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Paying for the New Economy: The Geography of Equity Finance in North Carolina

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The availability of corporate finance is of critical importance to local and regional development. As firms increasingly substitute intangible assets (such as human capital, innovative capacity and brand equity) for tangible assets (factories, machinery and inventories), they are less able to collateralize the traditional source of capital, debt financing. Since equity finance (the offering of ownership shares through public stock markets) is the only method of capital acquisition that is not collateralized, the firms that compete most effectively for it are thought to be stronger competitors in the current marketplace. It was found that equity investment in North Carolina is highly concentrated both spatially (40% in Charlotte) and sectorally (56% in FIRE). Relatively small shares of equity are held by firms in the manufacturing (10% of the state total) and technology industries (9% of the state total). While the total amount of equity investment in North Carolina firms has increased, its increased concentration suggests a lack of diversity in the state's economy.

How much are 1.8 billion doughnuts worth? Investors in Winston-Salem based Krispy Kreme believe the company that makes them is worth $1.6 billion dollars, or 88 cents per doughnut. These same doughnuts retail for less than 50 cents in stores. The response of investors to Krispy Kreme's recent success has allowed the company to expand aggressively outside of the Southeastern market it has served since 1937. After earning $220 million in revenue in fiscal 1999, the firm offered 18% of the company to investors in an initial public offering (IPO) to raise the capital necessary to finance its expansion. This sale of stock (equity) raised over $70 million and gave the firm a market value (the cost of purchasing 100% of the company) of $389 million in April, 2000. The cash raised in the IPO enabled Krispy Kreme to finance its expansion into the Northeast and California markets and, by October, 2001, had increased its revenue by 56%. Investors favorably responded to the company's successful expansion and bid up the price of the company's shares by 411%, giving the doughnut producer a market value of $1.6 billion. The company's primary asset, a brand image based on a doughnut recipe, is difficult to use as the collateral necessary for debt financing, so the public stock markets were the only source of capital of this magnitude available to finance Krispy Kreme's expansion. Public equity markets can and do play a critical role in the expansion of corporations and, by extension, the health of the economies which are the home of these corporations. This paper is intended to explore the distribution of public equity finance in North Carolina and examine its relationship to economic growth in the state.

Public equity finance refers to the acquisition of capital via the sale of corporate ownership (shares) through a stock market. Public equity finance is the only means of corporate finance in which a company can securitize (borrow against future income) the value of intangible assets such as human capital (or in the case of Krispy Kreme, a doughnut recipe). Despite the increasing frequency with which corporations turn to equity markets for financing, the relationship between regional economic development and local corporate participation in equity markets has yet to be examined. While the availability of corporate finance is a critical factor in local and regional development, geographers have focused only on foreign direct investment (Campbell and Stuart 1998) or bank finance (Wheeler and Dillion 1985) as sources of capital for regional growth. Other studies have examined the local economic impacts of investment institutions (such as stock markets) or actors (such as brokers) (Warf and Cox 2000) but no studies exist that exam-

ine the connections between equity investment and local economic health. This gap in the geographic literature is of growing significance. As firms expand to serve global markets, increase the flexibility of their production system and rely on human capital to a greater degree than ever before, public equity markets have become the primary source of corporate finance, particularly for firms with few tangible assets.

The primary purpose of this paper is to evaluate the importance of equity finance to the North Carolina economy. A secondary purpose is to explain the spatial and sectoral distribution of equity finance within the state. This research is based on the assumption that the ability of North Carolina headquartered firms to attract corporate capital from public equity markets will be related to the health of the economy in which these firms are headquartered. It is hoped that a clear understanding of these patterns will provide insight into the future of the state's economy. To these ends, the paper first seeks to define equity investment, discuss the connections between equity markets and regional economies, and finally, to assess the importance of equity finance to North Carolina and its implications for economic development.

Public Equity Investment

The initial sale of ownership shares to investors (known as an initial public offering or IPO) via one of the major securities exchanges (such as the New York Stock Exchange or the NASDAQ) results in an immediate infusion of cash into a company. Stock trading that occurs after the IPO, known as the secondary market, does not directly benefit a company's finances, however, these transactions increase the liquidity of a company's shares and provide a valuation mechanism for the firm. This post-IPO market value is indicative of the willingness of investors to provide additional capital to these firms (Tobin 1969, Hatsopoulos 1999, Mangalindan 2000). High market values, in relation to the tangible worth of the firm, encourage companies to use their stocks as currency in acquiring the assets of other companies and facilitate secondary offerings of equity via securities markets to accrue additional cash (Madura 1992, Mishkin 1998). Krispy Kreme took advantage of its soaring market value to offer 9.2 million additional shares to the market in March 2001 resulting in the flow of $92 million of investment into the company's coffers. Low share prices not only discourage additional sales of stock but also make companies attractive takeover targets (Logue 1990, Donlan 2000, Wysocki 2000). This relationship between market value and the cost of capital has clear spatial implications. Cities that are the home to firms with high market values are more likely to benefit from corporate expansion, while the homes of low market value firms are more likely to be impacted by layoffs, corporate acquisition or disinvestment. Changes in equity capital flows have been correlated to employment changes in regional economies (Minns 1982, Coakley and Harris 1983, Botts and Patterson 1987). Even North Carolina's most prominent firms have experienced restructuring as a result of declining share price. The decline in market value associated with First Union's bungled acquisition of Core States Financial, for example, has been connected to layoffs within the Charlotte bank (Veverka 2000, Moyer 2000).

In most cases the benefits of public equity market participation outweigh the risks of shared ownership. In addition to increasing the availability of capital, other benefits, such as an institutionalized system of corporate governance, may add to the stability of the firm. Andr Boisvert, president and chief operating officer of SAS, the largest software company in North Carolina, states that SAS's upcoming IPO is primarily motivated by the need to provide its workers with an ownership interest in the company by providing them with liquid stock options (Rothacker 2001). Public companies that offer employees stock options may have a competitive advantage over firms that don't since employee options may reduce the total cost of employee compensation, provide management incentive to innovate and workers motivation to re-skill (although most options are held at the management level) (Friedman 1999).

