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The Economic and Social Effects of Casino Development in Macau

Christopher Benton

University of Nevada, Las Vegas

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THE ECONOMIC AND SOCIAL EFFECTS OF CASINO DEVELOPMENT IN MACAU

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CASINO DEVELOPMENT IN MACAU

by

Christopher W. Benton

Master of Business Administration
Lee School of Business
University of Nevada, Las Vegas

Bachelors of Science in Business Administration
Sonoma State University
Spring 2010

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Master of Science in Hotel Administration
Department of William F. Harrah College of Hotel Administration
University of Nevada, Las Vegas

Graduate College
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Chair: Dr. Toni. Repetti

Abstract

This paper explores the economic impacts that took place in Macau after the gaming monopoly ended in 2002, as well as the resulting social effects to the local region. The broader research on casino gaming was analyzed, and was then compared to the social and economic impacts that took place in Macau. Specifically, economic indicators such as employment and GDP were evaluated, along with social issues such as problem gambling, crime, and educational attainment. Many countries, specifically Asian countries, are now entertaining the idea of introducing casinos to their local communities in an effort to try and replicate the type of economic growth that was experienced in Macau. The difficulty for these regional governments is trying to understand whether the results that took place in Macau are transferable to other Asian countries. This paper assists in answering this question, and details the unique variables that surrounded Macau's casino development.

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PART ONE

Introduction

Macau, also known as “Las Vegas of the East” is currently the largest gaming market in the world. In 2013 total gaming revenue in Macau was \$45.1 billion, compared to Las Vegas Strip gaming revenue of \$6.5 billion during that same year (UNLV Gaming Research, 2014). Although casino gaming in Macau has been legal since 1850, it wasn’t until the end of the gaming monopoly in 2002 that the gaming market began to increase at a historically high rate. Over the course of the last thirteen years, gaming has expanded throughout the region and has become the mecca of casino gaming throughout the world.

Macau is believed to be the oldest economy in the world that relies on legalized gambling (Vong & McCartney, 2005). Macau was transferred to the People's Republic of China in 1999 and became a special administrative region of China. In 2002, the Chinese government decided to end the gambling monopoly “Sociedade de Turismo e Diversões de Macau” or STDM which was in place since 1962 (Chan, 2000). The government granted three concessions, which later became six, to the original concessionaire and a significant number of foreign enterprises. These included STDM, Wynn Resorts, Las Vegas Sands, Galaxy Entertainment Group, MGM, and Melco. As of 2015, there are eleven casinos that make up the Macau Peninsula and Cotai Strip. Over the course of the next three years, a number of new megaresorts are set to open on the Coati Strip, which will increase the number casinos in the region (Schaper, 2013).

Although there are a vast number of measurements that can be used to gauge the impact of gaming development in Macau, the goal of this paper is to understand the key economic and social indicators that define the region. Economic measurements such as GDP, employment, and tax revenue will be quantified to give a better understanding of how the Macau economy

changed after 2002. These results will then be compared to current research regarding the general economic effects of casinos. A similar analysis will be done for the social effects, however many social measurements encompass a variety of variables that are unique to a specific region. This paper will analyze the effects on crime, education, problem gambling, and the overall quality of life in gaming communities.

Purpose

This study examines the economic and social effects that occurred after the end of the gaming monopoly in Macau. The central question is whether these outcomes are consistent with the literature regarding the regional effects of new casinos. Thus, the purpose of this paper is to determine if these outcomes are consistent with gaming research.

Justification

Due to the significant economic benefits and tax revenues that were generated by the new Macau casinos, many other Asian countries are entertaining the idea of legalizing casino gaming. Their motivation is based on achieving a similar type of economic windfall that Macau has experienced. However, achieving similar results may be difficult due to the different cultural, governmental, and economic policies of each country. Countries such as Vietnam, the Philippines, and Japan are potential gaming markets projected to have gaming revenues of \$3.0, \$3.5, and \$15.1 billion, respectively (Lai, 2014). To insure the accuracy of such projections, it is necessary to understand if the results in Macau may be transferable to other Asian countries. This paper aims to fill this research gap, and create a starting point for potential Asian gaming markets.

Theoretical and Conceptual Framework

The first section of the literature review will cover the general economic effects of casinos. This includes issues such as GDP, employment, and tax revenue within gaming communities. The economic effects that took place in Macau will then be analyzed using similar measurements. The second part of the literature review will focus on the social impacts of gaming, and how the introduction of new casinos affects the social environment of local communities. The social effects that took place in Macau will also be analyzed to understand how the region adapted to the casino development in 2002.

