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High school music program participation and subsequent strength of the local music economy.

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High School Music Program Participation

and Subsequent Strength of the Local Music Economy

By

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There is a belief among education researchers that student participation in music education programs eventually leads to the same students going into the music industry at a higher rate. Turnovec summed this assumption up in his 2001 research on the economics of education, stating that "the education received is supposed to provide guidelines for the rest of students' lifetimes" (Turnovec, 2001). Little research, however, has been done to test this notion (Psacharapoulos, 1996). Most research on the effects of music education on students focus on the ability of music education to increase students' cognitive abilities, such as concentration, memory, and communication skills (Boyd, 2014). Research has shown that the effects of music education can last for participants even 40 years after they have last picked up an Instrument (Krauss, 2014). There have been different theories as to how to maximize the effects of music on students. Susan Hallam's research on the effects of music engagement on students' personal and social development found that these effects are only positive if the music engagement is "an enjoyable and rewarding experience" (Hallam, 2010). Economist Alfred Marshall believed that exposure to good music leads to increasing subsequent demand for more good music (Becker, 1996).

As it applies to public policy, there is a dearth in the literature due in part to the lack of cross-disciplinary analysis in music education policy and economics (Psacharapoulos, 1996; Correa, 1995). Much of the literature on music education operates in a realm irrespective of the capitalist elements of our economy; that is to say, the focus is on the improvement of music education for its own sake. Authors such as Elliot and Swanwick justify music education for its intangible benefits, such as its ability to promote a student's understanding of themselves and their community (Elliot, 1995; Swanwick, 2002). For the purposes of public policy research, the existing literature serves more as philosophies of the arts of music and of music education. The

position of music as both the subject and the measuring stick of this research prevents it from transcending the literature of its genre.

The purpose of this study is to bridge the gap in the literature that hinders collective action between actors in music education and the music economy. For music education actors, the study attempts to answer the question of *why* to invest in music education, with the hope of finding a correlation between music education and the vitality of the music economy. For the music economy actors, the study attempts to answer the question of *how* to increase a city's economic music potential, with the hopes of finding the same correlation. This paper attempts to approach music education in a specific vacuum which places little importance on the inherent utility of music education, instead focusing on outside factors to judge music education. While the inherent utility of music education cannot be paused or ignored for the purposes of research, the hope of this project is that the inherent utility of music education will play itself out on an observable macroeconomic level.

Using Jefferson County public and Catholic schools as a sample, statistical models were used to test the correlation between student participation in high school music programs from 1984-93 and the strength of the music economy in Louisville. In order to address the obvious time lag that is required to accurately test whether students who participate in high school music programs contribute to their city's music economy, the correlation for student participation were be matched with economic data eighteen years in the future—when students are able to more fully participate in the economy on both the supply and demand sides.

Human Capital and Economic Growth

The theoretical framework which will guild this research emerges from the analysis of human capital and its impact on the neoclassical growth theory. As Romer and Mincer found in their analyses of economic growth, the stock of human capital (the economic value of an employee's education, experience, and abilities) determines rates of economic growth, while having a large population is not sufficient to generate growth—a refutation of Malthusian theory (Romer, 1990; Mincer, 1984). In writing on neoclassical growth theory, which states that steady economic growth can be achieved with proper amounts of labor, capital, and technology, Lucas attempted to calculate an efficient rate of human capital growth. He concluded that the U.S. economy ought to devote three times as much as it does to human capital accumulations (Lucas, 1988). Economists consider investments in education, training, and health to be the most important investments in human capital (Becker, 1996). More recent studies have confirmed that increases in the education of the labor force lead to increases in worker productivity and national economic indicators like GDP and GNP (Sianesi, Van Reenen, 2003; Wilson, Briscoe 2004; Mankiw 2000).

Theoretically, these findings in combination should lead policy-makers to strongly consider increasing greater levels of investment in education. Research by Psacharapoulos found that, in actuality, education decisions are often not made with reference to prior research and an analysis, but rather with reference to politics and political expediency (Psacharapoulos, 1996). In the microeconomic theory of education, the three main agents of analysis are students and prospective students, teachers and prospective teachers, and school administrators. In microeconomic theory, agents are assumed to be rational actors, who wish to maximize their welfare by balancing, in the instance of education, effort and leisure (Correa, 1995). The problem

4

that past research finds with this process is that school administrators do not get rewarded for student performance—despite the fact that microeconomic theory places school administrators in the role of firm managers, meaning their main goal is supposed to be the optimal allocation of resources towards the firm's output. In this case, the firm's output is educational outputs (Ibid). This lack of incentive for effective policies and allocation of resources represents a hole in the application and integration of economic theory to education.

Correa stated that numerous extensions of human capital models could be adapted to the study of allocation of human resources, but he pointed out that these possibilities had not been explored. He noted that future research should focus on the passage of time and interdependence (Ibid). In terms of interdependence, Correa listed the numerous factors that influence the efficacy of education policies:

> "…factors influencing a student's achievement…[include] the effort, knowledge, and experience of teachers, the characteristics of classrooms and of the school facilities and implements used, and, outside the educational institution, the characteristics of the student's family, home environment, and peer group."