Venture capital investment is frequently a precursor of a firm entering a public equity market. Venture capitalists take equity stakes in privately owned (pre-IPO) firms with the ultimate goal of profiting by selling these shares at the IPO. Since venture capital investment will typically lead public equity investment, its presence may indicate future growth of the num-

ber of equity financed firms (Leinbach and Amrhein 1987). North Carolina has never been a significant beneficiary of venture capital investment, according to PricewaterhouseCoopers *Money Tree Survey*; the state received only 1% of total venture capital invested in the U.S. during the first quarter of 2001. This contrasts sharply to the Silicon Valley area which received 30% of the venture capital invested during this same period. The relative absence of venture capital in the state is attributed to information asymmetries which reduce the willingness of venture capitalists to invest in spatially distant firms (Petzinger 1999). The scarcity of venture capital in North Carolina places the state at a disadvantage, relative to other states, for acquiring public equity investment. What little venture capital is invested in North Carolina is concentrated in non-technology firms suggesting that future investment may be concentrated in slow growth areas of the economy such as manufacturing (Lundegaard 1999). Spatial biases in venture investment are dramatic within the state as well. Table 1 shows that the majority of venture capital investment flows to the Triangle area – the most likely growth location for equity financed firms.

Table 1. Venture capital investment in North Carolina large metros, 1999 (as % of GMP)

MSA	Venture Capital	MSA Rank
Raleigh-Durham	1.35%	5
Charlotte	0.10%	33
Greensboro-Winston Salem	0.00%	50

Source: Atkinson and Gottlieb (2001)

Equity Investment and Regional Economic Development

This study follows a strong tradition of corporate headquarters research. The presence of corporate headquarters has long been used as a measure of command and control status based on the assuption that these are the sites of decision-making and profit accumulation in the modern economy. It is thought that this command and control status gives places a greater degree of control over their economic destinies in addition to being the primary beneficiaries of corporate profit growth (Pred 1977, Borchert 1978, Semple, Greene and Martz 1985, Noyelle and Stanback 1983, Wheeler 1987). This study seeks to improve upon the traditional approach by using the market value of a firm to measure not only its relative importance, but also its potential for growth. For example, Krispy Kreme has maintained its corporate headquarters in Winston-Salem since 1937 but its contributions to the local economy are poised to increase considerably after acquiring more than $100 million from equity investors. This expansion potential would have gone unnoticed in a traditional corporate headquarters study.

The difficulty associated with corporate headquarters research is the prominence of multi-location firms. Regardless of the spatial distribution of large corporations, the profits generated by the firm will ultimately flow back to the headquarters site (Holloway and Wheeler 1991). In addition, it has been shown that the headquarters location is the site of most of the research and development (Ceh 1997, OhUllachain 1999), and expenditures on high-order services (Mitchelson and Wheeler 1994). The presence of corporate headquarters has been shown to create additional employment, as well as stimulate the demand for office space (Noyelle and Stanback 1983, Wheeler 1987, Lord 1992). In addition, the provision of local grants and charitable gifts to the surrounding community is thought to be related to headquarters location (Martin 1999). While critics consider corporate headquarters research to be an oversimplification of

economic processes, the importance of command and control status to a community is certainly relevant to a local economy and therefore worthy of analysis. The fundemental contention of this paper is that a firm's command and control status is proportional to its market value.

In the early stages of industrialization of the U.S. South, corporations were typically financed informally though personal relationships. The large scale commercialization of corporate finance in the South didn't begin until the early 1900s when banks formalized the process of attracting excess capital and redistributing it to the rapidly expanding textile industry via loans secured on the basis of collateral such as factories or equipment (Hanchett 1998). As industrial production expanded into national markets, often by establishing multiple production sites and the substitution of capital for labor, the corporate demand for capital began to outstrip the ability of banks to provide it (Miller 1998). The modern production systems, which rely on constant innovation and the associated human capital, have dramatically increased the corporate demand for capital just as firms are becoming leaner and have less collateral to back borrowing (Nakamura 1999, Epstein 2000). The twin conditions of increased capital needs to fund the acquisition of intangible assets, such as research and development, and the decline of tangible assets used for collateral has made it critical for modern companies to find alternative methods of corporate finance. Public equity markets have become known as the only method of securitizing the growing value of intangible assets held by modern firms, and thus the only way to leverage these assets (The Economist 2001). Hence the regional economies that are the home of the most flexible or innovative firms are likely to have the highest levels of public equity investment.

When equity investments involve an exchange of cash between companies and investors that are spatially distant, securities markets act as capital relocation mechanisms. The interregional flow of capital has been accelerated by the rapid globalization of the financial industry and the desire of investors to geographically diversify their portfolios. The multinational nature of stock markets provides firms offering shares access to a global pool of capital. However, since the total amount of capital is fixed, companies must compete for this capital. The migration of capital that results from this competition may act to drain capital from the least productive regions, a process that Myrdal (1957) referred to as a "backwash" effect of development. There are numerous exceptions to Myrdal's assertion that capital will flow to the most productive users. Information asymmetries may encourage capital to flow towards the best-known or largest companies since a relatively larger amount of information is available to investors on these firms (Yang, Wansley and Lane 1985). This disproportionate flow of equity capital to the largest companies may make it increasingly difficult for small firms to obtain equity capital, a problem for the majority of public equity firms in North Carolina. Market frenzies or sectoral bubbles may also skew the inter-regional distribution of capital. The dot com market frenzy of the late 1990s, funneled huge amounts of investment capital to companies with few tangible assets and no profits. The promise of massive (and as yet unfulfilled) profits attracted billions of dollars of speculative equity investment which would have been unobtainable from any other source given the lack of collateral or established business models. This market bubble produced numerous economic impacts in the Silicon Valley area, including high rates of employment growth, entrepreneurism, and increased real estate prices (Grimes 2000).[1]

Many policy makers have questioned the reliability and sustainability of equity investment as a means of financing long-run development. However, other research suggests the perceived fickleness of equity investment seems to have little empirical basis (Stulz 1999, Claessens, Dooley, and Warner 1993). These studies suggest that the risk reduction associated with diversification of ownership and the decreased cost of capital appears to mitigate the problems associated with the mobility of equity investment. It may, however, be difficult to make this argument at the scale of the individual firm when declining share prices are frequently cited as causes of corporate downsizing.

