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In This Issue ....

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A Pre and Post-NAFTA Comparison of the Economic Indicators of the Imperial Valley Versus the Rio Grande Valley

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Introduction

The current trend for business is globalization, and the United States has been one of the key countries setting the patter for this movement due to the importance of the U.S. in trade all over the world. One of the first steps to take advantage of globalization is pairing with countries so that the benefits of trade can be achieved on both sides of the border. A clear example of this bi-lateral relationship is that of Mexico and the United States due to the neighboring position of these countries. Ever since the North American Free Trade Agreement (NAFTA) came into effect in 1994, Mexico, Canada, and the United States have become even greater trading partners. It can be seen that the border area between Mexico and the U.S. has developed into one of the most important trading zones. Moreover, there is a tremendous amount of incentives that drive foreign companies into Mexico starting with cheap labor and lower costs of exporting into the U.S. market.

The Imperial Valley in south California and the Rio Grande Valley in south Texas are two of the most important areas that have boomed with NAFTA and have gained economic prosperity. Foreign companies have situated on the Mexican side of these valleys creating a great amount of employment and capital. These plants commonly referred to as "maquiladoras" have readily taken advantage of the opportunities that are afforded through NAFTA.

One of the most important facts when discussing these regions is the similarity between them. The local economies of these two valleys have traditionally been based on agricultural production. However in different degrees, the economies of the two valleys have dramatically shifted towards manufacturing labor centers during the last decade. Furthermore, the Imperial Valley and the Rio Grande Valley have both gained in importance as pathways with respect to the continuing progress of the three countries that comprise the NAFTA agreement. The development of the cities within these two regions has been remarkable. These cities have increased greatly in population due to the expectancy of the people to reap the benefits of the NAFTA agreement in the form of jobs and business prospects.

Policy decisions pertaining to the economy on the U.S.-Mexico border can be enhanced through the comparison of border regions. It can be especially important to compare border regions that are in different states of the United States. Perhaps the most distinct comparison geographic-wise is to compare the Imperial Valley (represented by Imperial County) in California versus the Rio Grande Valley (represented by Hidalgo County) in Texas. This comparison is enlightening because both of these valleys have historically been two of the poorest in the United States and in their respective states. This paper initially compares these two valleys on both a geographic and demographic basis. Subsequently, the comparison specifically focuses on a pre-NAFTA and post-NAFTA economic indicator contrast.

The Imperial Valley

The Imperial Valley is heavily irrigated and is a portion of the Colorado Desert. The Imperial Valley lies below sea level with a low point of 235 feet below sea level. The silt of the Imperial Valley is abundantly fertile and the growing season is of significant length. The arid climate of the Imperial Valley is similar to the hot deserts of North Africa. The Imperial Valley is one of the country's richest agricultural regions. In particular, cattle-feeding is very important. Three leading field crops are alfalfa, lettuce, and carrots (Birdsall 2000). In winter, melons and specialty crops are raised. The Imperial Valley was once part of the Gulf of California, but deposits from the Colorado River cut the valley off from the gulf.

The Colorado River is immediately to the east of the Imperial Valley. The Salton Trough, a geologic depression that includes the Coachella Valley north of the Salton Sea and also the Colorado River delta an the Gulf of California, south of the Mexican border, dominates most of the Imperial Valley. Agriculture was impossible until the All-American Canal was built in the 1940's. The All-American Canal now brings water 80 miles from the Colorado River and provides irrigation for over 500,000 acres.

Agriculture still continues to be one of the sectors that stimulate the region's economy. Employing about 23 percent of the total working population, agriculture is slowly being demoted to a less important sector with the increasing diversification in the type of industries. The government and retail trade sectors are two of the strongest upcoming industries. In January of 2002, the unemployment rate in California was 5.5 percent; still lower than the overall unemployment rate of the U.S. Unemployment in January 2002 in Imperial County, California was 16 percent. Seventy-two percent of the population of Imperial County is of Hispanic origin.

The Rio Grande Valley

The Rio Grande Valley is one of the most fertile alluvial deltas in the U.S. Centuries of flooding have deposited layers of rich soil in the Rio Grande Valley. Approximately one million and a half acres have been cultivated in the Rio Grande Valley, and over half is fully irrigated. This irrigation and the railroads used to haul the resulting products to northern markets were instrumental in developing the Rio Grande Valley. In the northern part of Hidalgo County, wheat is grown on dry-land farms, in an area that resembles Kansas and Nebraska.

Milo and corn are grown in the Rio Grande Valley in large quantities. Over 90% of the nation's aloe vera is grown in the Rio Grande Valley. Many commercial greenhouses ship truckloads of ornamental tropicals that adorn the Rio Grande Valley. From 1910 through 1930, trainloads of farmers from the Midwest were brought to the Rio Grande Valley by developers. The farmers established farms growing grapefruit, oranges, onions, melons, cotton, and sugar cane.

Consisting of four Texas counties and having a strategic location, the Rio Grande Valley (RGV) was recently termed "The Boderplex" to designate an area that has been favored with the benefits of trade. This area has been benefiting due to the fact that the economic base has shifted from agricultural to a more diversified mix, particularly after the implementation of NAFTA. Trade, manufacturing and services have joined agricultural services to form a mix that has been pushing the economy of the RGV in the last decade, transforming it into a major international trade area. Moreover, the change has led to improvements in several other areas such as commercial, retail, office, industrial, medical, retirement, and educational. The area is heavily populated by Hispanics, who constitute 88.3% of the total population, and have increased over the last decade from 383,545 persons to over half a million (U.S. Census Bureau).

Employment in this region has increased steadily over the last decade, but the region has also suffered the effects of economic events such as the peso devaluation and interest rate turmoil in Mexico, slowing down the creation of jobs. More recently, the decline of the U.S. economy, due in big part to the world economic performance and the effects on the U.S. of September 11, 2001 has contributed to unemployment. By January of 2002,

the unemployment rate in Texas reached 5.7 percent; still lower than the overall unemployment rate of the U.S. However, unemployment in the two metropolitan statistical areas that are included in this region reached 12.2 percent and 8.8 percent respectively. Eighty-eight percent of the population of the Rio Grande Valley is of Hispanic origin.

Literature Review

The study that is most relevant to the present study is a cross-border comparison of Yuma County, Arizona and San Louis Rio Colorado, Sonora, Mexico discussed in Schmaedick (2001). Rey and Ganster (1998) provided a cross-border comparison of the San Diego-Tijuana region.

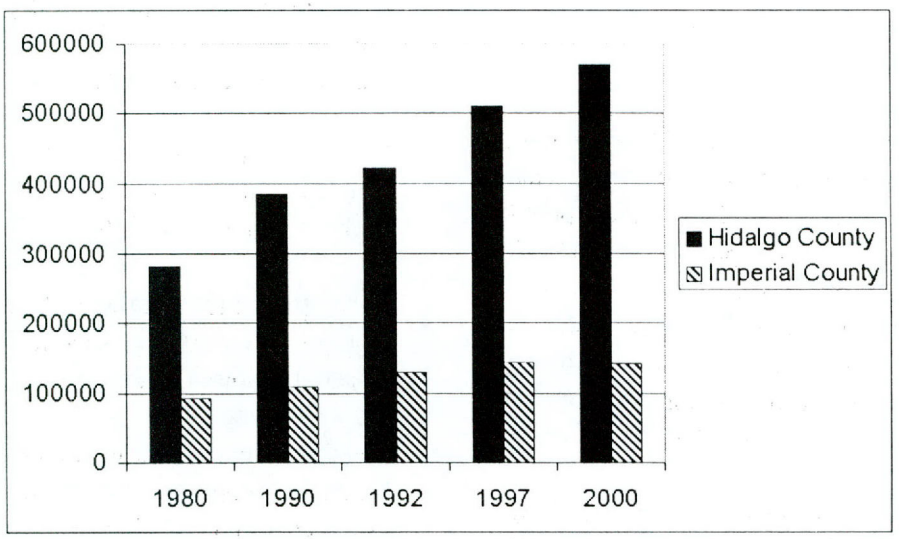
Studies that have compared different counties in the U.S. are cogently discussed in Clement (1999). Various issues related to economic and social issues related to the Imperial Valley are pointed out in Montenegro (2000).

The California Center for Border and Economic Regional Studies at the Imperial Valley Campus of San Diego State University provides crucial economic data on the Imperial Valley. In a similar respect, the Texas Center for Border Economic and Enterprise Development (Patrick 2000) provides economic data for the Rio Grande Valley.

Hanson (2001) analyzes whether the growth of export manufacturing in Mexican border cities correlates with the demand of goods and services in corresponding U.S. border cities. This study finds strong positive correlation in the border-city pairs between export production in the Mexican border city and employment in the corresponding U.S. border city. There is no significant correlation between U.S. interior cities and these border Mexican cities.

The Hanson (2001) study determines demand links between 10 border-city pairs in the time period of 1975-1997. The border city pairs in Hanson (2001) include the Imperial County, California – Mexicali, Mexico pair and the McAllen, Texas – Reynosa, Mexico pair. The

Figure 1: Population Comparison Imperial County versus Hidalgo County (1980-2000)



results have pre and post-NAFTA implications. The author discusses pre-NAFTA tendency of specialization between the U.S. and Mexico where Mexico specializes in low skilled labor and the U.S. specializes in higher skilled labor and raises future issues regarding the post-NAFTA effect on economic integration.

Data Sources

Several secondary sources were used to obtain information regarding the two areas researched. Secondary data was obtained from the many academic and private institutions, which have provided funds to research the economic development of both the U.S. and Mexico, especially in the border regions. Thus the amount of information in very large, and an important analysis can be made. Economic, demographic, and geographic indicators are the main sources of information for this study. Data has been acquired from several public institutions such as the U.S. Census Bureau, the Bureau of Labor Statistics, the Bureau of Transportation Statistics, the Texas Comptroller of Public Accounts, and the Federal Reserve Banks of Dallas. The use of primary data is not practical for this study, since the scope of the study is very big and the vast distance is another deterrent. However, the secondary data used was gathered by trustworthy sources and should be statistically correct.