For this reason, an in-depth analysis of interdependence would require a large dataset with unprecedented breadth that is likely not available at this time. As a result of this statistical deficiency, the passage of time will be the focus of this study. Before addressing the variable of time as it relates to the impact of music education on future economic conditions, the state of music education in the U.S. must first be addressed.

Trends in Music Education Policy

Data provided by the U.S. Census shows that Public Pre-K to 12th school system spending per pupil more than doubled from 1992 to 2012, from $5,001 to $10,608, with the only decrease coming from 2010 to 2011 (spending remained constant from 2011 to 2012) (Census). However, adjusted for inflation, spending in 2012 was only $8,265 per pupil (in 1992 dollar value). The National Center for Education Statistics found that the percentage of public secondary schools teaching various arts subjects remained relatively steady from 2000 to 2009, with Music (90% in 2000, 91% in 2009) increasingly nominally, while visual arts (93% to 89%), dance (14% to 12%), and drama/theatre (48% to 45%) decreasingly nominally (National Center for Education Statistics, 2012).

The threats to the future of music education are not necessarily in the number of students who partake in these types of classes, but rather the amount of time they spend in these classes. Music and arts education are often the first victims of education budget cuts, defunded in favor of classes which policy-makers see as more applicable to jobs in the modern economy, such as math and science. President Bush's No Child Left Behind (NCLB) education reform initiative led school districts to drastically increase class time devoted to math and reading for low-proficiency students. Math and reading were the main sources of student evaluation under the NCLB, which punished schools that fell short of rising benchmarks (Dillon, 2006). A 2006 survey by the nonpartisan Center for Education Policy found that "since the passage of the federal law (in 2002), 71 percent of the nation's 15,000 school districts had reduced the hours of instructional time spent on history, music and other subjects to open up more time for reading and math," (Center for Education Policy, 2006).

More recently, funds have been cut in more than 80% of U.S. school districts since 2008 (as of 2014), and oftentimes the first programs to go are disciplines such as music, art, and foreign languages (Boyd, 2014). Efforts to slash arts and music education funding can be seen in Chicago, Philadelphia, Los Angeles, Washington D.C., and other major cities. Some school districts are responding by raising private money to pay for arts education programs in order to combat the declining importance placed in arts education by policy-makers (Fang, 2013). Fang notes that subjects deemed to be more essential than art and music, such as reading, math, and science, are often prioritized in reconstructed education budgets. As previously mentioned, the substitution of politics for analysis could be a key in explaining why the arts and music are not priorities in education budgets.

Literature on the Music Economy

Research on the economy of the arts bridges some of the gap between the utility of music education for insiders and outsiders. Americans for the Arts, a nonprofit organization for advancing the arts in the United States, has conducted research indicating nonprofit arts organizations can be significant to the modern economy. Their 2003 study estimated that the nonprofit arts industry "generated $134 billion each year; $53.2 billion in spending by arts organizations; and $80.9 billion in spending by audiences; while supporting 4.9 million jobs" (Cohen et al., 2003). More recently, the 2009 National Arts Index came away with many findings that will be key to understand the music economy in the future. While the study encompassed more forms of art than just music, its findings are applicable to individual art forms. Perhaps the most important point made in the report is that the arts follow the business cycle; unlike sectors such as utilities or certain consumer products such as beer and tobacco, the

arts economy is subject to declines in the overall economy, such as recessions. The number of artists and arts organizations rose over 20% from 1998 to 2007, but the number of arts businesses did not experience the same success, fluctuating every few years and actually dropping a few percentage points over that time. While the number of nonprofit arts organizations has risen steadily over time, one in three failed to achieve a balanced budget according to the study (Kushner & Cohen, 2009). For the purposes of this research, these findings indicate that overly ambitious economic planning initiatives centered on stimulating the arts economy are subject to fluctuations in the economy regardless of the efficacy of the policies.

Further research by Americans for the Arts found that healthy arts economies require buy-in from local governments and business actors for support, not simply for the sake of having an arts economy, but for the real life economic value the arts can bring (Dreeszen, 2002). This support can come in many forms, such as integrating the arts economy into development initiatives. Over the years evidence has emerged that niche arts subcultures can be integrated into local economies through tourism in a wide variety of locales, from Appalachia to Australia (Dreeszen, 2002; Gibson & Connell, 2003).

The future of the arts economy looks to be in good shape; as evidenced by research from the aforementioned National Arts Index, more Americans are making their own art, while demand for arts education increased over 20% from 1998 to 2007 (Kushner & Cohen 2009). New technologies have led to the advent of new forms of musical expression, such as remixes, in addition to the general expansion of the music economy thanks to its integration with the Information and Communication Technologies industry (Power & Jansson, 2004). As technology advances further and becomes more widely proliferated, it is reasonable to expect these

indicators to continue their upward trajectory. Thus, opportunities for coordination of education and economic policy will increase with technological advances.

Interactions between Economic and Education Policy

While it is understand that the arts can benefit the economy, and that music education can have a positive influence on students, researchers are still left with myriad questions about the complex interactions between these ultimately related policy realms. The opportunity for effective policy collaboration between the actors determining the policies in music education and the music economy has gone untouched due to the lack of literature which explores this possibility. The preponderance of education literature utilizes student achievement, rather than economic impact, in evaluating resource allocation in schools (Rennie Center for Education Research and Policy, 2012; Levin, 2012; Plecki, et al., 2006). While such research is certainly useful for individual school systems seeking to improve students' prospective job readiness, it fails to represent a reasonable opportunity for music and education outsiders to coalesce around the cause for music education because it fails to transcend the genre of education literature. Importantly, researchers must understand what students take away from music education, especially outside the classroom.