There are situations where increased market values may have no significant local impact. Firms may not have the opportunity or desire to take advantage of short-term increases in market value to make addi-

tional investments or acquisitions. The problem of short-term skewing can be reduced analytically by temporally averaging market values over one year (or longer) periods, relying on aggregate data and comparing relative (rather than absolute) volumes of investment. In other situations, firms may utilize their increased market value to expand outside of their headquarters site, in this case their may be no direct benefits to the local economy beyond increases in command and control status and profit accumulation. The volatile nature of public equity investment makes its direct impacts difficult to quantify, however, these flows are likely to provide substantial, if sometimes temporary, benefits the local economy.

Data and Method

Stock price data are one of the most current sources of economic information; the data used here were taken from the *Global Access Database* (Primark Corporation 2001). Data were collected for January 1990 and January 2001. These share prices, which are used to calculate the market values of firms, are based on audited financial data that is reported to the U.S. Securities and Exchange Commission (SEC) annually. These data were collected during an exceptional period for the investment community. The dramatic appreciation of technology stocks resulted in massive shifts of investment towards these production complexes. While these shifts were substantial in absolute terms, the relative differences in inter-regional investment have remained steady since the 1980s (Graves 2000). The market values used here are based on the closing price of each company on the last business day of January of each year. Companies that do not have at least 500 shareholders and $5 million in assets are excluded from the database. In addition, companies that do not provide goods or services directly to a consumer or other business – including management investment companies, mutual funds, real estate investment trusts, limited partnerships and oil and gas drilling funds – are also omitted from the database.

These data are geocoded according to the county that is the home of the firm's headquarters office. This technique has the advantage of being simple and consistent and is compatible with previous corporate headquarters studies. As discussed earlier, there are a sufficient number of firms that are spatially disaggregated (notably the banks and retailers) to make the assumption of spatially aggregated firms problematic. However, with the exception of North Carolina's 15 largest firms, most companies in this data set centralize their operations within the headquarters' county.

This exploratory analysis of equity investment data will be accomplished using two descriptive statistics. First, the state's participation in equity markets relative to population will be measured by comparing the state's share of U.S. equity investment to its share of the nation's population using a location quotient. The location quotient is calculated as follows:

$$LQ_{equity} = (\text{State Market Value} / \text{U.S. Market Value}) / (\text{State Pop} / \text{U.S. Pop})$$

Location quotient values less than one indicate that the state has less equity investment per person than the national average. Conversely, location quotient values greater than one indicate states with higher concentrations of equity investment than the national average. Second, the intra-state concentration of this equity investment is measured using a Gini coefficient. The Gini coefficient measures the percent departure from a uniform distribution and its value ranges from zero (even distribution) to one (concentrated distribution). The Gini coefficient is calculated as:

$$G = 0.5 \Sigma |Q_i - Y_i|$$

where Q_i is the percent of market value in the i-th firm and Y_i is the expected percent if the distribution is uniform. States with only one publicly-traded firm will have Gini values of one while states with their equity investment evenly distributed between more than one firm will have Gini values of zero.

Equity Investment in North Carolina

North Carolina firms are well established in U.S. equity markets. The state is home to 123 publicly owned companies employing more than 800,000 workers nationwide and generating sales of over $200 billion during fiscal 2000 (Primark Corporation 2001). In aggregate, these companies are worth nearly $240 billion, based on market values calculated from January 2001 data. While the amount of equity investment in North Carolina firms is substantial, it is concentrated in a relatively small number of industries and firms. Over half of the state's equity investment

(as measured by market value) is in the state's four largest banks which are headquartered in either Charlotte or Winston-Salem (Table 2).

Establishing the importance of public companies relative to privately owned firms is difficult due to data limitations. However, limited estimates of the size of private firms are published annually. According to Speizer (2000) only 6 privately held firms in North Carolina have revenue greater than $500 million in 1999, this compares to the 37 public compa-

Table 2. Largest public compaines in North Carolina by market value. January 2001

Rank	Company	Headquarters City	Industry	Market Value (billions of dollars)
1	Bank of America	Charlotte	Banking	79.34
2	First Union	Charlotte	Banking	30.78
3	Duke Energy	Charlotte	Utility	30.26
4	Lowes	North Wilkesboro	Retail	19.14
5	BB&T	Winston-Salem	Banking	15.02
6	Wachovia	Winston-Salem	Banking	13.39
7	Progress Energy	Raleigh	Utility	8.87
8	Jefferson Pilot	Greensboro	Insurance	6.98
9	RJ Reynolds Tobacco	Winston-Salem	Manufacturing	5.62
10	Laboratory Corp of America	Burlington	Medical Lab. Services	4.63
11	Family Dollar Stores	Charlotte	Retail	4.18
12	V F Corp	Greensboro	Textiles	4.00
13	B F Goodrich	Charlotte	Aerospace	3.77
14	Carolina Power & Light	Raleigh	Utility	3.64
15	Nucor	Charlotte	Steel	3.35
16	RF Micro Devices	Greensboro	Semiconductors	2.98
17	Quintiles Transnational	Durham	Contract Medical Research	2.59
18	Spectrasite Holdings	Cary	Telecommunications	2.36
19	Cree	Durham	Silicon Light Devices	2.22
20	Delhaize America	Salisbury	Retail	2.20
21	Centura Banks	Rocky Mount	Banking	2.18
22	Marin Marietta Materials	Raleigh	Mining	2.03
23	CCB Financial	Durham	Banking	1.51
24	Red Hat	Durham	Software	1.31
25	Pharmaceutical Product Dev.	Wilmington	Contract Medical Research	1.26

Source: *Global Access*

nies in the state which exceed this revenue figure in 1999. With the single exception of software producer SAS, the largest privately owned firms in the state are in the manufacturing and retail sectors of the economy. The state's publicly owned firms are dominated by the finance, utility or technology industries.

