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The Tale of Two Economies: A Comparative Macroeconomic Analysis of Palo Alto and East Palo Alto

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The Tale of Two Economies
A Comparative Macroeconomic Analysis of Palo Alto and East Palo Alto
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Abstract:

Cities in the USA have experienced diverse growth rates and levels of prosperity. Some cities flourish in prosperity, while others suffer economic recession. This study examines why cities have had different outcomes. We investigated three elements: 1) What are the factors that play a role in the shaping of a municipal's economy? 2) What are the implications of these factors? 3) Which policies promote economic growth and prosperity? This essay aims to offer policy directions for cities that are not performing well. The paper applies a comparative analysis of two nearby cities, a flourishing economy contrasted with a troubled economy. This study is intended to set up a learning model for voters and policy makers in such cities. This study focuses on four major elements that affect economic prosperity: real estate, the police force, the budget allocation, and education. This paper concludes that real estate is the best indicator for a city's economic prosperity. We offer methods to increase land values through policy initiatives in the three other categories.

Introduction

We, Aditya Kotak and Safwan Siddiqi, are two students at Lynbrook High School with a profound interest in understanding what makes local economies thrive as well as what makes them fail. With our knowledge and resources, we decided to compare and contrast the economies of two neighboring cities: East Palo Alto and Palo Alto. We contacted Professor Fred Foldvary at San Jose State University's Department of Economics to supervise our research.

Palo Alto, home to Stanford University, one of the world's most prestigious institutions, has a thriving economy with high land values, low crime rates, sophisticated budget allocations, high test scores and low dropout rates. On the other hand, East Palo Alto suffers from several economic problems, including high crime rates, less sophisticated budget allocations, low test scores, and high dropout rates. These negative elements are reflected in the relatively lower land values of East Palo Alto.

Since GDP for cities is not readily measured, we decided to measure the success of the two cities' economies by examining four categories: real estate, the police force, budget allocations, and education.

For real estate, we documented both cities' retailing, demographics, industry, and land values. This was the most vital category in determining the success of the two economies.

For the police force, we documented the crime rates, the police budgeting, the police department's structure and neighborhood watch groups of both cities. This was the second most important category in evaluating the health of the two cities' economies.

For budget allocations, we documented government spending, government budgeting, and spending done by the residents of both cities.

Lastly, for education, we documented the schooling situations including the number of schools, the average test scores, and the dropout rates of both cities. We also looked at why test scores are important for land value.

After all of our data collection, we ran regressions on the data we collected from the four categories and their subcategories, and we found patterns in both economies. From these patterns, we discovered a number of actions that can be taken by city governments to improve their economies.

Part I: Real Estate

Introduction

We found real estate to be an important indicator of the success of a city's economy. Real estate touches all the finances of living in or working in a city. Land values provide a measure of how attractive is the location. The level of land values and their rates of change reveal whether its economy is thriving or failing. In order to get an understanding of real estate, we focused on the retail industry, geography and population, and land values.

Retail Industry

Retail is the process of selling goods and services. Consumer spending, done in the retail industry, accounts for over 70% of the national GDP, as measured by the final sale of goods within a year. Thus the amount spent by consumers gives a measure of how much households are contributing to the flow of the economy.

To compare the consumer spending done in each city, we calculated an average consumer spending per resident. In order to calculate that, we took the revenue from the sales tax, and then

divided that by the city tax percentage, reaching the total consumer spending done in the fiscal year. To avoid proportionality error, we divided the values for the total consumer spending by the respective city's population to calculate average spending per capita. For Palo Alto, the average spending per capita was \$14,857.22, while the average for East Palo Alto was \$7,204.84. The average spending in Palo Alto is more than twice that in East Palo Alto, proving that Palo Alto residents contribute to the flow of their city's economy significantly more than East Palo Alto residents do.

The reason there is so much more spending in Palo Alto is not only because the residents have more money to spend. Palo Alto also has more attractions such as Stanford University and Stanford Mall, attractions that bring more people to spend more money in Palo Alto. East Palo Alto hardly had any attraction of any kind until the Ravenswood 101 (including a Home Depot, Best Buy, and an IKEA store) shopping center was created in 2000. This attracted people from various areas. For many Bay Area residents, the nearest IKEA was now in East Palo Alto.