Results

In terms of population growth, the McAllen-Edinburg-Mission, Texas Metropolitan Statistical Area ranked fourth place nationwide in terms of percentage population growth in the year 2000. The population in Hidalgo County increased from 383,545 in 1990 to 569,463 in 2000. The additional 185,918 residents represent a 48.5 percent increase (see Figure 1). In comparison, Imperial County had a 30.2 percent population increase from 109, 303 in 1990 to 142,361 in 2000.

It is clearly seen that the population in the Rio Grande Valley is far greater than that of the Imperial Valley. The RGV population has increased almost 100 percent in the 20-year comparison provided in Figure 1. The RGV population in 1980 was 283,323 persons and increased to 569,463 persons in the year 2000. The population increase in the Imperial Valley has a similar increase in percentage terms of almost 100 percent, but the population in the RGV is clearly superior in magnitude thereby having implications with respect to other economic indicators.

Imperial County is almost three times larger than Hidalgo County in terms of land area. However, the population density is more than ten times greater in Hidalgo County (see Table 1). The number of housing units in Hidalgo County is than four times the number of units in Imperial County, indicating that Hidalgo County is more developed.

It can bee seen in Table 1 that there is a substantial difference in the volume of retail sales between the two counties. However, it can be seen that per-capita retail sales are very similar in the two regions. Imperial County has slightly greater sales per capita ($6,960 per person) than Hidalgo County ($6,621 per person) (U.S. Census Bureau).

The median household income is another interesting indicator, Even though the population and retail sales are greater in the RGV, the median income for a household is greater in the Imperial Valley. Federal funds are an important part of the economy of both valleys and each region has received a similar amount per capita.

It can bee seen in Table 2 that both Imperial County and Hidalgo County have nearly half of the respective county's children living below the poverty line.

In comparing the number of households, there has been a larger percentage increase in Hidalgo County versus Imperial County (Figure 2).

Retail sales per capita in Imperial County and Hidalgo County are approximately equal (see Table 3). An interesting analysis of similarities and differences with respect to retail sales along the U.S.-Mexico boarder is provided in Gerber and Patrick (2001).

With respect to the unemployment rate, the RGV has had a superior economic performance, except immediately after NAFTA was implemented. However, the large increase in the RGV unemployment rate at that time can to a large degree be attributed to the instability of the Mexican economy, which at the time was going through a depreciation of the Mexican peso. It can be seen from In 1996, the Rio Grande Valley reached a similar unemployment rate as the Imperial Valley, but after Mexico recovered, the unemployment rate of the RGV has been decreasing steadily to a low point of 13.6 percent in the year 2000. The unemployment rate in the Imperial Valley has had a more stable trend, bottoming at 23.4 percent in 1999, but increased the following year to 26.3 percent. Compared to the nation's unemployment rates, the RGV and the Imperial Valley can be seen as very poor performers. The seasonality of jobs in these areas also needs to be analyzed.

It can bee seen in Table 4 that there has been a large post-NAFTA for incoming pedestrian crossings in the Imperial Valley area whereas there has been a decrease for incoming pedestrian crossings in the Rio Grande Valley area. However, Table 5 shows that there has been a large decrease post-NAFTA for incoming passengers on buses in the Imperial Valley area whereas there has been a very small decrease for incoming passengers in buses in the RGV area. It can bee seen from Table 6 that both valleys have had small decreases in post-NAFTA for incoming passengers in personal vehicles.

Conclusions

This is the first paper comparing economic indicators of the Imperial Valley versus the Rio Grande Valley. The results from this analysis can be useful in studies comparing the Mexicali, Baja California region to the Reynosa, Tamaulipas region. This paper should have major implications for comparing the two valleys in regards to border infrastructure, environment, and trade related issues.

This study is also useful in analyzing the impact of maquiladoras on the Imperial Valley and the Rio Grande Valley. In both Mexicali and Reynosa there has been a tremendous increase in the number of maquiladoras in the past five years. The present study can be valuable in determining whether there is a sufficient demand and supply for the skilled labor that is required by maquiladoras.

The economic and demographic indicators have provided a clearer view of how these regions have changed after NAFTA. Population demographics is also examined for both areas and it can be seen that the RGV has a much larger population, even though the territorial area is greater in the Imperial Valley. Although the unemployment rate has been more stable in the Imperial Valley, the RGV unemployment rate has generally been significantly lower than the unemployment rate in the Imperial Valley. While analyzing unemployment, it can be seen that the instability of the Mexican economy has had a greater effect on the economy of the RGV. An increase in the RGV unemployment rate of approximately 10 percent can be observed during the period when the peso was devaluated. Nevertheless, the RGV employment has rebounded and by year 2000 was about half of the unemployment rate of the Imperial Valley.

Housing units as well as retail sales and median household income were analyzed as further indicators of the economic performance of the two valleys. It can be seen that both areas have similar figures in these two indicators, suggesting that economic development has been similar in the two regions.

In addition to the employment differences found in the economies of the two areas, it can be seen that the demographics present a strong case for the Rio Grande Valley to have a more superior performance than the Imperial Valley in the future. Moreover, the RGV has a better location than the Imperial Valley with respect to connecting Mexico, the United States, and Canada with the rest of the U.S.

Table 1: Economic Indicators Hidalgo versus Imperial County

Economic Indicator	Hidalgo County	Imperial County
Land Area 2000 (square miles)	1,570.00	4,175.00
Population 1980	283,323.00	92,110.00
Populationi 1990	383,545.00	109,303.00
Population 1992	420,955.00	128,972.00
Population 1997	510,922.00	143,706.00
Population 2000	569,463.00	142,361.00
Populationi % Change 1990-2000	48.5	30.2
Housing Units 2000	192,581.00	43,891.00
Households 2000	156,824.00	39,384.00
Private non-farm establishments 1999	8,187.00	2,260.00
Private non-farm employment % change 1990-2000	44.33	12.3
Retail Sales 1997	$3,337,625.00	$989,394.00
Median household money income 1997 model	$20.034.00	$23,359.00

U.S. Census Bureau, U.S. BLS (2002), TCBEED (2001), CEED (2001)

Table 2: Population Indicators of Imperial County versus Hidalgo County (2000)

Population Indicators (Year 2000)	Imperial County	Hidalgo County
High school graduates, persons 25 years and over, 1990	23%	16%
College graduates, persons 25 years and over, 1990	4%	4%
Home ownership rate, 2000	58.3%	73.1%
Median household money income, 1997 model-based estimate	$23,359	$20,034
Persons below poverty, percent, 1997 model-based estimate	30.3%	37.6%
Children below poverty, percent 1997 model-based estimate	43.8%	47.9%

U.S. Census Bureau, 2000

Figure 2: Number of Households of Imperian County versus Hidalgo County (1990 verus 2000)

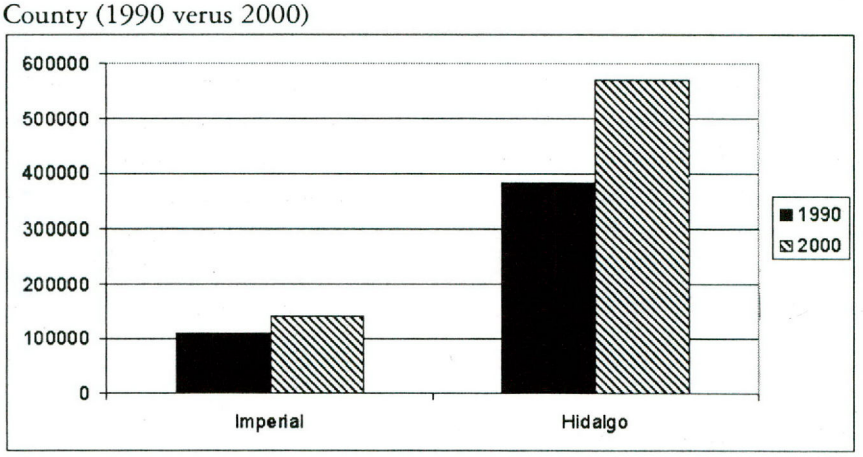


Table 3: Population Indicators of Imperial County versus Hidalgo County (2000)

Business Indicator	Imperial County	Hidalgo County
Private non-farm establishments with paid employees	2,230	7,990
Private non-farm employment	23,205	101,510
Private non-farm employment (percent change from 1990)	+7.4%	+34.4%
Manfacturing shipments	241,643	1,428,173
Retail sales	989,394	3,337,625
Retail sales per capita	$6,960	$6,621
Housing units authorized by building permients	339	5,663
Federal funds and grants (per capita)	$4,110	$3,179
Local government employment - fill-time equivalent	7,693	25,685

U.S. Census Bureau, 2000

Table 4: Incoming Pedestrian Corssings, US-Mexican Border

	1994	1995	1996	1997	1998	1999	2000	Percentage Change 1994-2000
Calexico	6,469,371	7,100,203	7,373,815	8,167,540	8,492,078	8,099,253	8,352,324	29.1%
Hidalgo	3,057,580	2,541,556	2,603,443	2,429,241	2,377,143	2,559,617	2,575,622	-15.8%

Source: U.S. DOT, BTS (2001) based on data from the US Customs Service, Mission Support Services, Office of Field Operations, Operations Management Database

Table 5: Incoming Passengers on buses, US-Mexican Border

	1994	1995	1996	1997	1998	1999	2000	Percentage Change 1994-2000
Calexico	36,286	29,806	30,151	21,143	37,540	29,194	19,367	-46.6%
Hidalgo	682,310	683,118	804,442	964,975	1,515,376	1,247,191	648,751	-5.3%

Source: U.S. DOT, BTS (2001) based on data from the US Customs Service, Mission Support Services, Office of Field Operations, Operations Management Database

Table 6: Incoming Passengers inPersonal Vehicles, US-Mexican Border

	1994	1995	1996	1997	1998	1999	2000	Percentage Change 1994-2000
Calexico	20,721,307	18,296,272	19,241,319	20,733,213	20,372,381	20,094,460	20,094,460	-3.0%
Hidalgo	23,864,739	21,070,912	23,318,753	24,943,370	29,118,835	21,947,731	21,947,731	-8.0%

Source: U.S. DOT, BTS (2001) based on data from the US Customs Service, Mission Support Services, Office of Field Operations, Operations Management Database

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The Impact of the International Dimension on the Wichita County, Texas Economy

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Introduction

The United States economy is growing more worldwide interdependent. As an indicator of international interdependence, combined exports and imports for the United States totaled $468 billion in 1975 and $2,696 billion in the year 2000, nearly a six-fold increase. Exports alone represented 12 percent of the United Stated GDP in 2000. A comparable figure for Texas was 13 percent, reaffirming the importance of international activities in the Southwest region of the country. This rapidly expanding dependence on international trade is, to a considerable degree, the result of improved transportation, better communications technology and reductions in trade restrictions. The collapse of Communism and the changing economic system in china have also contributed to expanded international trade.[2]

Has this noticeable national and international trend been experienced by a smaller community, such as Wichita County, Texas in 2000? That is, has this relatively small county in Texas expanded its economic activities to include more international related exchanges or has it primarily maintained a domestic and regional emphasis?