The total value of equity investment in companies headquartered in North Carolina has increased from $19.6 billion in 1990 to $239 billion in December of 2000.[2] The ratio of equity investment to Gross State Product in North Carolina increased from 12.4% to 91% of GSP during the same period. While these figures represent substantial investments they are well below the national norm of equity investment levels equal to 146% of gross state product. This increase in the volume of equity investment discussed above is not related to changes in the number of publicly financed companies in the state (123 companies in 2000 versus 103 companies in 1990); rather it appears to be a result of an increase in the valuation of existing equity firms. The increase in mean market value of North Carolina public firms shown in Table 3 parallels national trends.[3]

The values in Table 4 show the interstate distribution of equity investment. The states with the highest absolute levels of equity investment, California, New York and Texas have dramatically increased their volume of equity capital since 1990. This volatility does not appear to affect the lowest ranked states in terms of aggregate equity investment, Wyoming, Alaska and Montana have maintained essentially static levels of investment since 1990. According to the location quotient data in Table 4, only 13 states have a greater national share of equity investment than population, suggesting that equity investment is strongly skewed towards these states, generaly those in the urban core of the country. While North Carolina was not in the top tier of states in terms of the volume of investment, the state was one of only 14 to increase its proportion of equity, relative to population, since 1990. The slight increase in the state's share of capital suggests that North Carolina firms have, in aggregate, become more attractive to investors since 1990, suggesting that the state's firms have been successful in the global competition for capital.

The degree of inter-firm concentration of each state's equity investment is also shown in Table 4. Equity investment in North Carolina is more concentrated than the national average in both 1990 (0.66) and in 2000 (0.72). The change in Gini values since 1990 indicates that the majority of equity investment in the state has accumulated in the largest firms and resulted in less diversification in equity investment during the decade. This trend towards the consolidation of equity assets in a small number of companies is consistent with national trends; 40 of the 51 states experienced an increased concentration of assets during the study period. This concentration of equity investment may pose risks to state economies by limiting the diversity of equity investment. An economic

Table 3. Overview of public companies in North Carolina

Year	Firms	Total Market Value (billions)	Mean Market Value (billions)	Total Revenue (billions)
2000	123	$ 239.1	$ 2.20	$ 201.0
1990	102	$ 17.5	$ 0.20	$ 37.5

Source: *Global Access*

Table 4. Distribution and concentration of equity investment by state (sorted by LQ 2000).

State	Market Value 2000 (billion)	Market Value 1990 (billion)	LQ 2000	LQ 1990	Gini 2000	Gini 1990
CT	$ 696.27	$ 233.43	4.25	4.31	0.83	0.77
DC	$ 85.42	$ 21.08	3.11	2.11	0.79	0.66
DE	$ 105.13	$ 49.47	2.79	4.51	0.83	0.67
WA	$ 713.71	$ 89.40	2.52	1.12	0.87	0.75
NJ	$ 942.17	$ 186.67	2.33	1.47	0.85	0.79
AR	$ 297.32	$ 72.11	2.31	1.86	0.92	0.77
NY	$ 1,935.85	$ 672.59	2.12	2.27	0.83	0.80
CA	$ 2,636.05	$ 420.27	1.62	0.86	0.78	0.73
GA	$ 563.32	$ 175.67	1.43	1.65	0.83	0.77
MA	$ 397.65	$ 102.57	1.30	1.04	0.69	0.65
TX	$ 1,191.53	$ 308.32	1.19	1.10	0.80	0.74
IL	$ 708.73	$ 305.24	1.19	1.62	0.74	0.67
VA	$ 378.84	$ 103.61	1.11	1.02	0.80	0.76
NE	$ 73.08	$ 13.34	0.89	0.51	0.70	0.61
MN	$ 206.69	$ 97.38	0.87	1.35	0.74	0.73
CO	$ 164.16	$ 57.00	0.79	1.05	0.79	0.79
OH	$ 397.12	$155.54	0.73	0.87	0.72	0.65
RI	$ 32.92	$ 12.44	0.65	0.75	0.78	0.69
MS	$ 88.63	$ 6.22	0.65	0.15	0.89	0.52
NC	$ 236.44	$ 62.30	0.61	0.57	0.78	0.70
ID	$ 34.14	$ 13.42	0.55	0.81	0.72	0.43
PA	$ 322.30	$ 214.17	0.55	1.10	0.70	0.72
MI	$ 244.28	$ 175.63	0.51	1.15	0.79	0.77
MO	$ 133.74	$ 105.79	0.50	1.26	0.69	0.72
IN	$ 129.35	$ 58.06	0.44	0.64	0.78	0.71
NM	$ 35.60	$ 2.01	0.41	0.08	0.91	0.63