Obadić and Porić explored the possibility of coordinating education and economic policy. In line with the neoclassical growth theory, they concluded that higher levels of education are needed to make students more employable as prospective economic agents (Obadić and Porić, 2008). Americans for the Arts has advocated for integrating arts into the education of local youth in variety of ways as a means to bolster the music economy (Walker & Boyer, 2002). The efficacy of such proposals, as they relate to music education, has yet to be tested. Currently,

mainstream music such as Hip-Hop has found its way into the American education system as a means to reach out to at-risk and delinquent youth (Tyson, 2002). While not definitive, the results of Tyson's work indicated that under certain conditions, mainstream music can have utility in the furthering of youth mobility. For the purposes of stimulating the music economy, perhaps modern music has greater value than more traditional music which is taught in schools, such as Classical and Baroque. Future studies could contribute to this discussion by examining in depth the musical backgrounds of contemporary artists, both generally and at case-study levels.

Studies of the emergence of niche music cultures indicate that perhaps the most effective way to foster a strong music economy is by putting in place conditions and infrastructure where citizens can develop their creativity. Bader and Scharenberg (2009) explored the emergence of Berlin's music scene and its integration into the industry following the fall of the Berlin Wall. Importantly, they espouse that this development was not simply the commodification of Berlin's musical subcultures, but rather that flexible integration of these subcultures is becoming a new organizational model of the industry (Bader & Scharenberg, 2009). While this development was not the result of economic-education policy coordination, it could provide important lessons for the concept in general, at least as it relates to the arts economy. Untouched so far in this paper has been the question of whether artistic expression can be artificially stimulated. Surely, certain parts of the arts are easier to generate inorganically, for instance a policy requiring students to learn a musical instrument much in the same way that they must learn to add, subtract, multiply, and divide numbers in elementary school could certainly accomplish that. However, there is a difference between artistic expression generally, and artistic expression that *sells*. While Bader and Scharenberg's examination of Berlin is an isolated study, the emergence of the music subcultures after the fall of the Berlin Wall could be analagous to the development of Hip-Hop

10

music in the U.S., with its roots in the oppression faced by African-Americans (Gladney, 1995). As previously stated, listening to good music increases an individual's desire for more good music, thus it is worth wondering what social, economic, and political conditions produce music that is capable of resonating with a wide enough audience that it is able to generate revenue, whether in a local economic context or a larger one. While the prospect of creating better art through struggle does not address the cooperation of economic and education policies, it does represent an interaction of different policies in complex yet potentially important ways.

In general, the lack of integration of economic analysis into music education policy serves as a key problem going forward, as education policy-makers attempt to build human capital among the labor force that will eventually be regulated by economic policy-makers. Education policy which is based in well-founded analysis of the economic realities it will create could allow for policy coordination efforts which will benefit the economy as a whole. Until that becomes a reality, education policy will remain at the mercy of politics, creating economic inefficiencies which economic policy-makers will eventually have to address.

Methodology

Determining whether or not student participation in music programs is correlated with future participation in music occupations could be very useful in future school policies. Rather than basing school policies off of studies which mainly focus on the effects of music education on students while they are still in the school system, the results of this project could allow for school policymakers to have proper context for their policies. Specifically, this project illuminates the effects that school policies have on their students much further in the future than

current research allows, while also shedding light on the effects of school policies within the context of their community—in this case, the economy.

Test Design

The independent variable in this study is the proportion of the students in the sample that participated in the music programs offered by their high school in the years prior to the census data (data for the high schools will be from the years 1984-94). The dependent variable is a measure of the strength of the music industry in the Louisville Metropolitan Area (Louisville and Jefferson County merged in 2000), determined by using census data which breaks down the number of establishments in each area by description (independent artists, writers & performers, performing arts companies, etc) and employment-size class (employment-size class has different ranges available via the annual business census, with ranges from 1-4 employees, 5-9, 10-19, etc all the way to over 1000) (see Table 1 for an example). This census data is available from 1998-2013, with the years 2002-11 being the focus for this research.

Industry code	Industry code description	Total estabs.	1-4	5-9	10-19	20-49	50-99	100-249
71----	Arts, entertainment, and recreation	748	387	113	94	79	39	28
711	Performing arts, spectator sports, and related industries	178	120	17	19	9	5	6
7111	Performing arts companies	32	14	3	6	4	1	4
71113	Musical groups and artists	10	6	2	1	0	0	1
71119	Other performing arts companies	2	2	0	0	0	0	0
7113	Promoters of performing arts, sports, and similar events	52	36	5	4	4	2	1
71131	Promoters of performing arts, sports, and similar events with facilities	24	15	1	2	3	2	1
71132	Promoters of performing arts, sports, and similar events without facilities	28	21	4	2	1	0	0
7114	Agents and managers for artists, athletes, entertainers, and other public figures	8	7	1	0	0	0	0
7115	Independent artists, writers, and performers	62	53	5	4	0	0	0

Table 1

It is not feasible to account for the totality of student participation in music education

(including private tutoring, participation in bands with friends, etc.) at any time, much less more

than thirty years in the past. Student participation in music programs was collected from the

yearbooks for the schools in the sample. For each year, the total number of students in music

programs was divided by the student population of the sample schools, and that proportion is the

independent variable. The census data is available to the public online.