The creation of the Ravenswood 101 has greatly increased consumer spending in East Palo Alto. To further increase the consumer spending, the city should create a tertiary educational institution in East Palo Alto, so that the city can obtain income through college education the way Palo Alto does through Stanford. East Palo Alto currently does not have a single tertiary educational institution. Moreover, if the city was to create a community college, unemployed residents would have a greater incentive to obtain an education and consequently, reduce the city's unemployment rate.

Geography and Population

The geography of Palo Alto and East Palo Alto is notable because even though the two cities border each other, they are in different counties. The populations of the two cities are largely different, as seen in the cities' distinctly different demographics, which are measured every 10 years in the census. The geography and population are two factors that drive the public appeal of the city.

A summary of our findings can be found in Figure 1.1:

Year	City	White	Asian	Hispanic	African American
2004	1	71.14%	21.18%	5.26%	1.96%
2005	1	69.99%	22.17%	5.41%	1.94%
2006	1	68.83%	23.15%	5.56%	1.92%
2007	1	67.68%	24.14%	5.71%	1.91%
2008	1	66.52%	25.13%	5.87%	1.89%
2009	1	65.37%	26.12%	6.02%	1.88%
2010	1	64.22%	27.11%	6.17%	1.86%
2011	1	63.07%	28.10%	6.32%	1.84%
2012	1	61.91%	29.09%	6.48%	1.83%
2004	0	24.71%	2.52%	54.44%	18.32%
2005	0	24.81%	2.65%	54.82%	17.72%
2006	0	24.91%	2.78%	55.19%	17.11%
2007	0	25.01%	2.91%	55.57%	16.51%
2008	0	25.11%	3.04%	55.94%	15.90%
2009	0	25.21%	3.17%	56.31%	15.30%
2010	0	25.32%	3.30%	56.69%	14.69%
2011	0	25.42%	3.43%	57.06%	14.09%
2012	0	25.52%	3.56%	57.44%	13.48%
	1 = Palo Alto	0 = East Palo Alto			

Figure 1.1 Demographics of Palo Alto and East Palo Alto

As the Asian and white populations grew in East Palo Alto, the dropout rates from the city decreased. In the regression comparing dropout rates to demographics, there is a substantial inverse correlation between the dropout rates and the white and Asian populations. On the contrary, the Hispanic population is correlated with a higher dropout rate. The correlation of higher dropout rates with the demographics is mirrored inversely by the correlation of higher test scores with the demographics.

Land Values

Land values are the estimated market prices of land. In calculating the land value, several contributing or correlated variables (including test scores, crime rates, and geographic location) are taken into account in the regression analysis in this study. Because land rent gives a clear and explicit measure of how attractive the land is to either live in or start a business in, it is the most crucial subcategory of real estate, and it is the most vital indicator of the economy's health. Better and greater public goods, as well as commerce and population density, generate higher land rent. The price of land is a function of the rent of land, interest rates, and tax rates. Thus a high price of land may reflect a greater degree of public goods, but it could also be influenced by low property taxes.

Virtually all variables are taken into account and have statistically significant correlation either inverse or direct to the land value. The police budgeting for example has a t-stat of 6.303, and the test scores have a t-stat of 2.212. The t-statistic is a strong measure of how well correlated a dependent variable (land value) is to an independent variable (police budgeting) in this case.

The counties provide the land values for individual cities. Santa Clara County provided the land values (as well as the improvement values, total values, exemptions, net total and parcel count) since 1999, whereas San Mateo County only provided the total land values since 2004. The total values in Palo Alto have all been substantially higher than the ones in East Palo Alto, and presumably, they were in the years prior to 2004.

The land values are the most significant indicator of the city's economy, as they are the price to live in the city. The higher the land value, the better the city is doing in practically all other aspects.