This article addresses international dimension and its economic importance to Wichita County, Texas. Specifically, an effort is made to: (1) briefly describe the economic aspects of Wichita County; (2) measure the extent of international involvement in the area's manufacturing sector; (3) evaluate the economic impact of NATO's presence at Sheppard Air Force Base; (4) determine the economic significance of international students attending Midwestern State University and the Wichita Falls Independent School District; and (5) calculate the overall economic influence of the foreign sector on the Wichita County economy in 2000, and formulate some conclusions on the importance of international dimension to the regional economy.

Wichita County, Texas, Profile

Wichita County, approximately 120 miles from either Dallas or Oklahoma City, is located in the north central region of Texas. Wichita Falls, the County seat, is the major city along with a few smaller communities in Wichita County. The population of Wichita County was 131,664 in 2000. Caucasians made up 78.8 percent, blacks 10.2 percent, Hispanics 12.2 percent, and others 8.8 percent of the total, respectively. Overall the population of Wichita County increased by 7.6 percent from 1990 to 2000.[3] The population shift included a 2-percent increase in the number of whites and increases of 20 percent and 54 percent in the black and Hispanic groups, respectively. A trend toward an older population was also evident in12.7 percent of the age group 65 years old and over in Wichita County, compared with 9.9 percent for that of Texas, a relatively young state.

The non-farm labor force of Wichita County in 2000 totaled 58,286 and employment was 55,514, as shown in table 1. This compared with a labor force of 52,987 and employment total of 50,455 in 1991. There were four major employment sectors in the county. Most sig-

nificant was the Services and Other group with 25 percent of total employment. Retail trade followed with 24 percent. Manufacturing was responsible for 15 percent of the total. Local, state and federal government when combined accounted for 22 percent of Wichita County employment. Retail and wholesale trade together represented 25 percent of overall employment in the county, as shown in table 1.

Major employment trends during 1991-2000 reveal a decline in the Mining, Transportation and FIRE groups of 42,3 percent, 21.4 percent, and 11.4 percent, respectively. Gains were posted by the Construction, Government, Retail / Wholesale and the Service and Other groups of 34.5 percent, 22.0 percent, 17.6 percent, and 10.7 percent, respectively.

The Wichita County personal income was $3,324 million in 2000, compared to $2,126 million in 1991, an increase of 56 percent over the ten-year period.[4] Comparable increases for the nation and Texas were 64 and 91 percent respectively.[5] A study published in the early 1990s which covered the 1981 to 1991 period revealed that approximately 18 percent of the Wichita County personal income was in some way tied to international economic interchange.[6] Such a high significance of international related economic activities in Wichita Falls was surprising. This research will attempt to ascertain the importance of international dimension in the Wichita Falls area economy in 2000. Some conclusions will be reached concerning changes which took place over the ten-year period commencing in 1991.

International Economic Impact On Wichita County, Texas

To determine the evolving role of international exchanges in the Wichita County economy, a number of areas will be examined for the year 2000. These include: manufacturing; the Euro-NATO Joint Jet Pilot Training Program (ENJJPT) sponsored by the North Atlantic Treaty Organization (NATO) at Sheppard Air Force Base (SAFB) in Wichita County; and international students attending Midwestern State University (MSU) and the Wichita Falls Independent School District (WFISD). Areas analyzed are number of employees, payrolls, capital outlays, operating expenses and miscellaneous items.

Manufacturing

Manufacturing is an important component of the Wichita County economy. There were five business

Table 1
Non-farm employment by sector
Wichita county, Texas, 1991 and 2000

Employment Sector	Year 1991	Year 2000	Percent Change
Manufacturing	8,133	8,422	3.6
Mining	1,400	808	(42.3)
Construction	1,567	2,107	34.5
Retail / Wholesale	11,833	13,920	17.6
Transportation	25,78	2,026	(21.4)
FIRE	2,400	2,127	(11.4)
Services and Other	12,700	14,093	10.7
Government	9,844	12,011	22.0
Total	50,455	55,514	10.0

Source: Texas Workforce Commisstion (http://www.twc.state.tx.us/lmi/lfs/type/coveredemployment2000.html

firms which in one way or another were involved in international economic activity in the year 2000. During the year under review, 8,422 individuals were employed in the Manufacturing sector. The international related employment of this group totaled 1,638 or 19 percent of the total manufacturing employment. During 1991 the comparable figures were 8,133 employed in the manufacturing sector with 2,394 of these employed in international firms.

The 2000 payroll of these five companies was estimated to be $53.7 million, as shown in table 2. Operating expenses, which included utilities, material and supplies totaled $240.4 million. Capital investment amounted to approximately $18.5 million. Overall approximate expenditure outlays totaled $312.7 million in 2000.[7]

NATO

A major internationally related economic impact on Wichita County was the ENJJPT Program. Sponsored by NATO, this 55 week program is geared to prepare individuals to be qualified pilots for military aircrafts. It was started in 1973 by a group of European nations with the United States joining the group in 1974 along with the United Kingdom, Italy, Turkey and Canada. Participants in 2000 were: Germany; The Netherlands; Norway; Portugal; Spain; Belgium; Denmark and Greece for an overall total of 13 countries involved in the program. The United States was selected to host the program for a 10-year period starting in 1981. Extensions of the ENJJPT Program at SAFB were negotiated in 1987 and 1989. The current arrangement is scheduled to continue

Table 2
Regional Economic Impact
Wichita Conty, Texas 2000

	Gross Amount	Adjustment Factor	Net Amount
International Firms			
Payroll	$53,707,368	0.85	$45,651,262
Operating	240,403,860	0.39	93,757,505
Capital	18,545,558	0.60	11,127,3347
Total	$312,656,786		$160,536,101
NATO Programs			
Payroll	$45,700,000	0.80	$36,560,000
Operating	78,200,000	0.21	16,422,000
Capital	2,400,000	0.27	648,000
Total	$126,300,000		53,630,000
International Students			
Expenditures	$6,631,000	0.85	$5,636,350
Total	$6,631,000		$5,636,530
Grand Total	$445,587,786		$219,8025,451

until 2005.

During 2000 there were 1,275 military, civilian and contractor personnel involved in the ENJJPT program. The payroll for this group was $45.7 million. A major outlay of the program is training aircraft maintenance which amounted to $78.2 million. Materials and equipment represented costs of $2.4 million. Total expenditure for the ENJJTP Program in 2000 amounted to $126,281,185 which compared to $77,115,511 in 1991, as shown in table 2.[8]

International Students

There were 425 international students enrolled at Midwestern State University (MSU) during the regular semesters in 2000. Estimates are that these students spent an average of $15,000 per school year including the summer term in the Wichita Falls area.[9] This resulted in a total of $6,375,000 being spent by these individuals while studying at MSU. Additionally, there were 32 international students in the Wichita Falls Independent School District and other school districts in Wichita County. Assuming that the high school students spend a half of the estimated expenditures of MSU students, an additional $256,000 was spent by those students bringing the overall international students expenditures to $6,631,000 in 2000, as shown in table 2.

Miscellaneous

It is estimated that nationally one in every seven manufacturing jobs produces for exports. Exports played an important part in the sales of a number of manufacturing companies located in Wichita County, as well. Companies such as Magic Air Products, Echometer, Delphi Engergy & Engine Management Systems, sold in overseas markets. We have not included in this study export sales by those domestic firms in the area. Additionally we have omitted from this data the contribution of such other establishments as Burger King which in 2000 was a British owned operation. There were 18 Burger Kings in the area. The impact of international visitors to SAFB, MSU, business community, the WFISD as well as groups such as Rotarians was not considered.

Reported sales by international related manufacturing firms increased by 1.9 percent, from $306,831,769 to $312,656,786, between 1991 and 2000. This is impressive in the face of a sluggish manufacturing sector of the United States economy in the late 1990s and 2000. However, NATO's economic expenditure in the area rose by 63.8 percent during the period. More surprisingly, international students' monetary outlays in Wichita County expanded by 612.8 percent, due to an increase in enrollment and per capita expenditures. Thus all the components experienced a positive growth in internationally related economic activity in Wichita County during the decade.

The net combined expenditures of foreign owned industries, NATO related activities and international students and export sales in 2000, after adjustments for local expenditures, totaled $219,802,451, as shown in table 2. This compared with $173,803,983 in 1991 and represented an increase of 26.5 percent. Assuming a multiplier of 2.1 the total economic impact of these expenditures on Wichita County in 2000 was $461,585,147. The expenditures made by foreign related sources were thus equivalent to approximately 14 percent of the personal income of the county of $3,324,223.00 in 2000. This compares with 17.5 percent in 1991[10]. The results show that although the international dimension remains important in the regional economy in 2000, the relative importance has somewhat declined due to a rapid increase in personal income in Wichita County during the period.