Louisville was determined to be an appropriate city for this analysis because, at least

anecdotally, a high volume of residents of Louisville are actually from the city. This means that

the subjects of both datasets, the students participating in high school music programs from

1984-93 and the music establishment producers and consumers from 2002-11, would

theoretically have a greater level of overlap than a city with high levels of migration in and out,

such as New York or Los Angeles. Actual data on the percentage of Louisville residents that are

from the city was not available. However, Kentucky as a whole has a higher than average

percentage of its citizens who were born in their state of residence, which provides statistical

backing for this assumption about Louisville (Census).

Operationalization of Variables

Variable	Classification
Proportion of students participating in music programs	Discrete
Total number of music establishments	Continuous
Number of Music establishments in each NAICS employment class	Continuous

Table 2

Data Analysis and Interpretation

Descriptive statistics were used to illustrate general changes in the proportion of students

participating in high school music programs, as well as changes in the vitality of the local music

13

economy. This includes averages, ranges, and standard deviations of the variables. More in-depth analysis was provided through inferential statistics. Pearson correlations, which test the linear strength of correlations between variables on a scale of -1 to 1, with -1 being a perfectly negative correlation, and 1 being a perfectly positive correlation, were also incorporated.

In order to determine if participation in music education programs does in fact correlate with future participation in the music industry and related jobs, a time-lagged regression analysis for Jefferson County Public Schools and Louisville Catholic schools was used. Using Stata, a data analysis and statistical software, it is possible to test linear correlations between the independent and dependent variables while controlling for other variables which might interfere with analysis. After inputting data and running the appropriate statistical models, Stata reports a p-value, which represents the odds that any correlations found are a result of randomness, as opposed to a statistically significant correlation.

An eighteen year lag in the data was chosen for the regression model because, based on Census data collected which sorted citizen income by age, 35 is the age at which the top decile of the population earns over $100,000.00, which allows for greater discretionary spending, either to spend on music products or to start a music business (Census). Because the average age of students in high school is estimated to be about 16.5, based on the expected age of students by year, the 18-year lag is assumed to allow students to reach this level of discretionary spending. By matching the census data of the metropolitan area with the music participation data from the area eighteen years prior, the assumption that participation in music education programs will in some way push students to occupations in the music field, or push students into becoming consumers of music establishments, can be tested.

Descriptive Analysis

The results for the initial data collection indicated a possible correlation between music program participation and the future strength of the local music economy. The percentage of students participating in music programs remained relatively steady throughout the sample set. The yearly percentage ranged from 6.4% participation to 13.2% participation. The average yearly percentage was 9.3%, with a standard deviation of 2.2%. The total percentage of student participation over the totality of the sample was also 9.3%.
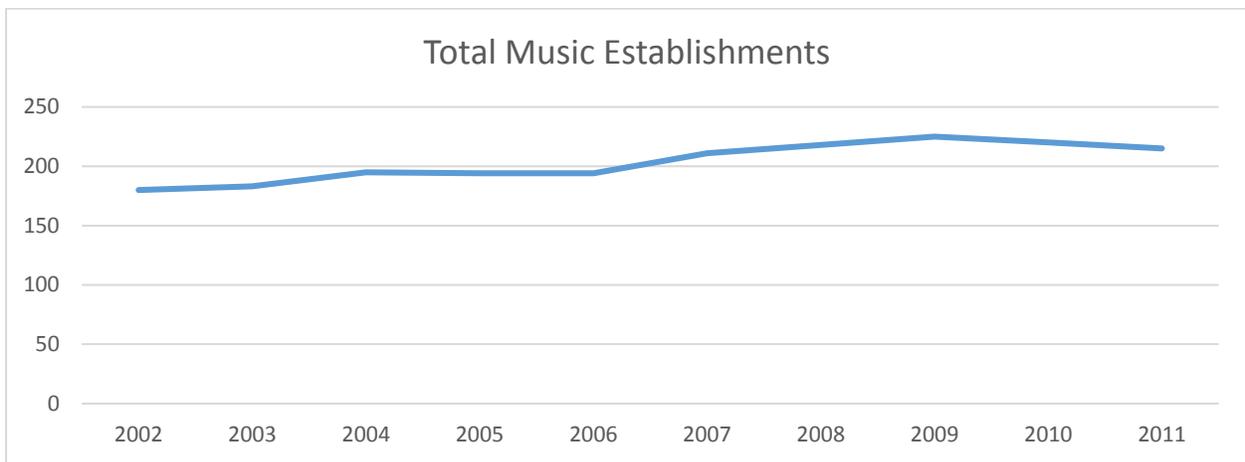
Percent of Students in Music Programs
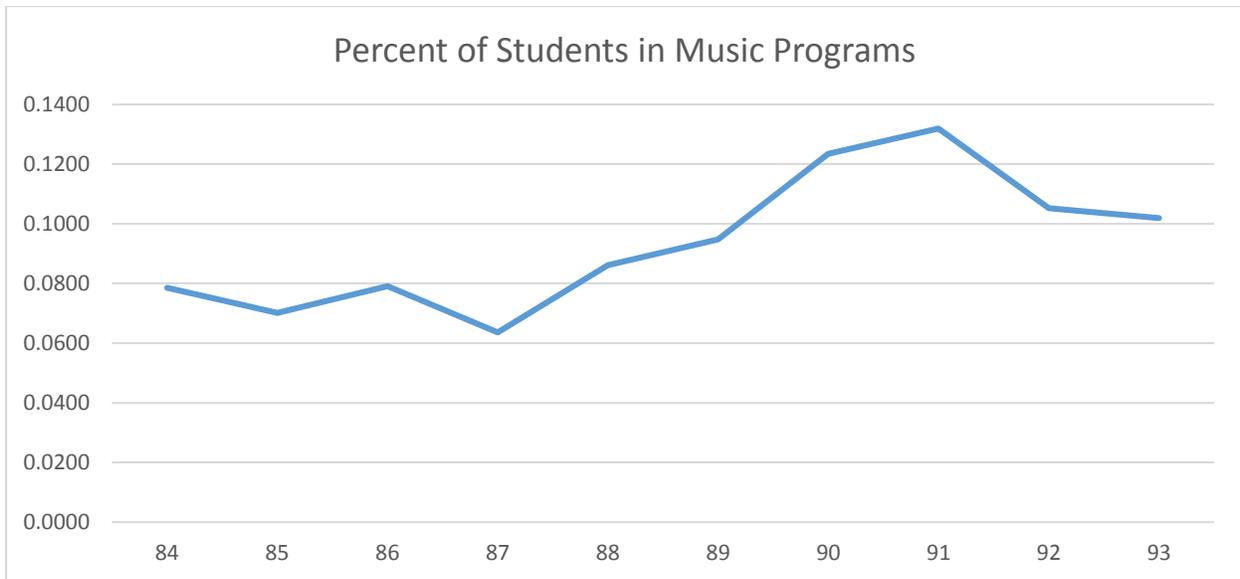
Graph 1