Conclusion

Real estate is a vital factor in a city's economic status. Palo Alto's retail industry and land values are significantly better than East Palo Alto's. East Palo Alto has improved its retail industry since its creation of the Ravenswood 101, but there is substantial improvement that can still be made. The creation of any type of tertiary educational facility would drastically improve East Palo Alto's consumer spending. Geography and population are other factors. The demographics account for a substantial amount of contrast between the economies of the two cities, as certain demographics are correlated with higher test scores and lower dropout rates, leading to more sophistication in the economy. The land values in Palo Alto explicitly show how Palo Alto is heavily more expensive to live in, demonstrating that its economy is thriving substantially more than that of East Palo Alto.

Part II: The Police Force

Introduction

Indisputably, one of the imperative roles of any government is to keep its residents safe. A sound police department is practically the only way for a city's government to ensure its

residents' safety, as the city's police officers are empowered to enforce criminal law. The per-capita amount of money that a city government spends on its police department is the largest indicator of how much the city's police force is prioritized, and therefore, its spending to prevent and handle crimes with victims largely shows how much the city's government cares about the residents' safety. The police department's infrastructure (including its number and types of divisions) is a vital indicator of how efficiently it can protect its city. There are various factors that indicate a police department's level of sophistication, but the effectivity of the police department is most largely seen in the city's crime rates. Higher crime rates are highly correlated with a weaker police force.

Crime Rates

The crime rates are the largest indicator of how safe the city is. The crimes, which we evaluated, were homicide, rape (including attempts), robbery (including attempts), assault (not including simple assault), total burglaries (including attempts), larceny-theft (including attempts), motor-vehicle theft (including attempts), and arson between the years of 2000 to 2012. There are several more crimes that have occurred in both Palo Alto and East Palo Alto, but these eight crimes have been severe enough to affect the residents' safety. Other crimes including (but not limited to) tax evasion, marijuana possession, gambling, and petty theft are not included because their impact on the city's level of safety is marginal. If a fellow resident of a city is guilty of tax evasion for example, the city is essentially just as safe as it would have been if that resident had paid the taxes.

Because Palo Alto's population (as of the 2010 Census) is 64,403 whereas that of East Palo Alto is 28,155, there would be a sizable proportional error if we compared the two cities' exact number of aforementioned crimes. To avoid this proportional error, we compared the two cities' crime rates calculated per 10,000 residents.

Of the eight crime rates we examined, Palo Alto's rates were significantly lower for all except arson, of which East Palo Alto had a lower rate. The difference in arson rates was small, so this may just be "statistical noise" and nothing meaningful.

Palo Alto's total sum of the eight crimes from 2000 to 2012 is 3,909; the average crime rate for the 13 years is 300 major crimes per 10,000 people. On the other hand, East Palo Alto's total sum is 5,055 and its average is 389 major crimes per 10,000 people. On average, in each year, the crime rate fell by 10.666 per 10,000. The R-squared value of the equation is .525, which means that more than half of the dependent outcome is explained by the independent variables.

On the contrary, East Palo Alto's crime is decreasing by 9.224 per 10,000 with the R Squared Value for the equation is 0.394. So both equations have a coefficient of approximately negative 10, showing that the average total crime rates in both cities are decreasing at approximately the same rate. The fact that both cities' average crime rates are at a relatively close downward trend shows that both cities' police departments have been effective in reducing crime rates. However crime rates are still particularly high in East Palo Alto, so there is still significant room for improvement.

Figure 2.1 depicts a graph of the total crime rates in relation to time for both cities. There is a direct correlation between a higher unemployment rate and higher crime rates. The t-stat of that regression is 1.453. Between 2002 and 2003, the unemployment rate in East Palo Alto went up from 13.5% to 14.4% and in that same time period, Palo Alto's unemployment rate increased from 4.4% to 4.9%. This change is correlated with a higher crime rate total. Palo Alto's crime

rate jumped from 295.48 (major crimes per 10,000 residents) to 361.33 and East Palo Alto's jumped from 392.3 to 464.2.