Conclusions

International related activities thus played an important role in Wichita County economy. This study shows that several local firms of foreign ownership were important to the economic well being of the Wichita Falls area. The NATO program at SAFB impacted the local economy in a very positive way. International students attending MSU and the WFISD contributed to the expanded economic activity in the area. The NATO and

international students are a source of worldwide exposure for Wichita County, as are the international manufacturing operations. The flow of international visitors to the community supported the area's global outreach. Our study reveals that during 2000 international related economic activity continued to be an important component of the overall Wichita County's personal income. These exchanges were part of the expanding trend toward world wide economic interdependence taking place in the United States.

As the world grows economically more interdependent, smaller communities should not overlook international related economic activities. Low costs of production, available resource bases as well as desirable quality of life may provide opportunities that contribute to the economic growth in these communities by attracting internationally related activities. The Wichita County, Texas, economy as an example has benefited greatly from its international related activities.

Notes

1. McConnell, Campbell and Brue, Stanley L. *Economics: Principles, Problems and Policies*. 15th Ed. McGraw-Hill Irwin Publishing Company, New York, 2002, p. 97.

2. U.S. Department of Commerce, Bureau of Census.<http://quickfacts.census.gov/pfd/states/48/48485.html>

3. Ibid

4. Ibid.

5. Rodriguez, Louis J. and Fukasawa, Yoshi, "Economic Impact of the International Dimension on Wichita Falls," *Midwestern Business and Economic Review*, No. 17 (Spring 1993), pp. 1-2. It is noted that the figure for personal income for 1991 was extrapolated from 1984-1989 data in the 1993 study, resulting in an underestimation of personal income. This underestimation gave the impact percentage of 19. The actual personal income in 1991 was $2,125,640,000. The recalculated impact was 17.5 percent.

6. The survey of international firms in Wichita County included ABB, Inc. (Switzerland); CerBay (Saint-Gobain Vetrotex of France); Washex Machinery Corporation (Lavatec of Germany); Pratt-Whitney of Canada (Canada), Vetrotex CertainTeed (Saint-Gobain Vetrotex of France). The combined employment of 1,695 represents 20.1 percent of the total manufacturing employment in Wichita County in 2000.

7. U.S. Air Force, Sheppard AFB, 82nd Training Wing Office of Public Affairs, *Fact Sheet*, Wichita Falls, TX. 2002.

8. International Students Office at Midwestern State University estimates that annual cost for a non-resident student to be $16,006 per year and that for a scholarship recipient with a tuition waiver $10,774. The weighted average was approximately $15,000 per student.

9. See note 6 above.

Moving from Training to Workplace Learning: New Perspectives on the High-Involvement Environment

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Introduction

How do individuals get into the mindset of continuously learning? Just what is the connection between individuals improving their learning and the organization being able to utilize this capability?

These are not easy questions to answer. As was found in this ethnographic study, workers on the shop[floor of a manufacturing company can make the transition from a Tayloristic model of worker response to one that encourages their individual input and decision making abilities. In fact, the employees' ability to entertain a "systems" perspective is also delineated. Being able to move in this direction is vital for a company's growth and viability.

Research has recognized that companies develop repertories of capabilities which enable and constrain their responses to changing environments (Cespedes, 1995). This link between an individual's learning capabilities and an organization's learning and adaptation is highlighted in this study as the company makes a transition to learning and as the individuals learn to continuously grow, develop, and problem solve to the benefit of all.

Relationship to Other Research

Progression to high-involvement requires workers who are motivated to be actively involved in a new learning environment. This type of learning environment is all-pervasive and reflects the overall migration to a knowledge economy. In knowledge economies, the rapid pace of technological change means that learning must be constant and that education must be updated throughout one's working life. People have to increase their learning power to sustain their earning power (Davis & Betkin, 1994).

Worker education can be the catalyst affecting change to high involvement in an organization. Schein (1992) writes of the need to break the "tyranny of culture" in a mature organization. To effectively make the evolution to a high involvement workplace, a company must work to bring about that environment needed to foster learning, insight, and participation. "The best organizational change programs approach making changes as a learning experience" (Lawler, 1992, p. 345). The new training goal is to train workers to develop as technology continues to change (Ashbum, 1986; Beard, 1991a; Beard 1991b). Training programs must now be judged in terms of empowering workers with direct responsibility for decisions affecting production and quality (Camevale, 1991).

Data verities the linking of education, training, organizational structure, productivity and income (Camevale, 1991). As published by the Conference Board (1995), Forbes' "Annual Report on American Industry" rates companies on measures such as profitability, growth, sales, net income, and profit margin. Using the report's profitability measure, "high" performance enhancement companies were found to outperform those with few

or no enhancement programs. Although production worker training forms an integral part of the Tayloristic work model, that training was often built upon the most limited definition of skill. Today, the effective use of advanced manufacturing requires workers with skill and understanding beyond any specific limited area. Now, more generic concepts of entire plant perspective, teamwork, and the development of learning skills (Ashbum, 1986) are the essential skills in fostering the growth and development of both the individual and the organization.

Senge (1990) makes the point that companies and all human endeavors are systems, not unlike rainstorms and other natural designs. As a part of the lattice, it is very hard for the individual to see the whole pattern, to see beyond an isolated part or specific task. The workers in this study are pleased with their learning and the use of their own skills. They also like using their training as a source of responsibility and authority and to see their job as a part of a whole. For Senge, "systems thinking" is the integrating skill that fuses other skills together. For many of the trainees, learning was arousing that kind of thinking.

Methodology

A qualitative research design was deemed the most appropriate way to understand a company's transformation to a high involvement organization and work cell arrangement. Qualitative research is descriptive research that seeks to understand, through insight and discovery, the processes that contribute to the greater whole of an event or phenomena (Bogdan and Biklen, 1992); Goetz and LeCompte, 1983; Patton, 1990). Because of its descriptive and inductive nature, it "holds the greatest possibility for making significant contributions to the knowledge base" in applied areas such as education and human resource development (Merriam, 1998, p.4).

Qualitative case study research is a particular type of qualitative research. Its purpose is to describe and characterize the occurrence and evolution of a given phenomenon. It is a detailed examination and account of one particular context or setting (Bogdan and Biklen, 1992). "Case study, which has as its purpose the description and interpretation of a unit of interest, can result in abstractions and conceptualizations of the phenomenon that will guide subsequent studies (Merriam and Simpson, 1984, p. 99). It is a particularly useful design when the factors or variables of interest can not be identified a priori and/or so imbedded in the context that it would be impossible to separate them out (Yin, 1992). Contexts that are naturally "bonded systems, such as a class, a family, a company, and so on, easily lend themselves to qualitative case study research.

Data Collection and Analysis

Data were gathered in three ways. First, in-depth interviews were conducted with key managerial and nonmanagerial personnel. An interview guide was used which, according to Patton (1990, p. 283), "make[s] sure that basically the same information is obtained from a number of people by covering the same material. The interview guide provides topics or subject areas within which the interviewer is free to explore, probe, and ask questions that will elucidate and illuminate that particular subject."

The formal interview guide was developed from the feedback of subject matter experts. These experts were economists, academics, consultants, writers, and business leaders who were experienced with small manufacturing companies that export. The guide includes descriptive questions about high performance work practices, human resources, exportation, and NAFTA. All interviews were tape-recorded, then transcribed.

In the set of interviews, the people contacted were top administrative personnel and all the workers involved in the training program. Many of these people were interviewed a second time to confirm information or check the validity of the emerging findings. Checking validity of emerging findings is called *member checks*. In member checks, the emerging findings with supporting quotes and references to particular instances are taken back to

selected interviewees in the organizations and meaning, context, and interpretations are verified.

Data were also collected through several days of on-site observation, including attendance at staff meetings and training sessions. Finally, documents such as memos, letters, contractual agreements relevant to the training were obtained and analyzed. Data from the interviews, observations, and documents were then analyzed using Glaser and Strauss's (1967) constant comparative method of data analysis.

For the purpose of this paper, the company that served as the research site for this paper will be called Creative Technology, Inc. (CTI).

Going from Training to Workplace Learning

Often traditional training of equipment operators involved task learning, with no theory or explanation. Training, involving disciplining workers in simple, repetitive tasks, was typical of that done to support a Tayloristic production process. There is still some of this training going on at CTI and the program being studied has some procedural training in it.

Don Riley, the engineer conducting the program compared his classes, which teach both practice and theory, to the old teaching.

> We had pretty much 'do as I do' type training, with someone who may or may not be qualified to operate the machine correctly, showing another individual, who probably has never seen the machine before, and has no understanding of its workings, how to run it without hurting himself.

However, the trainees see hands-on training, problem solving and a variety of operating skills as important. Procedural training has become very individualized and specifically problem-orientated within this program. Knowles (1984) asserts that the best environment for adult learners is a non-authoritarian, less formal, cooperative atmosphere; the instructor's role would be that of facilitator, catalyst and guide, in a process built around what learners feel they need to know (Bell, 1989; Knowles, 1984, 1989a, 1989b; Zemke & Zernke, 1988). This would be an apt description of the training program studied.

Practical application was a very important part of the classes even when theory was the topic. The start-up of the cell work organization provided Al, the engineer who introduced the cells to CTI, and Don, with a chance to offer practical conceptual training. They began on the shop floor:

> We spent almost full-time three months working with two operators and really bringing them up to speed. We were teaching what a good drill looks like, why different drill geometries, why you use this end mill as opposed to another end mill, what's a 20% carbide insert. A lot of things were not associated with their job, but we wanted to make these people knowledgeable, as quickly as possible.

The literature raises important questions regarding positive transfer of training to the job. The obvious rationale for the worker training is the belief that students will effectively apply the understanding, skills, and views from class to the shop floor. However, the degree to which this takes place is often not clear. The degree of learning transferred to the job is said to vary with both training style and the acceptability of the new learning within the company and within the trainee's own department (Baldwin & Ford, 1988). However, it is clear that Don's interactive training style and the workers' acceptance of the new learning generates a high level of transfer.