| Year	Total establishments	1-4 employees	5-9	10-19	20-49	50-99	100-249
2002	180	123	19	15	10	2	11
2003	183	119	24	15	15	2	8
2004	195	135	20	18	12	3	7
2005	194	137	19	14	14	4	6
2006	194	132	25	16	11	2	8
2007	211	145	25	14	13	7	7
2008	218	154	21	19	12	5	7
2009	225	164	20	19	12	4	6
2010	220	146	31	17	16	3	7
2011	215	143	30	15	13	7	7

Table 3

15

The total number of music establishments in Louisville during the sample ranged from 180 to 225, with an average of 203.5 and a standard deviation of 15.4. The number of music establishments with 1-4 employees ranged from 119 to 164, with an average of 139.8 and a standard deviation of 12.9. The rest of the descriptive statistics can be found in table 4.

Table 4	Total establishments	1-4	5-9	10-19	20-49	50-99	100-249
Average	203.5	139.8	23.4	16.2	12.8	3.9	7.4
Standard Deviation	15.4	12.9	4.2	1.8	1.7	1.8	1.4

Graph 2

Graph 3

16
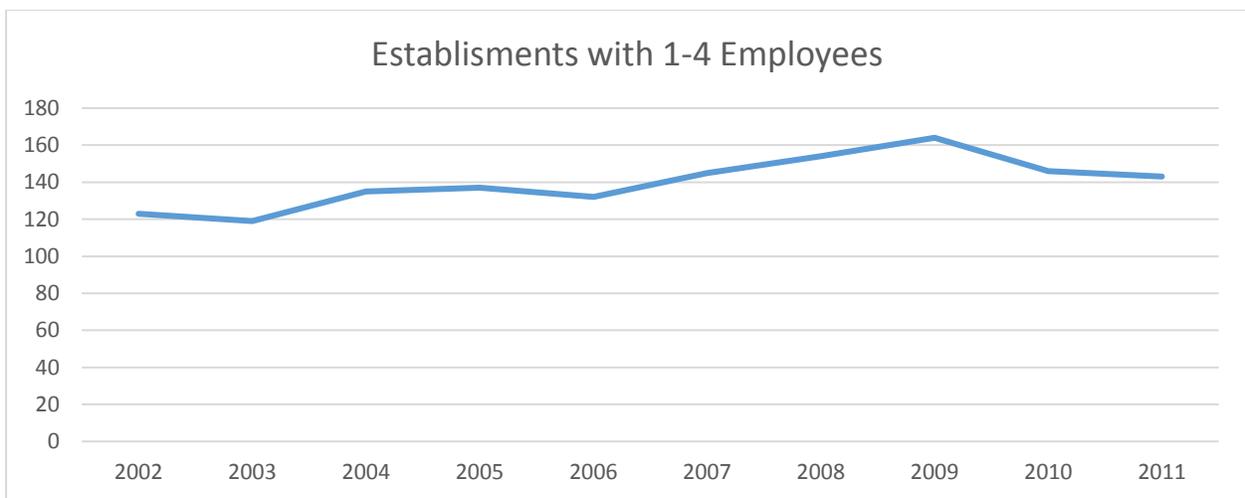
Inferential Analysis

A test of the Pearson correlation between the percentage of students participating in music programs from 1984-93 and the number of total music establishments in Louisville from 2002-11 revealed an R score of 0.88. Additionally, a Pearson correlation between the percentage of students participating in music programs from 1984-93 and the number music establishments with 1-4 employees also revealed an R score of 0.88. While this does not necessarily confirm the hypothesis that participation in music programs stimulates future music economies, the strength of the correlations is noteworthy.