Statement of Problem

As more Asian countries start to entertain the idea of allowing casinos in their local communities, it is necessary for governments to understand the economic and social effects that may result from the introduction of new casinos. Given the significant economic benefits that were experienced in Macau, many Asian countries are attempting to replicate this type of economic growth through new casinos of their own. However, the circumstances surrounding Macau are very unique compared to other Asian countries. This paper will compare the effects that took place in Macau, and analyze whether these results can be expected in other Asian countries.

Limitations

Although significant economic and social effects occurred after the gaming monopoly was eliminated, this paper does not go into detail regarding the regional effects that took place before 2002. Although the government limited casino expansion during this time, there were still casinos in operation that served the regional market. How these original casinos affected Macau's economy and social climate is a question for future research. Due to the ambiguity of

many social measurements, this paper is also limited on the specific social effects that can be compared with past literature. The methodology behind many social measurements can vary greatly from one research paper to another, which makes comparing such findings extremely difficult. Finally, the paper does not create comparable measurements from other Asian countries. Although comparing economic, social, cultural, and governmental policies from other countries would serve useful, the robust research needed to complete such a study is outside the scope of this paper.

PART TWO

Introduction

Given the qualitative differences between economic and social measurements, the literature review is organized into four different sections. The research presented in these sections will help clarify the unique effects that took place in Macau, and whether these results can be expected in other Asian countries. The first two sections analyze economic research regarding the economic effects of casinos and the actual effects that took place in Macau. The last two sections focus on the social effects of casino gaming, and how they compare to what actually happened in Macau. Although the economic and social measurements may not be identical for comparison purposes, this literature review creates a comprehensive overview of the effects that took place in Macau, and how these effects align with gaming research.

Economic Effects of Casino Gaming

When analyzing the economic impacts of a tourism based business, it is necessary to start with the multiplier process. This process measures the amount that an endogenous variable (spending) changes in response to a change in some exogenous variable (new casino) (Walker, 2013). The biggest challenge with measuring the multiplier effect is the complex process of collecting the data and determining an appropriate number of parameters.

The most utilized method for measuring the multiplier effect in a casino setting involves input–output measures and tourism expenditure modeling (Ryan, 2003). There is additional research that classifies three stages of the multiplier process (Witt, Brooke, & Buckley, 2013). These stages include the direct effect (only occurring in the industry that is immediately affected), indirect effect (inter-industry reaction), and induced effect (changes in household income).

Positive Economic Effects

Tax Revenue. The most significant economic benefit that a casino can contribute to a region is the increase in tax revenue for the government (Anderson, 2005; Gu & Li, 2009). The American Gaming Association's *State of the States* publication reported total commercial U.S. gaming tax revenue of \$8.6 billion in 2012 (American Gaming Association, 2013). Although empirical studies of gambling industries and their effects on state budgets are limited, research has been done on state lotteries. Kearney (2005) examined household expenditure data from 1982 to 1998, in which 21 states implemented a state lottery. In her report, she studied the source of lottery ticket expenditures. Kearney (2005) concluded that spending on lottery tickets is generated by a reduction in none gaming expenditures, suggesting that other forms of gambling are not impacted by a lottery. This may result in lotteries increasing state revenues since the lottery tax is significantly higher than other types of expenditures. A study that supported this finding is Borg, Mason, and Shapiro (1993), who found that \$1 in lottery revenue resulted in a decline of 15-23 cents in other types of government revenue, particularly sales and excise tax, but that the lottery led to an overall increase in revenue. Fink, Marco, and Rork (2004) also studied this effect, and came to a similar conclusion.

Employment. In addition to tax revenue, there are studies suggesting that casino gaming increases economic benefits by the addition of regional employment opportunities. When researching the difference in employment between counties with and without casino, Cotti (2008) found that counties with casinos see an increase in employment after casinos open. The study also concluded that casinos create benefits to employment and wages in the areas surrounding casinos, and that the employment growth effect is inversely related to county population. This is also supported by Long (1996) who found that casinos create direct jobs that

are created from the actual gaming operations and indirect jobs created by the supporting industries. The University of Chicago's National Opinion Research Center (NORC) found that populations closest to casinos experienced a 12% to 17% decrease in welfare assistance, unemployment rates, and unemployment insurance after the introduction of casino gaming.