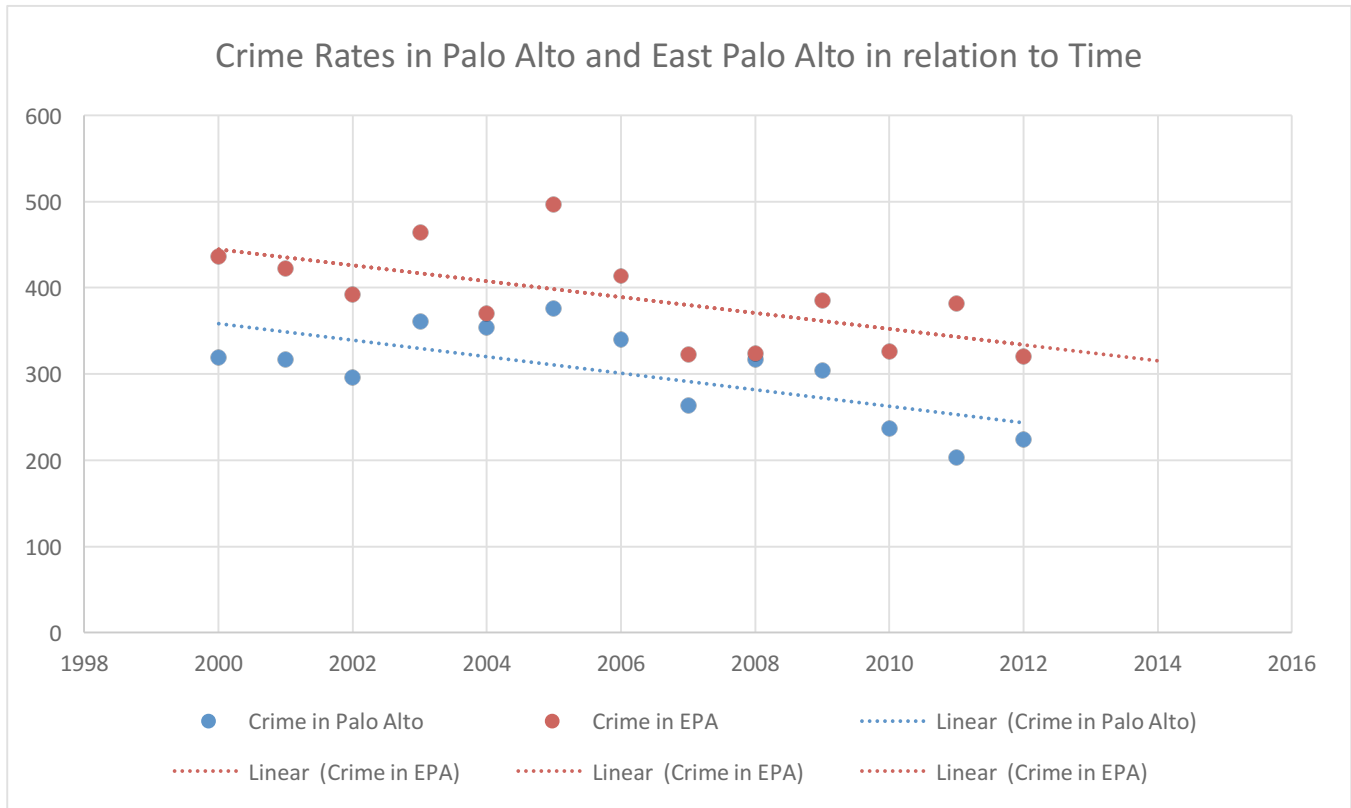


Figure 2.1 Crime Rates in Palo Alto and East Palo Alto

In those same years, the unemployment rates in San Mateo County, Santa Clara County, California and the US also rose. The unemployment rates of cities mirror the trends of the country and the state. Outsourcing of jobs to Asia for example affects the unemployment rate of the entire nation, including Palo Alto and East Palo Alto. Locally a notable difference between the two cities is that Palo Alto's Unemployment Rate only increased 0.5% while East Palo Alto's rose 1.1%. The jobs in Palo Alto are far more skilled than the jobs in East Palo, and cyclical unemployment is far more common in East Palo Alto. Palo Alto contains Stanford University, in which the employees are skilled, and steadily employed. The contrast in worker qualifications between the two cities is based on a higher emphasis on education leading to a lower dropout rate in Palo Alto than in East Palo Alto. Both dropout rates and lower test scores lead to unemployment, which is why both of them also have a direct correlation with higher crime rates.