State	Market Value 2000 (billion)	Market Value 1990 (billion)	LQ 2000	LQ 1990	Gini 2000	Gini 1990
UT	$ 42.57	$ 15.88	0.40	0.56	0.76	0.77
MD	$ 93.75	$ 21.56	0.37	0.27	0.67	0.63
OR	$ 50.97	$ 20.55	0.31	0.44	0.72	0.69
WI	$ 79.06	$ 32.26	0.31	0.40	0.63	0.54
OK	$ 49.87	$ 25.49	0.30	0.49	0.72	0.73
TN	$ 78.55	$ 34.72	0.29	0.43	0.66	0.62
FL	$ 192.15	$ 71.43	0.25	0.34	0.71	0.75
ME	$ 14.50	$ 5.80	0.24	0.29	0.69	0.68
IA	$ 33.07	$ 14.09	0.24	0.31	0.67	0.57
NH	$ 13.91	$ 11.57	0.23	0.63	0.60	0.71
NV	$ 22.02	$ 15.61	0.23	0.79	0.69	0.65
AL	$ 42.92	$ 19.71	0.20	0.30	0.64	0.53
AZ	$ 49.08	$ 11.55	0.20	0.19	0.66	0.71
LA	$ 31.99	$ 27.32	0.15	0.39	0.68	0.66
KY	$ 26.08	$ 14.05	0.13	0.23	0.67	0.63
SC	$ 22.23	$ 10.57	0.12	0.18	0.69	0.59
VT	$ 2.91	$ 1.79	0.10	0.19	0.51	0.50
ND	$ 3.02	$ 0.71	0.10	0.07	0.54	0.59
HI	$ 5.30	$ 5.17	0.09	0.28	0.59	0.57
KS	$ 10.80	$ 13.47	0.08	0.33	0.62	0.74
SD	$ 2.91	$ 1.01	0.08	0.09	0.57	0.46
MT	$ 2.86	$ 1.84	0.07	0.14	0.68	0.67
WV	$ 3.50	$ 2.26	0.04	0.08	0.59	0.38
AK	$ 1.33	$ 0.71	0.01	0.08	0.42	0.35
WY	$ 0.13	$ 0.40	0.01	0.05	0.54	0.82
Ave.	$ 267.17	$ 80.26			0.72	0.66

Source: Calculated by authors from *Global Access*

misstep by one of these large firms may have a greater regional impact in terms of capital availability than in the past.

Figure 1 graphically displays the data shown in Table 4 – log-transformed location quotients are plotted on the X-axis and the Gini values are plotted on the Y-axis. The axes are oriented such that the origin represents a Location Quotient of 1.0 (log value of zero), reflecting the national average and a Gini value equal to the national mean of concentration (0.72). States on the right side of Figure 1 have attracted a disproportionate share of equity investment, suggesting that firms in these states are perceived to be more innovative or productive than other firms. States on the left side of Figure 1 have attracted the least equity investment per capita, suggesting that employment in these states is in predominantly subsidiary or branch plant sites. States in the top half of Figure 1 have equity investment that has a greater inter-firm concentration than the national average – possibly indicating a lack of diversification of equity finance. States at the bottom of Figure 1 have equity that is more evenly distributed than the national average, possibly indicating less dependence upon a small number of firms for capital. Every state but Massachusetts that has a high relative amount of equity investment also has its equity investment concentrated in a relatively small number of companies. North Carolina's position in Figure 1 indicates that its equity landscape is similar to states such as Colorado, Michigan, Indiana, Rhode Island and Minnesota -- states that have moderate levels of equity investment per person and high levels of equity concentration in their largest firms. The strong correlation between these two variables is in-

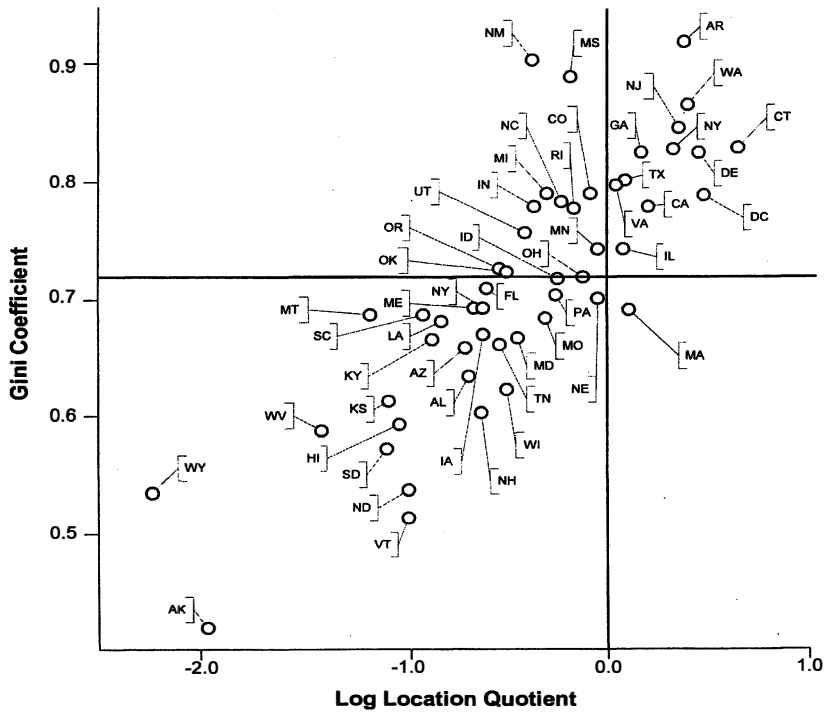


Figure 1. Location quotient and Gini Coefficient by state, 2000

dicative of the bias of public equity investment towards the largest firms driven by information asymmetries. The states that are least successful in attracting public equity investment appear to lack large, "lightening rod" firms that are the principle attractors of capital. While this concentration of investment in large firms appears to benefit states in terms of the aggregate amount of equity capital, it is at the expense of the diversity of these economies.

