arts and Culture Organizations and their*
54 *Audiences*, Washington: Americans for the Arts, 2007, and Ann Markusen and
55 David King, *The Artistic Dividend: The Arts' Hidden Contributions to Regional*
56 *Development*, The University of Minnesota, Humphrey Institute of Public Affairs,
57 July 2003.
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ones when it comes to attracting an educated work force – quite the reverse is true.

Figure 5 - The Determinants of %BA BS 25+

$$\%BA\ BS\ 25+ = -44.613 + .027x^9 + .651x^{10} + .169x^{11} + 1.408x^{12}$$

Predictor	t	p
Constant	-2.829	.001
Crime ranking	2.802	.012
Leisure ranking	3.971	.001
Transport ranking	4.034	.001
Less civilian employment	2.575	.019

$$R\text{-sq}2 = .605 \quad R\text{-sq}2(\text{adj.}) = .517$$

where: x^9 = ranking in crime; x^{10} = ranking in leisure; x^{11} = ranking in transportation; and x^{12} = less civilian employment .

How urban leaders can use this analysis

For these results to be of use to decision-makers and planners in the individual MSAs, all of the determinants must be presented in a form that highlights the specific competitive strengths and weaknesses of that MSA. We do this in Table 2. Here we present two sets of determinants: the primary determinants that explain the Urban Competitiveness ranking, and the secondary determinants that explain the educational attainment of the population of that MSA. Two explanatory comments are required. The value for labor force/FIRE indicates that for most MSAs a higher share of the labor force being in finance, insurance and real estate does not enhance competitiveness. The products of this sector may not in most cases be extra-regional traded services and may do little to increase economic growth. Labor force/research centers develop new

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Table 2. Metropolitan areas rankings by explanatory variable, 1997-2002

Determinant	Primary determinants								Secondary determinants				Rank
	ΔMVA	HOSP	Educ	LF/FIRE	Cult	F<100	Trans	LF/RC	Crime	Leisure	Tran R	CivEmp	
Miami	2	17	19	5	21	1	22	13	23	10	22	7	1
San Diego	1	23	8	1	20	6	18	6	6	7	18	16	2
Phoenix	20	22	16	12	23	9	21	5	19	10	21	14	3
Kansas City	10	5	11	16	9	19	19	4	1	22	19	22	4
Atlanta	6	2	6	10	17	19	9	15	11	14	9	8	5
New York	21	1	7	21	1	2	3	20	5	1	3	1	6
Dallas-Ft. worth	7	11	10	11	14	16	7	2	21	17	7	5	7
Houston	19	12	14	2	16	13	20	14	2	17	20	9	8
Seattle	5	21	5	4	15	5	5	22	15	4	5	13	9
Minneapolis-St. Paul	11	8	4	18	6	17	13	16	7	12	13	12	10
Denver	23	18	3	13	12	3	6	8	12	14	6	17	11
Tampa	4	16	23	15	22	7	23	3	22	16	23	19	12
Boston	17	9	2	22	3	11	8	17	3	6	8	6	13
Pittsburgh	9	7	21	8	7	14	10	23	4	20	10	18	14
Los Angeles	8	20	15	6	4	8	4	7	13	2	4	2	15
Chicago	13	6	9	14	5	18	2	10	18	2	2	3	16
St. Louis	14	3	17	9	19	19	12	9	20	19	12	15	17
Philadelphia	3	4	12	23	10	10	11	18	10	8	11	4	18
San Francisco	22	13	1	19	2	3	1	21	8	4	1	10	19
Cincinnati	15	10	18	7	11	23	14	11	17	23	14	21	20
Detroit	16	14	22	3	18	12	15	1	16	8	15	11	21
Milwaukee	12	19	13	20	8	22	16	19	14	21	16	23	22
Cleveland	18	15	20	17	13	15	17	12	9	13	17	20	23

<u>Primary determinants</u>	<u>Secondary determinants</u>
ΔMVA = increase in MVA, 1997-2002	Crime = ranking of 354 MSAs
HOSP = hospital beds/100,000	Leisure = percentile of 354 MSAs
F<100 = % firms with fewer that 100 empl.	Trans R= percentile of 354 MSAs
Educ = percentage of 25+ pop. with univ. degree	CivEmp = less civilian employment, 2000
Cult = ranking of 354 MSAs	
LF/FIRE = finance, insurance, real estate emp	
LF/RC = labor force/research centers	
Trans = ranking of 354 MSAs	