The Evolving Nature of Learning

At CTI, learning has been in a process of evolving as shop needs changed and knowledge developed. After three years, Riley sees the program at a crossing point where he must make sure that goals are very clear-cut so that everyone "knows what those goals are and can achieve them." One thing he feels strongly about is that

people comprehend that "a better understanding of the world of machining" is not the final goal. "I want successful people."

The evolving nature of training at CTI and the goal of personal success for the trainees does seem clear. The goals include: Giving the trainees the opportunity to keep learning, improving ability on the shop floor, and one that seems most important, "start using your human resources correctly or lose your skilled work force." Don's idea that if the workers' sill is not appreciated at CTI they will have the credentials needed to move on.

At this stage in their personal development, the majority of trainees wanted to keep learning. They have become "adult lifelong learners" with particular interest in what they see as their profession. Dewey (1916) wrote: "Real education starts after we leave school and there is no reason why it should stop before death." In class, trainees were quick to offer both functional and hypothetical illustrations of the topic at hand. On the shop floor, machine operators were observed reading machine shop manufacturing magazines while "babysitting" their high tech equipment or while on break. During class breaks and on the floor, trainees often wanted to talk about global competition and Japanese human resource use, referring to what they had read or seen on television. Trainees often answered questions for their reasons for volunteering for the classes saying, "You can never learn too much."

A goal of the instructors is to give the trainees confidence on the shop floor. The students revel in that directed confidence. You can see and hear joy in their learning during the class. They like to tell what has been going on the floor and how they learned works. Matt shared this story with the basic class:

> I'm getting the knowledge that, I don't think there were to many people in here who were freely giving. I can give you an example...It helped me a whole heck of a lot. We kept having these cap problems...Now, Don is telling us that, through studies, it doesn't matter if you've got ...80% thread or 60% thread, the pull-out power is the same. So as soon as I learned this, I changed all my drill sizes ... and never had a problem with the caps again. Now we can stop going by trial and error.

Building plenty of practical application into his teaching advances trainees' interest in their own work. Leo was gratified with the progress of his learning and its application. He related:

> If I learn something...I can understand it. I've picked up a lot from the people I work with. I didn't know how much when I got here. [Now I can] communicate better with the engineer, which is very good. You're trained to do everything... No matter what's running, you can run it.

An important part of Don's training philosophy is that people from the floor, engineers and production workers should do the training. Moving the training to this milieu advances the evolving nature of learning.

Continuous Learning

Although learning is sought for a variety of reasons, customary judgment is that, for adults, learning is usually not sought as its own reward. Learning is most often a means to an end. Yet, many adults do study for the sake of learning itself (Zemke & Zemke, 1981; Merriam & Caffarella, 1999). Among this group of self-selected trainees, learning for learning's sake and for gaining credentials for financial gain or to help land a new job after being laid off are of about equal weigh as reasons for taking part in the training. Lifelong learning, the practice of continuously and purposefully acquiring knowledge formally or informally in order to maintain or improve an employment edge for personal improvement, became a mode of the CTI trainees (Schfritz, 1988).

Shaire, a ninth grade dropout, became bored at home after three children. When she took a job at CTI, work kindled an interest in learning. She completed her GED and worked her way into the training program:

> ...because you never know too much. It's always

> good to learn something. I know my job; I know what I am doing, but you can get stagnant doing things. I always volunteer to learn something new. You never know. It'll always come in handy sometime. Life doesn't end in that department.

Another woman said:

> I think most people realize that you have to repaint and re-look at things because they are done differently today. You have to keep up with it. [This class]... is related to a lot of things I deal with...I help and teach certain aspects of it, which is fun, a lot of fun because you really feel responsible...

There is an element of learning for learning's sake among workers who will take the training and apply the proficiency learned to their job, but resist moving to high involvement jobs. Matt, a student in the basic class, claimed that he had no interest in going into a cell to work. However, he loved to talk about using the power his new knowledge gave him in his current job. He clearly felt that the class had given him more practical understanding of his work and the ability to take part in decision making.

> Now I just go right up to the methods engineer and say, 'Look I have this problem...and I think...' ...and I'm sure if I point it out to him he's going to say, "Yeah, you're right."

The feelings and reasoning of these CTI trainees exhibit what adult education theory infers. Building or maintaining self-esteem is often a strong motivating factor, along with job advancement. In addition, the application of learning to relevant problems and integration of new and already known ideas are important (Zemke & Zemke, 1981; Merriam & Caffarella, 1999).

When Bud was asked in what way the training had helped him most he said:

> I communicate better with the engineer directly... You can take an engineer and sit down, understand what he is saying, and the engineer is going to understand what you are trying to get across.

Theory, as well as personal experiences, teaches that adults have an aversion to the risk of new behavior before peers. Yet, they openly bring a great deal of experience to class, where sharing it with fellow students greatly advances learning. Social and cultural influences play a crucial role in adult participation and success in formal education such as corporate training (Zemke & Zemke, 1981; Merriam & Caffarella, 1999). These points were obvious from observation of training class interaction at CTI. Training classes provide a source of social relationships. Sue, coming from a very low-skill job, credited a skilled worker in her department with talking her into volunteering for the program. She had this to say about her fellow students:

> I don't know any of these people here, but they're all...a lot of fun...and they don't knock you down, although I feel stupid if I ask questions...they're always willing to help...explain.

Bo talked about more skilled trainees who brought sample problems to class form the shop floor:

> ...that's good...somebody [with less experience] will ask the question. Any one of use will answer them... I've never seen where somebody's 'I'm better than you. Why should I bother?' Everybody had been very cordial.

Systems Perspective and Benefits to the Organization

To think systemically involves the ability to see connections among seemingly unrelated parts. There is also the inherent capability to live with uncertainty and to look for underlying systemic structure of any given situation. What this means in practice is the realization of a time delay between an action and its consequences, that one needs to understand that immediate closure to a problem may not be as immediate as one would like. This requires patience and the development of understanding.

Whatever their perspective at the start of the program, the CTI trainees now have a "systems" view of their

work and of scholarship. An engineer studying with the advanced class told this story of CTI's move to the new training and the importance of a systems perspective on the production line:

> The CNC machine...it's a wonderful tool but you need good operators. They're not just button pushers; they have to be able to diagnose problems... know how to correct a problem and even get in and edit a program...

The wisdom on the shop floor is that the new learning environment has been forced up into the company, forced up by workers who saw a need to learn more about the whole production process. "It came from the floor up, not from the top down." In Don Riley's view:

> The need came from the shop floor, created with the help of the shop floor. I went [to the production workers] to find out just what to teach and where we wanted to go with the training. I got a lot of input from the individuals on the shop floor, who were running the processes at the time. They were the ones that badgered the living daylights out of their supervisors.

Other skilled workers illustrate the key characteristics of systemic thinking. Sharie is a coordinator who takes responsibility for much of the production planning in her department. Her systems perspective and interest in benefits to the organization was clear when she talked about the effect on demand for her department's products due to recent tornadoes. Although the coming of Spring usually meant a cutback in hours worked in her department, Sharie convinced the foreman that they should keep production levels up because of rebuilding that would be taking place. She talked of opportunities from rebuilding, but also of her concern that shoddy construction practices had given fastener systems such as CTI's a bad name. Sharie said that the company should make sure that building inspection and building code boards got the right message. This is a systems perspective from a ninth grade dropout, who after three children became weary of household management. She also trains operators on the shop floor. In the training program, she joined in helping build what looked like Senge's "Learning Organization," "..where people continually expand their capacity to create the results they truly belive in" (Senge, 1990a, p. 3).

Bo talked about the fact that production issues had replaced sex and sports as break time topics for trainees:

> ...they're allowed to use their minds a little bit, kicking the cobwebs out...these guys love this course, jogging and getting their minds active. They say, 'Let me look and see what I'm really doing' versus 'I'll just do it.' They've caught a lot of things...that should be straightened out, where, without this course, they would have never... [Before] it was 'If it works, it works.' Now it's, 'It can be better, why do it this way?'

Trainees are keen on the importance of global competition and the connection between competitiveness and their well being. Although they are suspicious of motives, they do accept the inevitability of change. When Sharie said, "CTI won't be here twenty years down the line, unless we smarten up," she was expressing a view of reality that trainees feel demands action. Floyd is a machine operator who has been with CTAI for five years. As he sees things:

> The Company is making a major transition. Their ultimate goal is to ... compete better with global competition. They've been trying to cut and streamline to make it more efficient.

Betty Jane serves in a downsized Quality Assurance Department. She expressed excitement about the changes taking place: "I like what I am doing! ... building quality into the work" is important for competitive success. "Japan has done this before their recession."

Like most of the trainees in the program, she was cognizant of and articulate about changes affecting her:

> Manufacturing is going through another industrial revolution... more of a technological angle...I have to be more versatile. It's necessary to keep your

> education going...[it] keeps you up to date, because everything is changing so fast... In today's world, you have to know everything to keep even.

Gloria narrated the most positive assertion on the change under way at CTI. She works in a department transformed to an autonomous work group, independent of the cell program. She talked about her new involvement and its effect on her and CTI.

> In enjoy being able to have responsibility to make my own decisions. At this time, we're trying to work out problems we have with the first shift because there has to be communication between both shifts to make the whole thing work right.
>
> We make our own hours. We check the production schedules. If, by the end of the week, it seems like we're behind, we can schedule our own overtime... Say we need maintenance, we go right to the maintenance department. The boss actually wants us to make all our own decisions. We make all our own decisions between the group.
>
> It may work out better, in the long run, that way because we know better what we're doing. As far as someone sitting upstairs in an office...things may work out on paper for them, but to be right here, on the floor, may not be the same.
>
> Now, I'm losing money when the machine is shut off so the stressful part of winding wire is gone. [The department is now on salary.]...of course, we have to fix the machines...when they machine shuts off, the company is losing money. I have to look at like that's my job also...If we're not pleasing the customers by getting orders they want out on time, then these customers aren't going to reorder.