Stata was used for further analysis. After running a Dickey-Fuller test to ensure that the data collected did not follow a random walk, the null hypothesis could not be rejected. The presence of a random walk indicates an element of randomness in the dependent variable which causes obvious problems for regression analysis. For this reason, a one-year lag on the dependent variable was added to the statistical model. The addition of this one-year lag allows the model to account for the trends that were happening over time in the local music industry, making it easier to parse out the correlation between the local music economy and high school music program participation. After adding this to the model, the relationship between student participation in music programs and the total number of music establishments in Louisville from 2002-11 was accepted at the $p=.05$ level (meaning that there was less than a five percent chance that the correlation between the variables was simply due to random data) with a p-value of 0.026. The relationship between student participation in music programs and the number of establishments with 1-4 employees was also accepted at the .05 level with a p-value of 0.024, as was the relationship between student participation in music programs and the number of establishments

with 10-19 employees, which had a p-value of 0.033. All of these significant correlations were positive.

These findings do not open and close the case for the coordination of economic and education policies with the goal of stimulating the music economy, because of the presence of numerous variables with the ability to sway the dependent variable. However, they do indicate that there is a connection that can be fostered. The lack of a correlation found in the three largest employment classification sizes (20-49, 50-99, and 100-249) indicate contrarily that larger music establishments are unaffected by student participation in music programs. In order to understand the reason for the lack of a correlation, incorporating regional level data, including 'comparison cities,' could be useful in future analysis.

The regression coefficients, which indicate the expected change in the dependent variables given a 1 unit (in this case, a 1% change in the level of music participation) change in the independent variable, were relatively high for the relationships that were statistically significant. For the total music establishments in Louisville, the coefficient was 3.12, with a standard error (which is the standard deviation of the data from the mean) of 1.11. For establishments with 1-4 employees, the coefficient was 4.27, with a standard error of 1.49. For establishments with 10-19 employees, the coefficient was 0.64, with a standard error of 0.24.

Explications for Findings

In understanding the possible reasons for the correlations found in the regression model, the issue must be examined from both the supply and demand side. It is certainly possible that the students who participated in the high school music programs were some of the employees in the new music establishments which were observed from 2002-11, either due to their increased

skill in music (human capital) or due to their increased desire to work in music. Perhaps student experiences in music programs increased the quality of the music establishments in the city, thus generating a larger demand for these businesses. In these cases, it makes sense that there was a significant statistical correlation between music participation and small music establishments with only 1-4 employees, as these establishments are the most sensitive to the choices of individuals. An individual can decide to become an independent artist much more easily than they could 'decide' to start a music establishment with 5-9 employees. Additionally, an independent artist requires less demand for sustainability than an establishment with 5-9 employees.

However, it is also entirely possible that these students were instead the *consumers* in these new music establishments, and that their support allowed for the expansion of the local music economy. This could be due to an increased desire for music products due to participation in the music programs, with the assumed increase in musical skill playing a part in this increased desire. Further, it could be possible that this increased desire for music products was a result of the experiences gained in music programs that the students, who then became parents wished for their children to have. Thus, this increased desire for music products would have manifested itself in the consumption of products for the musical enrichment of former students' children.

However, other possible explanations for the correlations observed in the regression model exist. As was previously noted, the music industry tends to fluctuate with the cycles of the economy. Thus, the increase in student participation in music programs could have been a result of increased resources (teachers, instruments) available to students, rather than an increase in the desire to participate in music programs. Additionally, an economic boom could have resulted in a decreased need for students to work after school to support their families, thus allowing for the

19

allocation of extra time to extracurricular activities. Similar realities of economic booms could explain the increase in music establishments observed over the sample period: increased disposable income by consumers, increased resources available to citizens which allowed for the opening of new businesses, etc. The low degrees of freedom in the sample data make drawing statistical conclusions on these possibilities irresponsible at this time, but the possibilities could tested in future research. Finally, it must be noted that the correlations found, no matter how statistically significant, do not necessarily imply causation.

Discussion

Due to the myriad variables that come into play when analyzing data relating to the economy, it is entirely possible that the economic data available to the public will have little relation to the independent variable in this study. Whether local market forces produce random fluctuations or systematic stability in the music economy is entirely possible in this sort of endeavor, although the model used for this analysis controlled for that with the introduction of the one-year lag. However, the lack of this type of econometric analysis in the literature is precisely the reason for pursuing research such as this. Projects such as this come with the possibility of failing to produce meaningful results due to faulty data or unforeseen variables, but it is important to highlight the utility of such attempts.