Local Industries. In addition to direct economic benefits, casinos can also improve opportunities dealing with recreational, leisure, construction, and entertainment activities within the region. This is due to casinos offering other types of entertainment, such as restaurants, bars, lounges, and shopping outlets (Buultjens, 2006). The degree in which each industry benefits from casino gaming depends on the type of services that support the casino.

As previously mentioned, there are three types of economic effects that casinos contribute to: direct, indirect, and induced effects. Direct effects deal with the economic impacts within the industry that is being affected (Andersen, 1996). For example, the jobs needed in the day to day operations of the casino would constitute direct effects to the regional economy. Indirect effects occur from the increase in sales and employment by suppliers of goods and services associated with the maintenance, construction, and operation of a casino (Andersen, 1996). Induced effects occur from the increase in spending by individuals whose income rises as a result of the direct or indirect activity created by the casino (Andersen, 1996). Table 1, which was prepared for the American Gaming Association, shows the total direct, indirect, and induced outputs that were generated by commercial casinos in the U.S. in 2010. Commercial casinos directly created \$49.7 billion in consumer revenue from casino operations, hotel, food and beverage, and other types of businesses (Bazelon, Neels, & Seth, 2012). More than two-thirds of this spending was created by actual gaming activities located in the casino. To give a complete and accurate total, both indirect and induced effects were added in to illustrate what the gaming

industry means to the entire U.S. When indirect and induced impacts are added in, the industry creates an additional \$76 billion in spending and 470,000 new jobs (Bazelon, Neels, & Seth, 2012).

Table 1

Output by Revenue Source: Commercial Gaming Industry (in billions)

Source	Gaming	Food & Beverage	Hotel	Other	Total
Direct	\$34.6	\$6.5	\$5.1	\$3.5	\$49.7
Indirect	\$19.8	\$5.4	\$3.6	\$2.2	\$31.0
Induced	\$30.8	\$6.4	\$4.6	\$3.2	\$45.0
Totals	\$85.2	\$18.3	\$13.4	\$8.8	\$125.7

Output by Revenue Source (Bazelon, Neels, & Seth, 2012)

A comprehensive study that tested whether casinos create economic growth was done by Rose (1998). In his report he reviewed 36 major studies and other writings on economic impacts of casino gambling/gaming, and used the results from these studies to test whether casinos bring economic growth to hosts communities. Rose concluded that a new casino, of even limited attractiveness, which is placed in a market that is not already saturated, will yield positive economic benefits to its host economy.

Negative Economic Effects

Given the complexity of measuring the economic impacts of casinos, there is also a significant amount of research that suggests that casinos do not create the type of economic surplus that gaming companies propose.

Tax Revenue. In contrast to Borg, Mason and Shapiro (1993), Fink, Marco, and Rork (2004) found that overall state revenues decrease when lottery revenues increase. Although both studies only analyze lottery gaming, the disagreement in tax revenue generation is quite significant. In their study regarding the correlation of gaming and recreational taxes, Siegel and

Anderson (1999) found that a 10% increase in gambling tax revenue led to a 4% decline in tax revenue from other amusement and recreation sources. However, they did not find any consistent negative effect on other types of tax revenues. Popp and Stehwien (2002) used a similar method to evaluate the impact of New Mexico's eleven Indian casinos. The report analyzed quarterly state tax data from 1990 to 1997 and concluded that the casinos had a negative effect on overall state tax revenue. More specifically, the study found that the introduction of the first Indian casino decreased county tax revenue by 1%, while introduction of the second casino decreased county tax revenue by 6%.

Employment. Although there is significant research that suggests that casinos create jobs for host communities, there are many studies that contradict these findings. Garrett (2004) concluded that casinos do not create local employment if they are built in rural or developing communities, where the labor force may be unskilled, since many casinos will likely hire more skilled labor from surrounding areas outside of the host community. In addition, Grinols (1994) found that new casinos built in Illinois did not create significant job opportunities in the state. Goodman (1994) found that the opening up of a casino may displace local workers and residents as well. He stated that casino gaming can be viewed as “an economy within an economy” since the job creation of a new casino generates very little spillover effect. Most of the newly created jobs will not benefit the host community since casinos will not hire underprivileged residents who lack the necessary skills.