Crime rates are the primary data that show how safe an area is to live in. It is one of the most vital responsibilities of any government to reduce crime rates in order to keep its residents safe. While Palo Alto's crime rates have never been an immense issue, crime in East Palo Alto's has been. In order for East Palo Alto to reduce its crime rates, the city needs lower unemployment rates, which can be achieved by a higher emphasis on education and with better policies for business. As noted above, the crime rates in East Palo Alto have been at a downward trend, proving that the city has been getting safer.

Budgets

Every city government allocates specific amounts to its respective police departments each fiscal year. There is a substantial inverse correlation between the police budgeting and the crime rates. The amount of money allocated to the city's police department allows for a more effective police force (with more officers as well as more sophisticated resources) and it also shows how highly the city's safety is prioritized by its government.

To draw conclusions on which city prioritizes its residents' safety higher based on a comparison of that raw total amount allocated would be fallacious because Palo Alto's population is substantially higher than EPA's. To compare police budget allocations, we calculated the average amount allocated to the police department per capita by both. We took the police budget allocations for the fiscal years from 2012-13 to 2014-15, added them up to a raw total, and divided the total by the city's total populations (the sum of the city's three distinct populations in the three fiscal years). Palo Alto's average police expenditure per capita is about \$498.42 and East Palo Alto's is about \$324.51. This difference in the average amount spent per capita on the police force by each city directly correlates with East Palo Alto's significantly higher average crime rates.

A higher budget allows for a more effective police force (since it allows for both a higher number of police officers to be hired and more sophisticated equipment to be afforded), consequently reducing crime rates allowing for a safer city.

Infrastructure

The infrastructure of the police department is the department's organizational structure. This includes the various divisions. Every city is unique, and different divisions are needed in different cities. When two cities are located side-by-side, the residents likely have relatively similar needs, and the number of divisions shows a more sophisticated infrastructure.

Palo Alto's police infrastructure is divided into 7 divisions: the Field Services Division, the Technical Services Division, the Investigations and Crime Prevention Services Division, the Traffic Services Division, the Police Personnel Selection Division, the Animal Services Division, and the Parking Services Division. On the other hand, East Palo Alto has three divisions: the Operations Division, the Administrative Division, and the Investigative Division.

The higher number of divisions in Palo Alto's police department allows for Palo Alto's police officers to be able to do their job taking on more specific responsibilities that they are more specialized in. As an analogy, compare two hypothetical universities. One offers three majors: engineering, economics, and literature. The other offers biological, civil, and electrical engineering; macroeconomics, microeconomics, and legal economics; and European literature, African literature, and American literature. Professors at the first university would have a limited amount of knowledge on their major, but would have the responsibility of covering their entire major. On the contrary, the second university's professors would have a specific field inside of their major and would find it substantially easier to do their job. Likewise, when there are more divisions in the police department, the police officers can specialize in one division, allowing for several divisions to do a more sophisticated job protecting the city.

Hypothetically, if someone were repeatedly making a severe traffic violation in Palo Alto and another person were doing the exact same thing in East Palo Alto, the Palo Alto police department would be able to respond to the situation far more efficiently and with more sophistication than the East Palo Alto department would. That is because there is a specific division in the Palo Alto police department whose job it is to handle traffic violations. On the

contrary, the EPAPD would send someone from its Operations Division, whose lack of specialization would cause the officer to handle the situation with less efficiency and less sophistication.

More divisions in the city's police department allow for a more effective police force. The EPAPD's effectiveness would drastically be improved if the city's government were to change the police department's infrastructure allowing for its police officers to have more specialized jobs. With several divisions in the EPAPD, the officers' jobs would be easier and the department would be more effective.

Conclusion

The PAPD has more divisions in its infrastructure as well as better budgeting than the EPAPD does. The sophistication of the police departments are a major factor that results in Palo Alto's crime rates being significantly lower than East Palo Alto's. The fact that both cities' overall crime rates have been decreasing shows that their police departments have been effective in reducing crime rates, but allocating more money to the EPAPD and improving East Palo Alto's police infrastructure would allow for the city's crime rate to be further reduced.