North Carolina Equity Investment by County

Figure 2 shows the location of North Carolina public firms by county. As expected, the greatest concentrations of public firms are found along the state's urban crescent: Mecklenburg County (26 firms), Wake County (23 firms), Durham County (11 firms) and Guilford County (11 firms). While a small number of public companies are scattered outside the urban core, Catawba and New Hanover counties are the only locations with three or more equity financed companies. However, several of the state's largest firms are headquartered outside of major urban areas; they include Lowes (Wilkes county, home improvement retailer), Delhaize America (Rowan county, grocery retailer) and Centura Bank (Nash county).[4] Since Figure 2 displays only the location of the state's public companies, a second evaluation of the size of these companies follows.

The distribution of equity investment dollars differs dramatically from the distribution of public companies (Figure 3). The dominance of the largest firms suggested by the Gini index value in Table 4 is also apparent from Figure 3. Five of the six largest recipients of equity investment in the state are in either Mecklenburg or Forsyth counties. The majority of this investment is in the four large banks (Bank of America, First Union, Wachovia, BB&T), Duke Energy (utility), and RJ Reynolds (tobacco product manufacturing). The sixth firm, Lowes, has stated its intention to move some of its corporate operations to the Charlotte metropolitan area during 2002. Comparison of Figures 2 and 3 reveals that the presence of a large number of firms in Wake county is mitigated by their small aggregate total market value.[5]

The substantial disparity in total market value between the Research Triangle and Charlotte areas

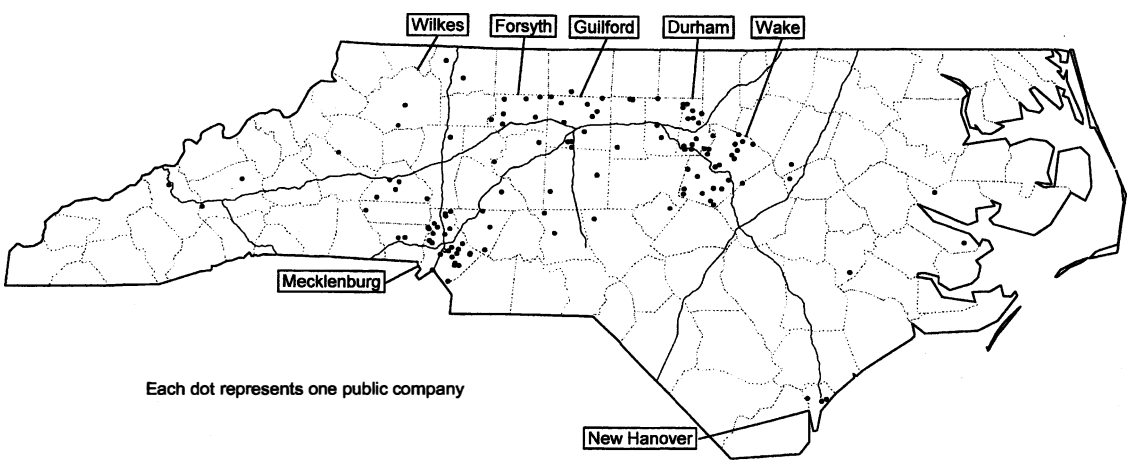
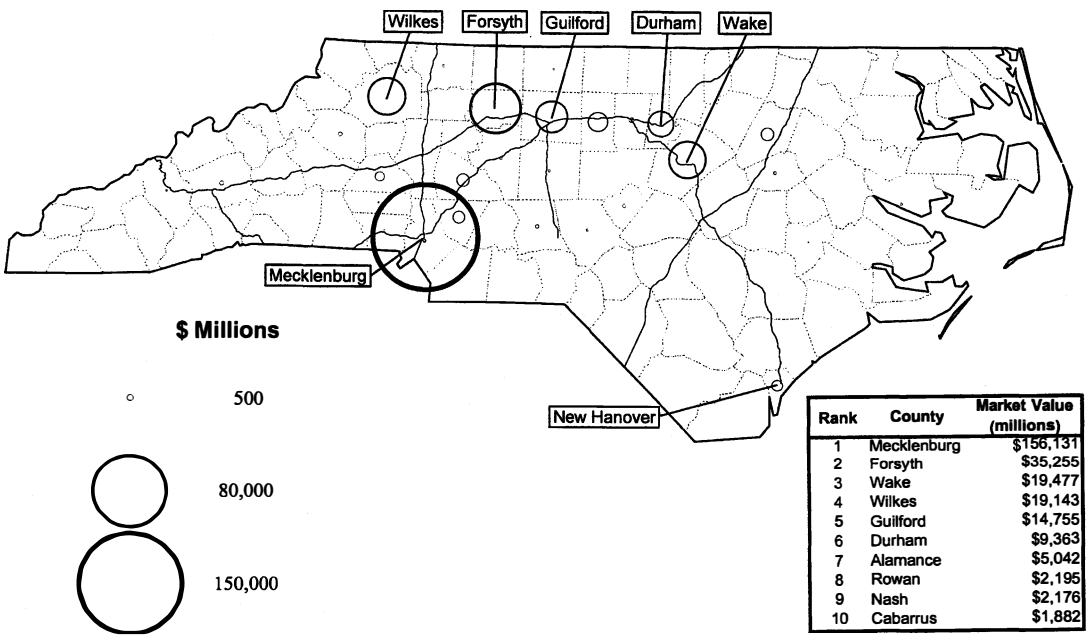


Figure 2. Public companies by county, 2001

shown in Figure 3 is surprising since both metropolitan areas have roughly equal amounts of total employment and numbers of public companies. However, the expansion of large amounts of non-government related employment in the Triangle has been a relatively recent phenomenon. The Triangle's public companies are generally younger than the public companies elsewhere in the state and have not been able to develop high degrees of visibility on Wall Street. In addition, there is anecdotal evidence to suggest that nascent technology firms in the Triangle have difficultly obtaining financing from distant venture investors (Lundegaard 2000). These data support this suggestion and illustrate the subsidiary nature of technology employment in the Triangle. Since the primary technology employers in the area (such as IBM, Cisco and Nortel) are headquartered outside North Carolina, profits generated by workers in this sector are exported to other states. This lack of command and control has not impeded the region's employment growth, but does make it dependent on decisions made outside the area. Recent layoffs in several Triangle technology firms, including Nortel and Cisco Systems, are evidence of this risk.