Thus, it should be noted the technical difficulty that was associated with collecting and analyzing the data for this research. Unfortunately, numerous schools that were originally a part of the sample were unable to be included due to the absence of yearbooks. Additionally, in many cases the pictures and/or lists of music program members that were used to construct the data sets for analysis were incomplete or unusable. For this reason, the sample of schools had to be

20

smaller than originally intended. While this does limit the degrees of freedom for regression analysis—thus limiting the number of variables that were able to be incorporated into the model—the dataset is still representative of the breakdown of public vs. private schools in Jefferson County during the sample years. Due to time constraints associated with obtaining completely accurate data, such as reaching out to alumni for yearbooks that were missing from high schools archives, or reaching out to the directors of music programs during the sample years, it was not feasible to conduct a more extensive econometric analysis of the music data as it related to the future of music jobs in the city. One school's data had to be estimated for two years due to a lack of information. However, the depth of the data provided by the census NAICS surveys allowed for analysis on numerous levels of employment in Louisville's music economy. In the future, more diligent record-keeping could provide the opportunity for eye-opening research as it relates to the coordination of education and economic public policies.

Additional research would do well to seek out innovative ways to account for the economic realities at play behind the data collected. Factors such as migration in and out of the city, as well as the flow of jobs to other cities in the region are important factors to consider before jumping to far-reaching conclusions about the efficacy of high school music programs in stimulating future music economies. Migration poses the problem of rending the high school data that is collected irrelevant through the possible brain drain of education policies intended target, while also muddying the waters by allowing for new producers and consumers of the music economy to enter the market.

In addition to analyzing the economic data for the Louisville metropolitan area, analysis of 'comparison' cities is expected to be useful in determining the validity of this project's hypothesis. Louisville's comparison cities may be Cincinnati and Indianapolis, among others;

these are the cities to which Louisville compares itself, but are also the cities with which Louisville competes for business and prestige, among other things. Comparison cities could be determined by reading business articles which reference such relationships between Louisville and other cities. Adding in information about comparison cities will allow for analysis of regional markets for the music industry, which could show, for example, that there is a regional glass ceiling for large employer-size music establishments (meaning that a loss of jobs in Louisville may not indicate a boon to the region's music industry, but rather a transfer of a business to Cincinnati).

Finally, further analysis with increased degrees of freedom could allow for the introduction of important variables to regression analysis, such as NAICS business data on the local, regional, and perhaps even national music economy, which could inform the trends observed in the Louisville NAICS data. More business data, such as trends in the rate of small business success or local rates of unemployment could also be used. Analysis of local music education initiatives, policies, and budgets could allow for in-depth understandings of the trends observed in both education and economic data. Specifically, these types of analysis could allow researchers to parse out the influence of music education programs from concurrent trends that result from public policy or even social factors. For instance, was there a large investment in the local music scene or in local music education initiatives that spurred the trends observed? This is an ambitious concern to address given the need to delve deep into local archives, where record-keeping may be spotty, but it could hold the key to understanding the potential for future education and economic policy coordination.

Applications to Future Public Policy

The intrinsic value of music education to students has been noted in more mainstream music education literature, but this topic is not especially relevant on the surface level to this research. As it pertains to future policy coordination between economic and education actors, there does seem to be the potential for stimulating local music economies by aiding high school music programs. It should perhaps come as no surprise that student participation in high school music programs appears to stimulate the local music economy through the creation of smaller music establishments—it would seem to follow the basic logic that individuals try to capitalize on their skills monetarily. Thus, this logic, if taken at face value and backed up by the findings of this research, can be applied to other economic sectors as well, pending statistical analysis for confirmation. Perhaps the greatest barrier to full acceptance of this logic is that most skills which can me commoditized, such as musical skill, often require years of cultivation which most often begin before high school. Without the availability of more data for analysis, it is uncertain whether or not the increase in participation in high school music programs was simply a small part of a larger overall commodification of musical skills or not.

Nonetheless, given the data available at the moment, it would seem prudent for education officials to heed the findings of this research, both in the music field as well as other fields which may be up-and-coming, such as computer coding, or those which are in need of revitalization locally. The key to appreciating this analysis for what it is, though, is not to take it as a cure-all for any economic malady a city may face, but as a systematic way of addressing a general lack of business activity. With the proper calculus, the coordination of economic and education policies seems to be able to produce tangible results for cities.

23

However, the benefits of this coordination cannot be expected generate enough market forces, either supply or demand, to stimulate the music economy by way of large music establishments. This should also not come as a surprise. The likelihood of any small business succeeding is not exceptionally high, and the likelihood decreases as the hypothetical business increases in employment class size. The creation of larger businesses, such as those with 100-249 employees, requires myriad advantages such as business savvy, product quality, and startup capital, which cannot possibly be addressed simply by participating in a high school music program for four years.

Conclusion

The potential for policy coordination between education and economic actors hoping to stimulate the music economy does in fact seem to exist given the correlations found by the regression analysis. The limitations of this study make it so that its findings should not immediately be sent to school boards around the country as a demand for increases in music education programs, but the study does show that there is a correlation between student participation in high school music programs and the subsequent strength of the local music economy. Due to the presence of other independent variables into this complicated equation, going any further than that with these results would seem irresponsible. The lack of literature on this specific topic is few and far between, and thus there are not many theoretical frameworks from which researchers can logically be expected to test next given these findings. However, with improved record-keeping and data quality, the opportunity for future research on economic and education policy coordination is absolutely present. The main difficulty for future researchers will be obtaining enough quality data to expand statistical analyses outside of

regressions with only a few variables. Other factors are certainly at play, both locally and regionally. Therefore, much is left to be learned about the correlations tested in this paper, as well as between other educational and economic outcomes.