The impetus associated with the CTI trainee's new skills and learning is self-motivated. Feelings of satisfaction come with their own work, but also from the program. They are pleased with their knowledge and the use of their skills and with working and studying with others who now have similar understanding. They are also pleased to use their training as a source of responsibility and authority and to see their job as part of CTI. In talking about learning, they integrate their skills with the change at CTI and with the global economy. While there is an expected financial component to the seeking of knowledge, they also want to learn for learning's sake.

Conclusions

For the workers in this study learning is an evolving process, as needs change and knowledge matures. Whatever their perceptions at the start, the trainees have adopted a life-long mindset with a systems view of work. The trainees in this study are willing to embrace empowerment, responsibility, and learning. Much of the impetus associated with these workers' new skills and learning is self-motivated, based on their perception of the workplace reality around them. They integrate their learning with the change at work and with the change in the global economy.

The effective use of advanced manufacturing requires workers with skill and also understanding of the more basic competencies and a whole organization perspective. The question of what specific skills workers should learn is becoming less important. Today not only are jobs becoming more complex, but also firms want more flexibility and responsibility from workers. Workers must stay abreast of rapidly changing technology and accept greater responsibility; they must also become full members of an evolving learning organization. Organizational learning allows for the growth and enhancement of individual capabilities for the benefit of both the individual and the organization. They key unifying skill of organizational learning, systems thinking, requires the ability to see the overall patterns inherent in any given situation in order that the most effective decision can be made. It is an ever-evolving process. The workers in this study have been very satisfied with their learning and the use of their own skills. There has been a renewed commitment on the part of the workers for continued involvement, growth, and learning – this can only augment the overall effectiveness and viability of the organization.

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Mixed Evidence Regarding the Correlation between Ticket Prices, Fan Costs and Team Payroll from the National Hockey League

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Introduction

Owners of professional sports teams, in an attempt to defray criticism for increasing ticket prices, often argue that the ticket price increases are necessary to offset increases in team payroll. They argue that if they do not increase ticket prices, they will not be able to retain current star players or sign marquee free agents. The implication is that a failure to raise ticket prices will eventually decrease team performance.

Leeds and Von Allmen (2001) argue that the connection between ticket prices and team payroll is far different than what team owners want the public to believe. They argue that player contracts should not be factored into the setting of optimal ticket prices because these contracts represent a **fixed cost**, and as such, cannot factor into the golden rule of profit maximization (i.e. setting marginal revenue equal to the marginal cost of selling an additional ticket). Despite the logic in their argument, the mythical correlation between ticket prices and team payroll still exist, in part because little empirical work has addressed the nature and causes of team-to-team variation in ticket prices or seasonal increases in ticket prices in professional sports.

The purpose of this article is to determine what drives differences in average ticket prices and ticket price increases (as well as overall fan costs) across teams and over time in the National Hockey League (NHL). Addressing this question will provide empirical evidence concerning the issue of whether team payrolls influence the level and rate of change in average ticket prices.

Literature Review

Quirk and Fort (1992) concluded that ticket prices for professional sports teams represent the best-informed *guesses* by management concerning what consumers are willing to pay. This suggests that sport managers do not rely on quantitative methods to determine optimal prices, but rely on their gut instincts. Howard (1995) noted that pricing decisions seem to be loosely based on either the perceived revenue needs of the organization or management's assessment of what the market will bear. Consistent with this last notion is the concept of consumers' *expected price thresholds* discussed by Monroe (1971). He argued that consumers have a range of prices they are willing to pay for a particular product or service. People refrain from purchases when the price is too expensive, and even when the price is too low (a low price could reflect poor quality).

Howard argued that increasing consumers' expected price threshold depend greatly on raising their perception of the value of the team. McCarville and Crompton (1987) found that consumers' threshold levels could be increased if teams promote recent success in an attempt to build brand loyalty. This explains why it is not uncommon for pro sports teams to market themselves early and often after an extremely successful season.

Fort (1998) argued that the cartel structure of pro sports leagues has enabled team owners to obtain favorable leasing arrangements and sizable amounts of public funding to build new stadiums. Given that the demand for pro sports entertainment is relatively inelastic, a portion of the costs associated with a new stadium is passed on to the consumer. Hence, it should be expected that costs associated with a new stadium are likely to influence ticket prices.

Another reason why consumers' willingness to pay for professional sports has become more inelastic during the nineties is related to the composition of those in the stands. Siegfried (2000) noted that corporations trying to wine-and-dine clients will not blink at ticket price increases because it represents only a small portion of a firm's budget, whereas the same price increase could represent a substantial portion of the average worker's budget. He also argued that ticket price increases are due to higher income levels among the top 20% of people who are buying the highest-priced seats.

Leeds and Von Allmen (2001) argue that team payrolls should not influence ticket prices because payrolls are a fixed cost, and as such, cannot factor into the profit-maximizing rule of setting marginal revenue equal to marginal cost. They argue that the marginal cost of selling an additional ticket and allowing an additional person into a facility is essentially zero prior to full capacity, and then infinitely large once maximum capacity is reached. Furthermore, unless capacity size is altered, this marginal cost curve will not shift. Marginal revenue is determined by demand, and shifts as demand shifts.

It stands to reason, then, that sustained success, large seasonal changes in performance, and percentage of capacity filled are all factors that could potentially shift the demand to watch a team. Signing a marquee free agent could also increase demand by lifting expectations about future performance. The only situation in which ticket prices could be related to team payroll, according to Leeds and Von Allmen, is if signing a new marquee player increases consumer expectations.

In sum, the literature suggests that ticket prices are altered by revenue needs of the team and management's assessment of customers' price threshold levels. Costs associated with a new stadium and improved team performance are more likely correlated to ticket prices than team payroll.

Rishe (2001) found preliminary evidence that overwhelmingly rejected the notion of a correlation between ticket prices and team payroll in the National Football League (NFL). After accounting for various local economic factors and team-specific demand and cost considerations, he found that ticket prices and fan costs were most sensitive to team performance, the presence of a new stadium, and household income of NFL attendees.

Model Specification

What determines differences in ticket prices across cities in the NHL, and what causes changes in ticket prices from season to season? The average ticket price for a given team in a given year is most likely a function of three things: local economic factors, team specific demand factors, and team specific cost factors (e.g. team payroll and costs associated with a new stadium). Seasonal increases in ticket prices are most likely a function of changes in local economic conditions, changes in demand to see the team, and changes in cost.

Local Economic Factors

Population size, per capita income in NHL cities, and the consumer price index could impact the average ticket price for NHL teams. The larger the local population, the more potential buyers, and hence, the larger the demand to watch NHL football. Assuming professional sports are a normal good, higher household income suggests higher demand, and hence, higher ticket prices. The higher the consumer price index, the more expensive the cost of living in a particular region, and hence, the higher the ticket prices.

Referring to seasonal changes in ticket prices, larger local increases in the CPI imply larger increases in the cost of living in that city. Hence, one might expect larger ticket

price increases in that city. Also, cities with larger household incomes may have less elastic demand for football tickets because the ticket purchase represents a smaller portion of their budget. Hence, higher household incomes could yield higher ticket price increases.

Team Specific Demand Factors

Number of wins (either from the previous year or recent history), playoff or 'final four' appearances, and attendance (i.e. either from the previous year or recent history) are factors that would cause deviations across teams for the demand to watch NFL football, and hence, lead to differences in average ticket prices. More wins suggest higher quality, thereby leading to higher demand and higher ticket prices. The same argument can be made if a team reached the 'final four' of the Stanley Cup playoffs the previous year. Attendance is another indication of fan interest. Teams that have a higher percentage of their capacity filled are teams with higher demand for their product, and hence, we would expect higher ticket prices for these teams. Changes in average number of wins and changes in attendance reflect enhanced quality and fan interest, respectively. Hence, increases in either should be positively related to seasonal increases in ticket prices.

Team Specific Cost Factors

Though professional sports teams often receive public funding to build new arenas, teams usually have to put up some money, and it is not uncommon for them to pass this burden onto the fans in terms of higher ticket prices. Hence, the presence of a new arena should influence both the level and change in the average ticket price.

The key variable in this analysis is team payroll and changes in team payroll. As mentioned in the introduction, owners would argue that there is a direct correlation between ticket prices and team payroll. Most economists argue that such a correlation is weak at best, and only exists if a team acquires a superstar free agent that increases consumer expectations about performance, which would thereby increase team specific demand and ticket prices.

Hence, two model specifications are in order. The first attempts to explain variations in average ticket prices across teams. The second focuses on the causes of ticket price increases. The first model is:

$$TIX = \alpha_0 + \alpha_1 POP + \alpha_2 INCOME + \alpha_3 CPI + \alpha_4 HPTS + \alpha_5 STAD + \alpha_6 PAY + \alpha_7 TREND + \varepsilon \quad \textbf{(eq. 1)}$$

TIX	the average ticket price for team j in year k;
POP	the population of the metropolitan statistical area (MSA) for team j, estimated for 1999;
INCOME	the average household income for the city in which team j plays, estimated for 1999;
CPI	the consumer price index, measured annually from 1995-2000;
HPTS	the average number of points for team j spanning years (k-1) through (k-3) (i.e. a three-year average);
STAD	= 1 if team j is playing its first season in a new stadium = 0 otherwise;
PAY	team payroll for team j in year k measured in millions;
TREND	a trend variable; and
ε	an independently and identically distributed random error term with zero mean and constant variance

The expected sign on all coefficients is positive. If the team payroll coefficient is not statistically significant, it can be surmised that team payroll does not explain differences in average ticket prices across teams.

The second model is:

$$\Delta TIX = \beta_0 + \beta_1 POP + \beta_2 INCOME + \beta_3 \Delta CPI + \beta_4 STAD + \beta_5 \Delta PAY + \beta_6 \Delta PCHG + \beta_7 FOUR + \beta_8 TREND + \varepsilon \quad \textbf{(eq. 2)}$$

ΔTIX	the percentage point change in ticket price for team j from year k-1 to year k;
ΔCPI	the annual percentage change of the consumer price index within the MSA of team j for year k-1;
ΔPAY	change in team payroll for team j between years k-1 and year k;

FOUR	= 1 if team j appeared in the 'final four' of the Stanley Cup playoffs in year k-1 = 0 otherwise;
ΔPCHG	change in number of points for team j between years (k-2) and k-1;
TREND	a trend variable; and
ε	an independently and identically distributed random error term with zero mean and constant variance

The expected sign on all coefficients is positive. If the coefficient on ΔPAY is not statistically significant, it can be surmised that changes in team payroll do not explicitly cause ticket price increases.