Part III: Budget Allocations

Budget Allocations are defined as the total amount of funding designated for particular expenditures. To assess the budget allocations of both East Palo Alto and Palo Alto, we examined the government spending as well as the public expenditures in both cities. All of the data involving budget allocations was made available on the city websites of both Palo Alto and East Palo Alto.

Government spending

Government spending is defined as how much money the government uses and what the money is used on. This provides an indication of what the government prioritizes and what the government is trying to improve on. It also shows if the government is effectively spending its money, which is highly important to the success of the city's economy.

We found that in the year 2012, Palo Alto spent approximately 47% of its budget on the city's public safety (the Palo Alto Police Department as well as the Palo Alto Fire Department). On the contrary, East Palo Alto used 5% of its budget toward public safety. This shows that Palo Alto prioritizes protecting its constituents and having policies that would be for the benefit of the people. East Palo Alto prioritizes public safety far less than Palo Alto does, even though the crime rates in East Palo Alto are substantially higher than the crime rates in Palo Alto.

There is a strong correlation between the amount spent on the police force and the crime rates of the city. This correlation is discussed in part II of this paper in the section for the police force. The fact that Palo Alto uses over 9 times more of its total budget on public safety than East Palo Alto does is a strong factor of why crime rates in East Palo Alto have been significantly higher than crime rates in Palo Alto. If East Palo Alto were to direct a higher portion of its government spending to the city's public safety, the crime rates would drop, and East Palo Alto would become a safer city to live in.

Crime rates are also significantly correlated with land values. The higher the crime rates, the lower the land values. If East Palo Alto's government is to allocate more money to its public safety, the crime rates in the city will drop, and consequently the land values in East Palo Alto will rise.

In order to optimize East Palo Alto's safety, its government should increase the spending done on public safety. Palo Alto's total crime rates are significantly lower than East Palo Alto's, and that is largely a result of the high amount of funding the PAPD receives from Palo Alto's total city budget. If East Palo Alto increases its spending on public safety, the EPAPD would be able to hire more officers, have better resources, and the city's crime rates would consequently be reduced.

Consumer spending

Consumer spending in a city is defined by how much money in a fiscal year households spend in a city. These spenders are not limited to citizens of the city; they include visitors and students. To calculate the total consumer spending, we used revenue collected in the sales tax of a fiscal year and used the city's tax rates to extrapolate how much the citizens of each city spent. For example, Palo Alto's revenue from sales tax in the year 2011-12 fiscal year was \$86,635,000. The sales tax charged by the city that year was 8.75%, so to find the total spending done by the people that year, we divided \$86,635,000 (revenue from sales tax) by 0.0875 (Palo Alto sales tax). The total consumer spending that year in Palo Alto in the 2011-12 fiscal year was \$990,115,000. On the contrary, East Palo Alto's consumer spending in the same fiscal year was \$33,920,000. The spending per capita in East Palo Alto was \$1,204.76 that fiscal year. In Palo Alto, it was \$15,473.74 per capita.

Our findings show that consumer spending in Palo Alto is almost 13 times higher than consumer spending in East Palo Alto. A large factor that causes this difference is the fact that Palo Alto residents generally have more money to spend, but the fact that there is more retail in Palo Alto adds to the higher consumer spending in the city. If East Palo Alto were to increase its retail by adding more stores (the way it did in 2000 with the Ravenswood 101), consumer spending in the city would increase and the economy would improve. Retail affects the economy positively because it results in more money being used in a city, which results in more money generated from sales tax and consequently more money spent on infrastructure such as the police force.

Consumer spending affects the overall economy by showing how much money the city is making, but it also shows how land values can be affected by retail. There is a strong correlation between public expenditures and land values. As mentioned in the Real Estate section of the paper, land values are the overall indicator of the health of a city's economy. Just as GDP tells the health of the national economy, land values display the health of a city's economy. The retail in East Palo Alto was increased drastically when the Ravenswood 101 was created in the year 2000. If East Palo Alto continues to increase the amount of retail in the city, its land values will consequently increase.