Composition of Equity Investment in North Carolina

The state-level analysis of the distribution of equity capital in Table 4 revealed a high degree of concentration of North Carolina's equity investment in a small number of companies. Examination of the industries that have benefitted most from equity investment shows that imbalances exist at the industry level as well. Table 5 shows that the vast majority of the equity investment in North Carolina is in finance, insurance and real estate (FIRE) sector firms, particularly banks. While the importance of financial firms to the state economy is widely acknowledged, the extent of the industry's dominance, as measured by market value, is disproportionate to its employment share. In January 2001, 51% of the state's market value was composed of the state's four largest banks (Bank of America, First Union, BB&T, Wachovia)[6] – an increase



Rank	County	Market Value (millions)
1	Mecklenburg	$156,131
2	Forsyth	$35,255
3	Wake	$19,477
4	Wilkes	$19,143
5	Guilford	$14,755
6	Durham	$9,363
7	Alamance	$5,042
8	Rowan	$2,195
9	Nash	$2,176
10	Cabarrus	$1,882

Figure 3. Aggregate market value by county, 2001

Table 5. North Carolina public companies by industry, January 2001

Industry	Firms 2000	Total MV (billions) 2000	% of State Total 2000	% of US Total 2000	Firms 1990	Total MV (billions) 1990	% of State Total 1990	% of US Total 1990
FIRE	30	$ 152.65	56.55%	18.80%	36	$ 9.78	48.87%	16.22%
Transportation and Utilities	11	$ 46.96	17.40%	8.62%	11	$ 6.27	31.36%	12.23%
Retail	10	$ 28.16	10.43%	1.71%	9	$ 1.41	7.05%	4.56%
Manufactoring	40	$ 27.72	10.27%	28.78%	27	$ 1.83	9.13%	47.71%
Services	25	$ 12.27	4.55%	58.55%	1	$ 0.04	0.21%	4.73%
Agriculture and Mining	1	$ 2.03	0.75%	0.63%	1	$ 0.01	0.04%	8.43%
Wholesale Trade	4	$ 0.13	0.05%	1.56%	5	$ 0.31	1.54%	4.01%
State Total	121	$ 269.92	100.00%	1.98%	90	$ 19.65	98.20%	0.87%
"Technology"* Sectors	43	$ 26.25	9.72%	58.16%	7	$ 0.16	0.79%	30.83%

*(Includes Instruments and Related Products, Electronic Equipment, Industrial Machinery, Chemicals, Communications, Business Servieces (including software), Health Services, Engineering and Management Services)

Source: Calculated by authors from *Global Access*

from 33% of the state's total equity in 1990. The 30 FIRE firms within the state comprise nearly 57% of the state's total market value. Utility firms (Duke Energy and Progress Energy) compose an additional 17% of the state's total market value. This sector experienced the greatest decline in importance since 1990. The FIRE and utility industries together make up nearly 75% of the state's total equity investment. In contrast, FIRE and utility companies make up only 27% of the nation's total market value. Retail and manufacturing firms receive the majority of the remaining investment within the state. The retail industry (dominated by Lowes, Family Dollar and Delhaize) accounts for just over 10% of the state's total public equity investment (the national average is 1.7%). The manufacturing sector, unlike the other major industries in the state, does not appear to be dominated by large firms, and despite the sector's dominance in terms of employment, these firms make up only 10% of the state's equity investment, well below the 28% national average. Relative to the remainder of the state's economy, investment in the manufacturing industry has remained essentially unchanged since 1990. While manufacturing is perceived to be important to the state's economy in terms of employment, it appears that the industry is largely controlled by companies headquartered outside of the state.

Table 5 also presents the aggregate data for the state's publically owned technology firms.[7] These com-

panies account for only 9.72% of the state's total market value. While this level of investment pales in comparison to the proportion of national equity dollars in the technology industry (58%), this figure represents a substantial increase in the state's technology sector investment since 1990 and a greater growth rate than the nation as a whole. The gains in technology sector investment are promising but the relatively low level of investment in the sector is indicative of the subsidiary nature of the technology sector in the state. In addition, the lack of any large technology firms (i.e. market capitalization greater than $5 billion) may handicap the state's firms in their competition for equity investment. The distribution of technology firms in the state shares the urban bias of public companies in general (Figure 4). While the Research Triangle area dominates the distribution of technology firms, Mecklenburg county (generally perceived as a financial center) also is the home to a significant number of these firms. The two technology clusters that are evident from Figure 4 are somewhat misleading since two of the largest technology firms in the state are located in New Hanover (Pharmaceutical Product Development, $1.26 billion) and Guilford (RF Micro Devices, $2.98 billion) counties.