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3 products and new technologies but the use of these competitiveness enhancing
4 results of research may be used in production activities elsewhere. Hence, when
5 San Diego is ranked first in FIRE/LabF this means that its economic structure is
6 not heavily weighted in this activity, whereas low ranked Philadelphia is.
7 Similarly, while Detroit is ranked first in RC/LF this means that Detroit is not a
8 research town, while Pittsburgh is. Second, there are two transportation
9 determinants, one is the percentile position of the MSA among the 354 MSAs
10 and the other is the MSA's a ranking in that same grouping. While the correlation
11 coefficient between the two is .991 each does slightly better in regression
12 analysis either as a primary or secondary determinant, respectively.
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27 With these caveats, what understanding can an MSA leader gain from this
28 table? We argue that for effective strategic planning decision-makers must
29 understand how their MSA stands in relation to others that might stand in
30 competition with it.¹⁰ In isolation, something the MSA has put in place may make
31 leaders feel they have gained some competitive advantage when, in reality, what
32 they have done just keeps the MSA in the same competitive position since other
33 MSAs have undertaken the same initiative. Clearly, a full understanding of this
34 dynamic can be gained only from intensive study of the specific situation, but the
35 general understanding that can be gained from Table 2 can also be of use. For
36 example, top ranked Miami has strengths in the growth in MVA, the fact that it is
37 not overly dominated by the FIRE sector and the large percentage of firms that
38 are under 100 employees, however, it has clear weaknesses in its cultural and
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57 ¹⁰ This has been discussed in: Peter Karl Kresl, *Planning Cities for the Future*,
58 Cheltenham (UK): Edward Elgar, 2007, ch. 2.
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3 transportation infrastructures, the education of its labor force, and its high crime
4 rate. Clearly, there are specific initiatives MSA leaders in Miami could undertake
5 to enhance their MSA's competitive strengths and to diminish its competitive
6 weaknesses. This sort of analysis can be done for each of the MSAs in this
7 study. While MSAs ranked at the bottom, such as Detroit, Milwaukee and
8 Cleveland, can improve their situation by taking action on almost any or all of the
9 determinants, closer on-site analysis would allow one to design a strategy that
10 could be relatively successful by focusing on a small number of these
11 determinants where improvement would generate the maximum enhancement of
12 competitiveness. It is the MSAs in the middle, from Dallas-Ft. Worth to Chicago,
13 for which the relative strengths and weaknesses could be used most effectively
14 to fashion as strategic approach for competitiveness enhancement. Some of the
15 weaknesses will be relatively easy to fix whereas others will be more intransigent
16 – calling for a triage sort of approach to action. Each of the MSAs strengths will
17 be challenged by another MSA so having a strength in a particular determinant
18 should not be an excuse for self-congratulation and passivity in this area.
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41 Fundamentally, the response of city leaders to the information in Table 2
42 should not be that of focusing on the ranking trying to move up a step or two, but
43 rather to use the rankings for each determinant to make tangible, objective
44 improvements in specific areas of relative strength and weakness. The position
45 of the MSA in the rankings table will take care of itself.
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53 How the determinants of urban competitiveness have changed over time
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55 Finally, since these three studies of urban competitiveness have been
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done over three decades, we can note the changes there have been in the explanatory determinants. The determinants are presented in appropriate groupings in Table 3. Four appeared in all three studies, and eight were found in

Table 3. Determinants over the Three Periods

Determinants in all three periods

Educational attainment of the population
 Cultural institutions
 Firm size
 Research centers/labor force

Determinants in the first two periods

Growth in per capita income
 EARM in the labor force
 Growth in population
 Location in the Sun Belt
 Research centers/MVA
 Growth in the capital stock of the state

Determinants in the last two periods

Transportation services
 Health care facilities

One time only determinants

Period 1

Managers in the labor force

Period 2

Fiscal, regulatory, political climate
 Growth in the labor force

Period 3

Growth in manufacturing value added
 FIRE/labor force
 Security
 Leisure opportunities
 Civilian employment

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3 only one period. Some of the determinants, specifically fiscal, regulatory and
4 political climate, state capital stock, and EARM, were available for only one or
5 two of the periods, and one, growth in MVA, appeared only in the third period
6 because of a change in methodology. The most significant overlap is in the first
7 two periods with three times as many shared determinants as in the last two
8 periods, suggesting that some important transformation occurred in the economic
9 environment toward the end of the last century. Some of the determinants took a
10 different form from period to period, that is, the value might be for one year or for
11 growth over several years, and a determinant might be either a ranking among all
12 US MSAs or a percentile of the highest value for that determinant among all US
13 MSAs.
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29 Location in the Sun Belt, the band from the Virginia through to Southern
30 California, ceased to be of importance in the third period. This could be reflective
31 of a fundamental change that occurred as globalization dramatically altered the
32 competitive situation of urban economies in the US and elsewhere. The Center
33 became the principal region of strength in the US and transportation emerged as
34 a determinant of importance. It is also noteworthy that “softer” determinants,
35 such as health care, security, and leisure replaced growth in population and per
36 capital income, two determinants that were important in the earlier years and, as
37 noted above, the sign for education of the labor force changed from negative to
38 positive for the most recent period. This is most likely a reflection of the higher
39 skills and educational attainment of today's workers and of the transition from
40 basic manufacturing to higher technology niche manufacturing, and to advanced
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3 services, including health care and education. Comments on some of the other
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5 determinants were offered above in the discussions of Figures 4 and 5.
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8 Final comments