Conclusion

The government spending in Palo Alto is far more sophisticated than it is in East Palo Alto. About 47% of Palo Alto's annual budget is spent on public safety, whereas only 5% of East Palo Alto's is. If East Palo Alto's government wants to see its city's crime rates decrease more drastically, it needs to prioritize public safety and allocate more money to the EPAPD. Moreover, consumer spending in Palo Alto is far higher than it is in East Palo Alto. That is in part because of the fact that East Palo Alto has less retail for money to be spent on. There is the Ravenswood 101 (which includes an IKEA where virtually all Bay Area residents go to), however there is little retail in the city other than that. To increase consumer spending, and consequently increase revenue through sales tax, East Palo Alto needs to incorporate more retail into its city. Both allocating more money to the police force as well as increasing retail will

improve the land values in East Palo Alto, as both police budgeting and retail have high correlations with city land values.

Part IV: Education System

Introduction

The fourth and final component of our analysis was looking into the education systems in both Palo Alto and East Palo Alto. We attempted to assess the strength of the education system in both cities by looking into the test scores from the STAR standardized test in local high schools and the dropout rates from these high schools. In Palo Alto, we looked into Gunn High School and Palo Alto High School, the two public high schools all Palo Alto teenagers attend. For East Palo Alto, we found that there were no high schools in the area and that teenagers traveled to nearby cities to attend school. So for East Palo Alto, we used the three most used schools by East Palo Alto, which were: Menlo-Atherton, Carlmont High School, and Woodside High School. We hoped to find a trend in determining how education impacted the overall economic growth of the city.

Test scores

Our first method to assess the education system was looking at test scores from the five different high schools to measure the academic success of both schools. These standardized test scores are an average assessment of how well these schools are performing and are published yearly in local newspapers to help the public see which schools are doing well and which are doing poorly. These test scores helped rank these schools across the state as well amongst the five schools we were focusing our analysis on. Moreover, we anticipated that the test scores would reveal the importance of education in both cities.

After over 15 years of data from all five schools, are results show that every single year, schools from Palo Alto outperformed the East Palo schools. Figure 4.1 shows our findings.

Year	Palo Alto High	Gunn High	Carlmont High	Menlo Atherton	Woodside
1999	852	885	625	640	616
2000	878	883	659	641	626
2001	861	858	685	655	652
2002	865	869	695	683	656
2003	880	870	709	686	672
2004	878	881	740	673	665
2005	886	885	782	728	720
2006	892	885	791	751	733
2007	883	899	800	762	743
2008	900	904	800	766	746
2009	962	915	827	771	750
2010	897	918	835	782	749
2011	900	910	857	794	743
2012	906	918	878	822	746

Figure 4.1 Test Scores in Palo Alto and East Palo Alto

This table indicates that Palo Alto has a more structured and solid education infrastructure. While the family environment also plays an important role, Palo Alto has consistently showed that its high schools are one of the best in the state and has proven that it

focuses on the growth of the education system. On the other hand, East Palo Alto, besides the fact of not having an actual high school in the city, hasn't paid the same level of attention in education than Palo Alto.

Our regressions (Figure 4.2) showed that test scores have a very strong correlation to land values.

	Coefficient	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-48.4282	19.56659	-2.47505	0.038407	-93.5488	-3.30757	-93.5488	-3.30757
Location	-0.12831	4.036114	-0.03179	0.975418	-9.43561	9.178983	-9.43561	9.178983
Year	-0.16501	0.21173	-0.77934	0.45821	-0.65326	0.323239	-0.65326	0.323239
Crime Rates	0.001611	0.004768	0.337879	0.744149	-0.00938	0.012607	-0.00938	0.012607
Police Budget	0.000777	0.000123	6.303421	0.000232	0.000493	0.001062	0.000493	0.001062
Revenue Collected	-1.1E-05	2.58E-05	-0.44072	0.671085	-7.1E-05	4.81E-05	-7.1E-05	4.81E-05
Test Scores	0.05389	0.024366	2.211712	0.057926	-0.0023	0.110078	-0.0023	0.110078
Gov't Spend	-5.3E-06	2.94E-05	-0.18174	0.860306	-7.3E-05	6.24E-05	-7.3E-05	6.24E-05

Figure 4.2 Regression of Test Scores to Land Value

The better the test scores, the higher the land value. This means that education plays a large role in determining the success of economies. The reason for this goes back to the fundamental economic relationship: supply versus demand. With a stronger education system and better test scores, the demand to live in that particular area goes up because a better education paves the way for a better future. With this increase in demand and a stable amount of supply, the price of the land can naturally go up. Therefore, proven by our regression and intuition, the test scores of high schools (representing the overall state of the education system in that city) are a strong factor in determining economic success.