Finally, the size of companies in these counties may influence the future flow of capital. It was previously noted that information asymmetries make large capitalization companies attractive investments as securities markets continue to globalize and the distance between investor and investment increases. This situation is expected to skew investment towards large capitalization firms. However, only nine North Carolina stocks are large enough to be considered "large capitalization" firms by Wall Street's definition (market value greater than $5 billion). Since seven of these nine firms are in either the FIRE or utility sectors, and seven of the nine are located in either Charlotte or the Triad area, the future flow of capital may be highly concentrated in these two areas and sharply reduced in periods of low interest rates (which generally reduce the profitability of FIRE firms). North Carolina's

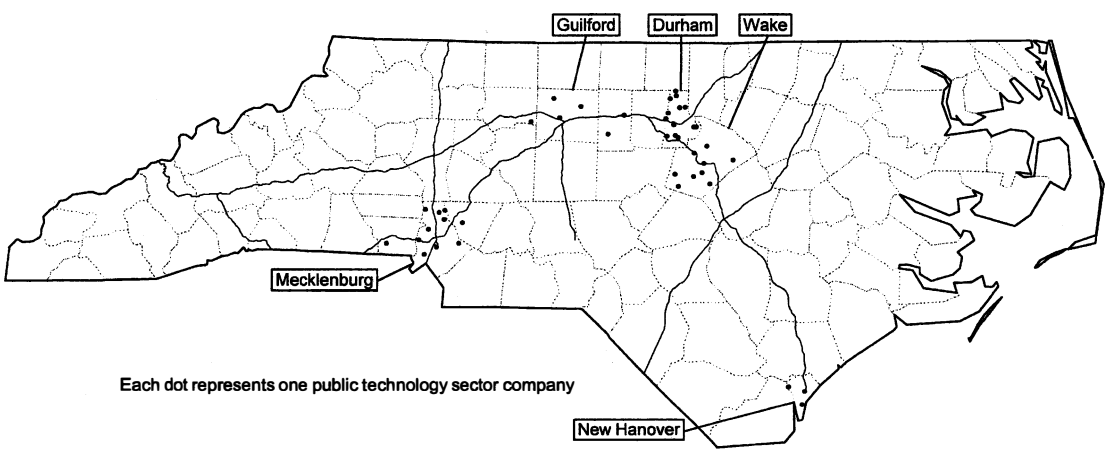


Figure 4. Public technology companies by county, 2001

sectoral dependance on FIRE firms may make it difficult to attract "hot money" from Wall Street.

Conclusions

Corporations' increased reliance on intangible assets such as human capital have heightened the importance of equity finance to corporate growth. Since the ability of a firm to obtain capital is critical to its ability to expand, linkages exist between the availability of public equity investment and the regional economies that house these companies. Firms with high market values are more likely to create spillovers in the local economy; these spillovers may include the increased demand for office space, local business services and employment growth. Taken in the aggregate, market values reflect investors' opinions of regional corporate productivity. In this sense, the aggregate market value of North Carolina-headquartered firms is indicative of the ability of the state's companies to compete for equity capital in a global economy. While absolute measures of equity investment are highly volatile and are dependant upon market psychology, relative differences in volumes of equity investment can be used to illustrate real or perceived differences in the productivity of public equity firms between cities or states. North Carolina has been moderately successful in attracting equity finance, $270 billion in 2000, ranking the state 20th in the total amount of public equity capital investment per person. Despite the mediocre ranking, these data indicate an increase in investment, relative to other states, over the previous decade.

While the urban concentration of equity investment in North Carolina is no surprise, the sheer dominance of the banking industry and its headquarters sites in Mecklenburg and Forsyth counties is remarkable. The banking industry accounts for over 56% of the equity investment in the state, overwhelming all other industries, including the emerging technology sector. This "eggs in one basket" situation may increase the state's vulnerability to economic downturn. The low market values of firms in the manufacturing, service, and wholesale sectors of the economy relative to national norms suggest that these local firms are perceived to be less competitive in the global investment marketplace and that the state risks their loss through corporate acquisition and merger activity or closure. Investment in the state's technology firms, while low in an absolute sense, has grown dramatically in the 1990s, suggesting that the state's efforts in promoting the sector have been successful.

This paper does not intend to argue that public equity capital will flow to the most efficient users; it merely asserts that companies that are offered large amounts of capital by markets will benefit while companies which are less popular with public equity markets will languish and that this relationship will have a spatial manifestation. This paper is merely a first step in a much larger examination of the linkages between Wall Street and local economies. Additional research should include investigations into the relationship between aggregate market values and local employment, examinations of the negative local externalities of declining stock price, and firm level case studies seeking to evaluate the extent of the corporate headquarters problem.

While North Carolina firms have been successful in attracting capital from outside the state, this capital has become increasingly concentrated both spatially and sectorally. As modern firms become increasingly reliant on public equity finance to pay for expansion and innovation, regional economies will become more dependant upon the opinions of investors. Improving the ability and willingness of North Carolina firms, particularly firms outside the FIRE sector, to participate in public equity markets is critical for the continued expansion of these firms, and in turn the state's economy, in the global economic system.

Notes

[1] North Carolina only has one dot com company, LendingTree.com of Charlotte. The firm's business consists of matching mortgage companies up with borrowers; it is simply an information broker. This business plan garnered the company a market capitalization of $340 million at its peak in early 2000 but dropped to less than $112 million in May 2001.

[2] To give these figures some perspective, Cisco Systems alone lost $450 billion in market value between March 2000 and March 2001. Even after this decline Cisco's market value was $138 billion (roughly equal to the market capitalization of Bank of America, First Union and Duke Energy together, North Carolina's three largest public companies).

In comparison to foreign direct investment the volume of equity investment in firms headquartered within the state ($239 billion) dwarfs (by nearly a factor of 10) the $24 billion in foreign direct investment that had accumulated in the state up to 1997 (Bureau of Census 2001).

[3] In March 2000, US stocks were valued at 181% of gross domestic product, up from 60% in 1990.

[4] Both Delhaize America and Centura Banks have been acquired by foreign firms since January 2001.

[5]At its peak in 2000 Red Hat reached $23.5 billion in market capitalization, making the company a large capitalization technology firm for a brief period.

[6] First Union and Wachovia completed a merger in September 2001. The new company took the Wachovia name and is headquartered in Charlotte.

[7] For the purposes of this paper technology firms are defined as operating in the following industries: Instruments and Related Products, Electronic Equipment, Industrial Machinery, Chemicals, Communications, Business Services (including software), Health Services, Engineering and Management Services.

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