Bibliography

1. Sahin, A., Ayar, M. C., & Adiguzel, T. (2014). STEM Related After-School Program Activities and Associated Outcomes on Student Learning.*Educational Sciences: Theory and Practice*, *14*(1), 309-322.

2. Becker, G. S. (1996). *Accounting for tastes*. Harvard University Press.

3. Chen-Hafteck, L. (2007). Contextual analyses of children's responses to an integrated Chinese music and culture experience. *Music Education Research*, *9*(3), 337-353.

4. Neiva, B. M., & Pepe, D. (2012). Time Well Spent: Designing Dynamic and Profitable After-School Programs. *Independent School*, *72*(1), n1.

5. Vasil, M. (2013). Extrinsic Motivators Affecting Fourth-Grade Students' Interest and Enrollment in an Instrumental Music Program. *Update: Applications of Research in Music Education*, *32*(1), 74-82.

6. Hallam, S. (2011). Culture, musicality, and musical expertise.

7. Nisticò, S. (2015). Enjoyment takes time: Some implications for choice theory.*Economics*, *9*(8), 1.

8. Pastchal-Temple, A. S. (2012). *The effect of regular participation in an after-school program on student achievement, attendance, and behavior* (Doctoral dissertation, MISSISSIPPI STATE UNIVERSITY).

9. Miksza, P., & Gault, B. M. (2014). Classroom Music Experiences of US Elementary School Children: An Analysis of the Early Childhood Longitudinal Study of 1998-99. *Journal of Research in Music Education*, 0022429413519822.

10. Cohen, R., Schaffer, W., & Davidson, B. (2003). Arts and economic prosperity: The economic impact of nonprofit arts organizations and their audiences. *The Journal of Arts Management, Law, and Society*, *33*(1), 17-31.

11. Kushner, R., & Cohen, R. (2010). *National Arts Index 2009: An Annual Measure of the Vitality of Arts and Culture in the United States*. Americans for the Arts.Power, D., & Jansson, J. (2004). The emergence of a post-industrial music economy? Music and ICT synergies in Stockholm, Sweden. *Geoforum*, *35*(4), 425-439.

12. Bader, I., & Scharenberg, A. (2010). The sound of Berlin: subculture and the global music industry. *International Journal of Urban and Regional Research*,*34*(1), 76-91.

13. Gladney, M. J. (1995). The Black arts movement and hip-hop. *African American Review*, *29*(2), 291-301.

14. Tyson, E. H. (2002). Hip hop therapy: An exploratory study of a rap music intervention with at-risk and delinquent youth. *Journal of Poetry Therapy*,*15*(3), 131-144.

15. Romer, P. (1989). *Endogenous technological change* (No. w3210). National Bureau of Economic Research.

16. Gary S. Becker. "Human Capital." *The Concise Encyclopedia of Economics.* 2008. Library of Economics and Liberty. Retrieved March 28, 2016 from the World Wide Web: http://www.econlib.org/library/Enc/HumanCapital.html

17. Lucas, R. E. (1988). On the mechanics of economic development. *Journal of monetary economics*, *22*(1), 3-42.

18. Mincer, J. (1984). Human capital and economic growth. *Economics of Education Review*, *3*(3), 195-205.

19. Measuring America: Spending on Education. (n.d.). Retrieved from https://www.census.gov/how/pdf/ssfinances_text.pdf

20. Boyd, S. (2014). Extracurriculars Are Central to Learning. *US News*, *1*(1).

21. Dillon, S. (2006). Schools cut back subjects to push reading and math. *New York Times*, *1*(1).

22. Fang, M. (2013). Public schools slash arts education and turn to private funding. *Retrieved October*, *30*, 2014.

23. What Percent Are You for your Age? An Income Calculator - DQYDJ. (2015). Retrieved from http://dqydj.net/a-calculator-income-distribution-by-age-for-2015-in-the-united-states/#.VvnB_r4rKhc

24. Rennie Center. (2012). Smart school budgeting: Resources for districts. Cambridge, MA: Rennie Center. Retrieved from http://www.renniecenter.org/research/SmartSchoolBudgeting.pdf.

25. Plecki, M. L., Alejano, C. R., Knapp, M. S., & Lochmiller, C. R. (2006). Allocating Resources and Creating Incentives to Improve Teaching and Learning. *Center for the Study of Teaching and Policy*.

26. Levin, S. (2012). Evaluating intradistrict resource allocation and its implications for equity: A case study.

27. Porić, S. (2008). *The coordination between education and employment policies* (No. 0802). Faculty of Economics and Business, University of Zagreb.

28. Elliott, D. J. (1995). Music matters a new philosophy of music education.

29. Swanwick, K. (2002). *A basis for music education*. Routledge.

30. Lifetime Mobility in the United States: 2010. (2011). Retrieved from https://www.census.gov/prod/2011pubs/acsbr10-07.pdf