Dropout rates

The dropout rates of these five high schools were another indicator for the health of the education system in both cities. Dropout rates are the percent of teenagers who quit high school before completing 12th grade from that school. The dropout rate helps us understand the importance each city places on the education system. A higher dropout rate indicates that the government has not sufficiently taken measures to keep students in school while a lower rate could represent the government's focus on the education system.

After collecting data on the past 15 years of the dropout rates of the five high schools, it is clear that Palo Alto has a lower dropout rate. While it is not perfect, it still has a few percentage points on the average of East Palo Alto schools. Figure 4.3 is a summary of what we found:

Year	Palo Alto	Gunn	Menlo Atherton	Woodside	Carlmont
1995	0.00%	0.00%	2.40%	4.50%	1.20%
1996	0.60%	0.60%	2.80%	3.60%	2.80%
1997	0.50%	0.60%	1.30%	3.00%	5.60%
1998	0.90%	0.50%	1.50%	2.60%	1.20%
1999	0.80%	0.00%	1.90%	1.90%	0.60%
2000	0.10%	0.00%	4.00%	3.10%	1.50%
2001	0.10%	0.10%	2.50%	1.80%	2.40%
2002	0.30%	0.00%	3.60%	0.90%	2.80%
2003	0.20%	0.10%	1.40%	1.90%	1.60%
2004	0.20%	0.50%	4.20%	1.10%	0.90%
2005	0.20%	0.10%	3.20%	0.70%	0.70%
2006	1.60%	1.10%	1.60%	0.70%	0.80%
2007	0.50%	0.50%	1.80%	0.70%	1.00%
2008	1.10%	0.80%	2.50%	1.00%	1.10%
2009	0.40%	0.70%	1.30%	0.30%	0.40%
2010	0.40%	0.60%	2.00%	0.80%	1.30%
2011	1.00%	1.50%	2.30%	1.40%	1.00%
2012	1.20%	1.70%	1.60%	0.50%	0.80%
2013	0.80%	0.90%	1.00%	0.60%	0.70%

Figure 4.3 Drop Out rates in Palo Alto and East Palo Alto High Schools

From these findings, we learned that Palo Alto has a stronger education infrastructure and that the government makes sure that not too many students are dropping out.

This is another reason for why Palo Alto has a stronger economy than East Palo Alto. The stronger education foundation paves the path for a better economy as it creates a stronger appeal for the public towards the city but also creates a stronger future generation who are more capable of contributing to society.

Conclusion

Based on our analysis of the education system, stronger infrastructure in education plays a significant role in economic success. Cities can learn from this assessment by creating more programs to encourage students to remain in schools and pass legislation to improve education and schooling in the city. This will in turn help the economy of the city over time.

Final Conclusions

In this paper, we conducted a macroeconomic analysis of Palo Alto and East Palo Alto in order to get a better understanding of what makes an economy successful. Our intent was to take a case study in which one city is flourishing economically while the other one is struggling. After analyzing the real estate, budget allocations, police force, and education, we conclude that real estate is the quintessential factor reflecting a city's economy. This is due to the fact that the real estate is the most accurate representation of the economic success of a city because the value of the land represents how much the "city is in demand." We found that this basic economic principle can be applied not only to markets for various products but also as an assessment for a city's economic.

Through this analysis, we also conclude that economic success can be built by a strong educational foundation followed by a more secure police force. The budget allocation needs to be more geared toward these two areas and legislators need to centralize their focus on these two subsections of public policy to spur real estate growth which in turn increases economic success.

Fixing an economy is not an overnight process. It takes patience and time. We hope that struggling cities can look to this paper to shift their paradigm on public policy as a means to fix their economy. Although the benefits may not be instantaneous, with proper focus on certain aspects of public policy, economic prosperity can be achieved in the long run.

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