Data

Average ticket prices, fan cost indices, and percentage increases in both were obtained from the fan cost index report published by Team Marketing Reports (www.teammarketing.com). Ticket prices and fan cost indices were obtained for all NFL seasons between 1997 and 2001. This means that the data set spans 5 years, and contains 150 data points. This data is collected by Team Marketing Reports. They use information provided by team executives, directors, vice presidents, and president/CEO-level executives. The Fan Cost Index is a composite of the average cost for a typical family of four that purchases a combination of 4 midrange tickets, 2 beers, 4 sodas, 4 hot dogs, parking, 2 programs, and 2 caps.

Consumer price index data was obtained from the Bureau of Labor Statistics web site (www.bls.gov). City specific CPI data from 1995-2000 was available for all NFL cities except Nashville, Jacksonville, Phoenix, Charlotte, New Orleans, Buffalo, and Indianapolis. However, the BLS has CPI estimates for cities of different sizes and different regions that can be used as a proxy. For example, the CPI data used for Buffalo was for 'size class B' (i.e. MSA between 50,000 and 1,500,000) cities located in the northeast.

There were 6 Canadian teams in the study: Calgary, Edmonton, Montreal, Ottawa, Toronto, and Vancouver. Statistics Canada (www.statscan.ca) provides measures of consumer prices. The methodology used to obtain these statistics is almost identical to methods used by the Bureau of Labor Statistics. CPI data collected from Statistics Canada was purchased from 1995-2000 for each of the Canadian cities under study herein.

1999 estimates of MSA population size and MSA per capita income were obtained from The Dismal Scientist web site (www.dismal.com). 1999 estimates of per capita income for the Canadian cities was obtained from Statistics Canada, and then converted into US dollars. Data on NHL win percentages, points, and playoff history was obtained from www.letsgowings.com, a web site for the Detroit Red Wings that contains voluminous historical hockey data. Attendance, percent of capacity filled, and changes in both were obtained from www.ballparks.com, a comprehensive source of data on stadiums and arenas for all professional sports teams. Team payroll data was obtained from proicehockey.about.com.

Given that the data set is pooled, heteroskedasticity is likely to be present, and Durbin-Watson statistics verified its presence after initial ordinary least squares (OLS) estimation. Other diagnostics revealed that the residuals were serially correlated. Therefore, OLS standard errors were modified using the Newey-West correction technique for heteroskedasticity and serial correlation. This technique yields consistent estimates of the covariance matrix in the presence of both heteroskedasticity and autocorrelation (Newey, Whitney, and West, 1987).

Results

Table 1 reports average ticket prices for all NHL teams between 1997 and 2001. The league average ticket price has increased by roughly $7 during this period. In 2001 the league average ticket price is $49.86, the Dallas Stars have the most expensive average ticket prices ($75.91), and the Calgary Flames have the least expensive average ticket prices ($32.79).

Table 2 reports fan cost indices for all NHL teams between 1997 and 2001. The average cost to attend a

NHL game has increased by between $5 and $20 per year since 1996. In 2001 the league average fan cost index is $275, the Dallas Stars are the most expensive team to watch for a family of four ($386), and the Calgary Flames are the least expensive ($188).

A. Differences in Ticket Prices and Fan Costs across NHL Teams

Table 3a report results from estimating equation 1 using average ticket prices as the dependent variable. The F-statistic suggests that the overall model has explanatory power, and the adjusted R^2 statistic suggests that roughly 55 % of the variation in average ticket prices can be explained by the joint variation of the independent variables.
The following conclusions can be made with 95 % confidence:

- average ticket prices increase by 45 cents given a 1000 person increase in population;
- a team playing in a new stadium for the first year has average ticket prices that are $10.80 more expensive than all other teams;
- a one win increase in a team's average number of wins from the previous three seasons (i.e. 2 additional points) increases average ticket prices by 25 cents;
- average ticket price is 41 cents higher given a $1 million increase in team payroll.

Table 3b uses the fan cost index as the dependent variable. All coefficients are statistically significant at the .05 level with their expected signs. An additional win increases fan costs by 94 cents. A new stadium increases fan costs by $47.24. The trend variable suggests that fan costs have increased by $4.09 per season. And a $1 million increase in team payroll increases fan cost by $1.81.

Table 4a report results from estimating equation 1 using the natural logarithm of average ticket prices as the dependent variable. The F-statistic suggests that the overall model has explanatory power, and the adjusted R^2 suggests that 53 % of the variation in the log of average ticket prices can be explained by the joint variation in the independent variables. The following conclusions can be made with 95 % confidence:

- average ticket prices have increased 1.60 % per year over the last five years;
- a team playing in a new stadium for the first year has average ticket prices that are 20.27 % more expensive than all other teams;
- a one win increase in a team's average number of wins from the previous three seasons increases average ticket prices by about 0.61 %;
- an additional $1 million in payroll increases average ticket price by 0.82 %.

Table 4b report results using the natural logarithm of the fan cost index as the dependent variable. All coefficients are statistically significant and have the expected sign. An additional win increases fan costs by 0.42 %. A new stadium increases fan costs by 17 %. The trend variable suggests a 1.6 % increase in fan costs over the sample period. And an additional $1 million in payroll increases fan costs by 0.66 %

The results from all four specifications offer a different spin on the correlation between ticket prices and team payroll than was the case in the football study. To this point it seems that there is a correlation between ticket prices and team payroll in the NHL. The data suggests that teams with $10 million more in payroll costs, ceteris paribus, will have ticket prices that are 8.2 % higher and fan costs that are 6.6 % higher.

Section III noted several team specific demand factors that have yet to be accounted for. These factors included things such as attendance (either from the previous year or most recent three-year average) or qualitative measures of exceptional performance from the previous year (denoted by either a playoff or Super Bowl appearance). These variables were not included in earlier specifications because each is highly correlated with number of wins, and hence would lead to statistical problems associated with multicollinearity.

When replacing historical average of team points with any of these other proxies for team specific demand, the

Table 1: Average Ticket Prices (1997-2001)

The data reports average ticket prices for all NHL teams between 1997 and 2001

Team	2001	2000	1999	1998	1997
Anaheim	$50.66	$50.66	$46.18	$44.36	$41.11
Atlanta	49.91	21.29	62.14		
Boston	52.36	49.36	49.22	47.50	48.17
Buffalo	42.13	40.39	37.07	38.69	37.52
Calgary	32.79	32.86	27.85	26.04	21.90
Carolina	38.70	41.26	47.34	38.15	41.68
Chicago	45.57	47.57	44.00	44.00	44.00
Colorado	63.35	63.11	59.09	49.28	49.28
Columbus	48.65	48.65			
Dallas	75.91	56.43	50.87	45.88	43.49
Detroit	53.64	52.39	50.23	48.63	43.68
Edmonton	34.50	34.85	33.63	29.82	27.43
Florida	47.73	47.71	48.46	47.44	38.30
Los Angeles	56.33	54.03	49.22	41.66	35.30
Minnesota	50.24	49.26			
Montreal	39.06	38.36	44.97	43.10	43.90
Nashville	43.52	43.48	43.48	43.48	
New Jersey	54.43	51.12	46.50	46.50	43.03
NY Islanders	34.68	34.68	34.68	38.01	47.30
NY Rangers	65.82	65.82	65.82	58.83	58.83
Ottawa	46.23	43.05	38.61	32.60	32.93
Philladelphia	62.31	62.31	58.19	53.25	52.75
Pheonix	39.72	38.73	39.63	39.80	39.80
Pittsburgh	53.42	45.45	43.67	44.77	47.84
San Jose	49.11	47.22	45.00	41.57	41.57
St. Louis	52.51	45.02	46.21	44.20	44.43
Tampa Bay	45.09	40.56	35.74	36.80	42.25
Toronto	70.29	67.01	69.92	41.78	40.70
Vancouver	48.78	46.80	40.01	36.09	36.09
Washington	44.48	38.42	41.03	52.71	52.71
League Average	49.86	47.70	46.38	42.78	42.15

Table 2: Fan Cost Indicies (1997-2001)

Table 2 reports fan cost indicies for all NHL teams between 1997 and 2001. The fan cost index for a family of four is comprised of a market basket of four tickets in midrange seats, parking, four sodas, four hot dogs, 2 beers, and 2 souvenir caps.

Team	2001	2000	1999	1998	1997
Anaheim	$266	$276	$271	$249	$232
Atlanta	295	282	271		
Boston	297	272	330	274	274
Buffalo	239	237	277	216	209
Calgary	188	180	220	148	135
Carolina	225	2327	158	216	223
Chicago	276	286	254	270	262
Colorado	352	339	272	267	267
Columbus	275	276	316		
Dallas	386	292		241	232
Detroit	288	293	273	271	237
Edmonton	189	196	284	159	158
Florida	255	251	184	253	225
Los Angeles	321	312	253	255	223
Minnesota	281	267	283		
Montreal	204	203		229	229
Nashville	237	245	243	229	
New Jersey	318	304	231	258	244
NY Islanders	216	210	276	229	266
NY Rangers	375	373	208	348	338
Ottawa	228	218	368	170	180
Philladelphia	328	333	196	277	273
Pheonix	242	238	299	232	231
Pittsburgh	290	254	239	234	243
San Jose	282	277	244	256	241
St. Louis	281	245	267	237	236
Tampa Bay	248	240	214	207	229
Toronto	349	329	350	227	225
Vancouver	249	244	216	199	201
Washington	262	237	262	303	282
League Average	275	265	258	239	234

Table 3a: Average Ticket Prices

Variable	Coefficient	Standard Error	t-statistic	P-value
C	7.978933	4.922421	1.620937	0.1075
POP	0.000449	0.000230	1.952631	0.0530
INCOME	0.000202	0.000114	1.780391	0.0774
CPI	0.021938	0.020899	1.049706	0.2958
HPTS	0.122726	0.042607	2.880434	0.0047
PAYMIL	0.409631	0.068780	5.955658	0.0000
STAD	10.79763	4.176003	2.585638	0.0108
TREND	0.535447	0.414856	1.290679	0.1991
R-squared	0.571	F-statitstic	24.56	
Adj. R-squared	0.548	Prob (F-statistic)	0	

The Newey-West correction technique is applied to ordinary least squared coefficients to remove the effects of heteroskasticity and autocorrelation. The results use the average ticket price for team j in year k as the dependent variable.