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10 We opened this paper by noting that there were different methodological
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12 approaches to the study of urban competitiveness and that each had its own
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14 advantages. Without commenting on the advantages or disadvantages of the
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16 other two approaches, we would like to finish by highlighting what can be
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18 accomplished using our methodology. First, our ranking of cities is done by
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20 utilizing three variables that we assert are reliable indicators of urban
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22 competitiveness. It is only here that we make assertions or assumptions.
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24 Second, when we have the ranking we can then derive a set of determinants of
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26 urban competitiveness that are statistically verifiable. This gives us a smaller set
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28 of determinant variables than the other approaches but we have perhaps more
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30 confidence in the validity of these variables. Third, when we do this study for
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32 different time periods we can reveal the increase and decrease in
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34 competitiveness of individual cities and of geographic regions over time. Fourth,
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36 we can show how the importance of individual determinants has varied over
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38 these time periods. Fifth, using the Kresl-Singh methodology, we are able to
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40 present our determinants of urban competitiveness in a table that makes them
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42 usable by city leaders in designing an economic strategic plan for the
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44 development of their city's economy in the near future. We conclude that these
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46 five advantages do not obtain with the two other methodologies.
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Appendix 1. Analysis of variance

For the Determinants of Urban Competitiveness

Source	DF	SS	MS	F	p
Regression	8	2.41594	0.30199	9.28	0.000
Error	14	0.45579	0.03256		
Total	22	2.87172			
x^1	1	0.81661			
x^2	1	0.01119			
x^3	1	0.05372			
x^4	1	0.34013			
x^5	1	0.67790			
x^6	1	0.24528			
x^7	1	0.08286			
x^8	1	0.18824			

For the Determinants of %BA BS 25+

Source	DF	SS	MS	F	p
Regression	8	275.797	68.949	6.90	0.0002
Error	14	179.961	9.998		
Total	22	455.758			
x^9	1	4.215			
x^{10}	1	94.292			
x^{11}	1	109.995			
x^{12}	1	66.296			

Appendix 2. The results of earlier studies.

Results of the 1994 OECD Study.

Determinants of Urban Competitiveness:

- the increase in per capital income
- the percentage of the population 25 years and older with a university undergraduate degree
- the number of research centers/labor force
- the share of the labor force categorized as “managers and professional”
- a dummy variable for location in the “sun Belt and west
- the share of the labor force in EARM (engineering, accounting, research and management)
- the ranking of the city according to its cultural institutions

Determinants of growth in per capita income:

- the increase in the population
- the increase in the percentage of the population with a university degree
- the increase in the percentage of firms with 100 or more employees
- the growth in investment in plant and equipment

Determinants in the EARM Component of the Labor Force:

- the increase in the population
- the increase in the percentage of the population with a university degree
- research centers/manufacturing valued added
- the number of cultural institutions

Results of the 1999 Urban Studies Study.

Determinants of Urban Competitiveness:

- the growth in per capital money income
- research centers/manufacturing valued added
- the growth in the percentage of firms with more than 100 employees
- the number in the labor force with more than a BA/BS degree
- the share of EARM (engineering, accounting, research and management) component of the total labor force
- the growth in the number of cultural institutions
- the growth in the capital stock for the state’- exports as a share of total output.

Determinants of the share of the EARM component of the total labor force:

- the growth in the population
- transport services

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3 - research centers/labor force
4 - location in the sun belt.
5 Determinants in the growth of per capital money income:
6 - the fiscal, regulatory and political climate
7 - the percentage of firms with more than 20 employees
8 - the growth in the labor force
9 - the number of cultural institutions
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11 *Results of the Present Study.*
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13 Determinants of Urban Competitiveness

- 14 - growth in manufacturing nvalue added, 1997-2002
15 - hospital beds per 100,000 in 1998
16 - percentage of the 25 and older population with a BA or BS degree
17 - finance, insurance and real estate employment as a share of the labor force
18 - the number of cultural institutions
19 - the percentage of firms with fewer than 100 employees
20 - university and government research centers/labor force
21 - transportation infrastructure and services
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23 Determinants of the percentage of the 25 and older population with a BA or BS degree

- 24 - ranking in public security and crime
25 - ranking in leisure
26 - ranking in transportation infrastructure and services
27 - civilian employment, 2000
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