Table 3b: Fan Cost Index

Variable	Coefficient	Standard Error	t-statistic	P-value
C	33.35939	21.77665	1.531888	0.1280
POP	0.004287	0.001044	4.105046	0.0001
INCOME	0.001806	0.000487	3.711122	0.0003
CPI	0.198223	0.091738	2.160762	0.0326
HPTS	0.469608	0.191626	2.450650	0.0156
PAYMIL	1.809427	0.361682	5.002814	0.0000
STAD	47.23862	16.57149	2.850595	0.0051
TREND	4.088862	1.823941	2.241774	0.0267
R-squared	0.659	F-Statistic	35.60	
Adj. R-squared	0.640	Prob (F-statistic)	0	

The Newey-West correction technique is applied to ordinary least squared coefficients to remove the effects of heteroskasticity and autocorrelation. The results use the fan cost index for team j in year k as the dependent variable.

Table 4a: Natural Logarithm of Average Ticket Prices

Variable	Coefficient	Standard Error	t-statistic	P-value
C	2.925686	0.113810	25.70683	0.0000
POP	9.83E-06	4.89E-06	2.011718	0.0463
INCOME	4.94E-06	2.38E-06	2.074871	0.0400
CPI	0.000703	0.000469	1.500768	0.1359
HPTS	0.003038	0.000945	3.213502	0.0017
PAYMIL	0.008231	0.001393	5.90245	0.0000
STAD	0.202678	0.070652	2.868689	0.0048
TREND	0.011247	0.009697	1.159798	0.2483
R-squared	0.551	F-statistic	22.58	
Adj. R-squared	0.526	Prob(F-statistic)	0	

The Newey-West correction technique is applied to ordinary least squared coefficients to remove the effects of heteroskasticity and autocorrelation. Results use the natural logarithm of the average ticket price for team j in year k as the dependent variable.

Table 4b: Natural Logarithm of Fan Cost Index

Variable	Coefficient	Standard Error	t-statistic	P-value
C	4.60456	0.093471	49.23135	0.0000
POP	1.66E-05	4.11E-06	40.42315	0.0001
INCOME	7.64E-06	1.89E-06	3.946628	0.0001
CPI	0.001010	0.000387	2.607891	0.0102
HPTS	0.002117	0.000751	2.80556	0.0056
PAYMIL	0.006566	0.001273	5.158167	0.0000
STAD	0.170463	0.054960	3.101555	0.0024
TREND	0.015997	0.007740	2.066893	0.0407
R-squared	0.643	F-statistic	33.18	
Adj. R-squared	0.624	Prob(F-statistic)	0	

The Newey-West correction technique is applied to ordinary least squared coefficients to remove the effects of heteroskasticity and autocorrelation. Results use the natural logarithm of the fan cost index for team j in year k as the dependent variable.

Table 5B: Percentage Point Increase in Average Ticket Prices

Variable	Coefficient	Standard Error	t-statistic	P-value
C	6.239030	5.433204	1.148315	0.2531
POP	-0.000132	0.000426	-0.310713	0.7566
INCOME	1.51E-05	0.000172	0.087747	0.9302
CPICHG	1.574293	1.258653	1.250794	0.2134
PAYCHG	0.060659	0.038593	1.579508	0.1168
WCHG	0.074955	0.207978	2.679080	0.0084
FOUR	7.8061587	3.652666	2.137120	0.0346
STAD	24.45001	7.498726	3.393911	0.0009
TREND	-1.650185	1.093964	-1.508446	0.1340
R-squared	0.271	F-statistic	5.61	
Adj. R-squared	0.222	Prob(F-statistic)	0	

The Newey-West correction technique is applied to ordinary least squared coefficients to remove the effects of heteroskasticity and autocorrelation. The results use the percentage point increase in average ticket price for team j in year k as the dependent variable.

Table 5a: Percentage Point Increase in the Fan Cost Index

Variable	Coefficient	Standard Error	t-statistic	P-value
C	3.44608	4.639043	0.742957	0.4589
POP	-0.000167	0.000298	-0.559044	0.5772
INCOME	132E-05	0.000134	0.098438	0.9217
CPICHG	0.884429	0.901591	0.980965	0.3286
PAYCHG	0.047380	0.028542	1.660001	0.0995
WCHG	0.066571	0.021830	3.049531	0.0028
FOUR	7.147712	2.134872	3.348075	0.0011
STAD	20.49839	6.268008	3.270320	0.0014
TREND	-0.764738	0.705345	-1.084205	0.2804
R-squared	0.312	F-statistic	6.85	
Adj. R-squared	0.266	Prob(F-statistic)	0	

The Newey-West correction technique is applied to ordinary least squared coefficients to remove the effects of heteroskasticity and autocorrelation. The results use the percentage point increase in the fan cost index for team j in year k as the dependent variable.

empirical results are unaffected. That is, the coefficients on each team specific demand variable examined were positive and significant. The statistical significance of the other variables was unaffected. In short, the conclusion that team payroll impacts average ticket prices and overall fan costs is not sensitive to the proxy used for team specific demand.

B. Determinants of Seasonal Increases in Ticket Prices and Fan Costs

Table 5a report results from estimating equation 2 using the percentage point change in average ticket prices as the dependent variable. The F-statistic suggests that the overall model has explanatory power, and the adjusted R^2 suggests that 22 % of the variation in the percentage point increase in average ticket prices can be explained by the joint variation in the independent variables. It can be said with 95 % confidence that:

- a team playing in a new stadium for the first year realized an increase in average ticket prices that was 25.45 percentage points larger than all other teams;
- a team that reached the 'final four' in the previous season realized an increase in average ticket prices that was 7.81 percentage points larger than all other teams;
- a one win increase in the number of wins from the previous season increased the rate of ticket price increase by about 0.15 percentage points.

All other variables are not statistically significant, including changes in team payroll.

Table 5b report results from estimating equation 2 using the percentage point change in the fan cost index as the dependent variable. It can be said with 95 % confidence that:

- a team playing in a new stadium for the first year realized an increase in their fan cost index that was 20.50 percentage points larger than all other teams;
- a team that reached the 'final four' in the previous season realized an increase in their fan cost index that was 7.15 percentage points larger than all other teams;
- a one-win increase in the number of wins from the previous season increased the rate of increase in the fan cost index by 0.13 percentage points.

All other variables are not statistically significant, including changes in team payroll.

The results from Table 5a and Table 5b suggest that the primary determinants of seasonal increases in ticket prices and overall fan costs are the presence of a new stadium, a run deep into the Stanley Cup playoffs from the previous year, and improved performance in terms of the number of team wins. Changes in team payroll do not seem to significantly influence seasonal increases in either ticket prices or fan costs.

When replacing number of wins from the previous season with other proxies for team specific demand (i.e. attendance as a percent of capacity or playoff appearance), the empirical results are unaffected. That is, the coefficients on each team specific demand variable examined was directly and significantly correlated to seasonal increases in ticket prices and fan costs. The statistical significance of the other variables was unaffected. In short, the conclusion that team payrolls do not impact seasonal increases in ticket prices or overall fan costs is not sensitive to the proxy used for team specific demand.

Conclusions

The empirical evidence from the National Hockey League regarding the correlation between ticket prices and team payroll is mixed. The results suggest that cross-sectional differences in the size of team payroll explains some of the variation in average ticket prices across teams, though payroll is only one of many variables (population, historical success, presence of a new stadium) that helps explain these differences. The evidence does not support the hypothesis that changes in payroll significantly impact seasonal increases in ticket prices and fan costs.

These findings represent a slight departure from a similar study conducted using data from the National Football League (Rishe, 2001). The evidence from that study strongly rejected the notion that team payroll impacted either cross-sectional differences in ticket prices and fan costs, or seasonal increases in the same. It is concluded that the results differ because of one fundamental structural difference between the two leagues. NFL teams must abide by a salary cap, whereas NHL teams do not. This has lead to a greater variability in team payrolls in hockey, and hence, a stronger correlation between payroll and success.

Consider simple linear regressions between success and team payroll for the NHL and NFL separately (with t-statistics in parentheses):

PTS	=	72.55**	+	0.41PAY**	(NHL)
		(13.7)		(2.58)	
WPCT	=	0.416**	+	0.0015PAY	(NFL)
		(6.07)		(1.19)	

This provides empirical evidence that the correlation between winning and team payroll is more significant in hockey than in football. Perhaps this explains why cross-sectional differences in ticket prices are partially due to payrolls in the NHL. Management knows that higher payrolls are more likely to lead to better success, and if they believe fans will buy into that argument, this gives owners the leverage to increase ticket prices.

But it must be reiterated that changes in team payroll did not affect seasonal increases in ticket prices or fan costs in hockey, and that the impact payroll had on cross-sectional differences was one of many factors. Hence, it is still difficult for owners to argue that rising player costs forces them to raise ticket prices.

One area for future research is to analyze the impact that player salaries have on ticket prices and fan costs in both the National Basketball Association and Major League Baseball. Baseball has received much press concerning the troubling fact that teams (in the absence of any kind of salary cap) seemingly buy their way into the playoffs in recent years. Basketball has a salary cap, though their cap is notorious for its numerous loopholes that still allow for sizable differences among team payrolls. Continued research in this area could pinpoint how these leagues compare with each other in terms of the degree to which ticket prices either are or are not correlated with team payroll.

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