Local Industries. Other conflicting research lies in the effects that casinos have on surrounding industries. Goodman (1994) and Grinols (2004) suggest that the expansion of casinos will increase the cost of production for local industries and make them more vulnerable. Since casinos are often full-service facilities that offer an array of goods and services such as

dining, retail, and lodging, local enterprises struggle to compete and may be “cannibalized” or even driven out from the economy. Local customers may also patronize the casino's facilities, which will decrease the amount that they spend on local businesses (Rephann, Dalton, Stair, & Isserman, 1997). As noted by Oddo (1997), during the initial four years when casinos began operation in Atlantic City, NJ, the number of retail businesses declined by 33%, and the number of restaurants decreased by 40%. Room, Turner, and Ialomiteanu (1999) also concluded that the local population will decrease spending on other entertainment options after the opening of a new casino. The economic improvements created by a new casino will only benefit certain types of industries instead of the entire economy. Casinos may even create negative effects on the sources, revenues, and job opportunities of other industries, and as a result may deteriorate their development (Wan & Kong, 2008). For example, Truitt (1996) concluded that riverboat casinos in Illinois did not create the expected tourism or economic growth, since customers did not stay in the riverboats long enough to accommodate the hotel rooms or eat at the local restaurants.

Economic Cash Flow. Although casino gaming may be regarded as a kind of “trade” which may generate positive economic effects, the local population would not benefit if casinos are unable to entice outside customers to visit the casino. In a way, casino gaming is a kind of export service industry. The more gamblers and tourists that come from outside the host community, the more gambling goods and services will be “exported”, and the more likely local residents will benefit from the economic growth (Eadington, 1995). The degree in which the local population will benefit relies solely on the actual number of gamblers and tourists that come from outside of the community. In support of this view, Rose (1998) studied future growth potential of adding additional casinos in gaming centric communities. He found that future growth for these communities would be less than what had been experienced in the past, since it

would be more difficult to attract tourists given the already existing casino. Even if casinos succeed at attracting the necessary amount of outside tourism into the community, the presence of a foreign owned casino may direct cash flow outside of the local economy. Rose (1995) suggests that if casino operators are non-locals, what they earn in the local economy will eventually be sent out of the region.

Substitution Effect. As previously mentioned, any economic activity created by casinos may come at the cost of activities in other industries. Thus, the addition of casinos only shuffles spending among industries. Any benefit to employment or income may be canceled out by losses in existing industries that see a decrease in business, which in turn decreases employment. This theory is known as “industry cannibalization” or the “substitution effect” (Walker, 2013). Wichita State (2007) concluded that 50% of new jobs that are created by casinos are generated by substitution of existing jobs. If a casino is expected to hire 300 people, there will be a direct benefit of 150 new jobs into the economy. The study also concluded that nearly 73% of all gaming revenue is generated from other spending within the community.

Additional studies focusing on river boat gambling in Indiana have produced similar results. Siegel and Anderson (1999) found that riverboat gaming in Missouri led to a movement of revenue from businesses that could substitute for gaming activity. These businesses included entertainment, recreation and other tourism related sectors. Anders, Siegel, and Yacoub (1998) also found that after two Indian casinos were built in Maricopa County, AZ, employment and retail sales in the local economy declined.

Economic Impacts of Macau’s Casino Development

The rapid growth of the gaming industry in 2002 represented the turning point of

Macau’s economy. When the Macau government was created in 1999, the economy was still recovering from the Asian financial crisis. As will be demonstrated in the following sections, key economic measures such as gross domestic product (“GDP”), GDP per capita, employment, and tax revenue, experienced immediate year-over-year (“YOY”) growth once the gaming monopoly ended. This rapid growth continued until 2009, as the global market adapted to the U.S. economic recession.

GDP & GDP Per Capita

The choice to end the gaming monopoly created instant growth in GDP and per capita GDP. When the gaming monopoly ended in 2002, total GDP and GDP per capita increased 10.3% and 9.2% from the following year (DSEC, 2010a) (Figure 1). This was significantly higher than the previous year’s YOY growth, which was 1.5% and 0.7%. This high growth rate continued even during the economic recession in the U.S. In 2008, the Macau economy still recorded a 10.7% increase in per capita GDP. Not until 2009 did the rate decrease by 1.6%, which is not considered significant given the economic downturn in the U.S. (Hung & Zheng, 2011).

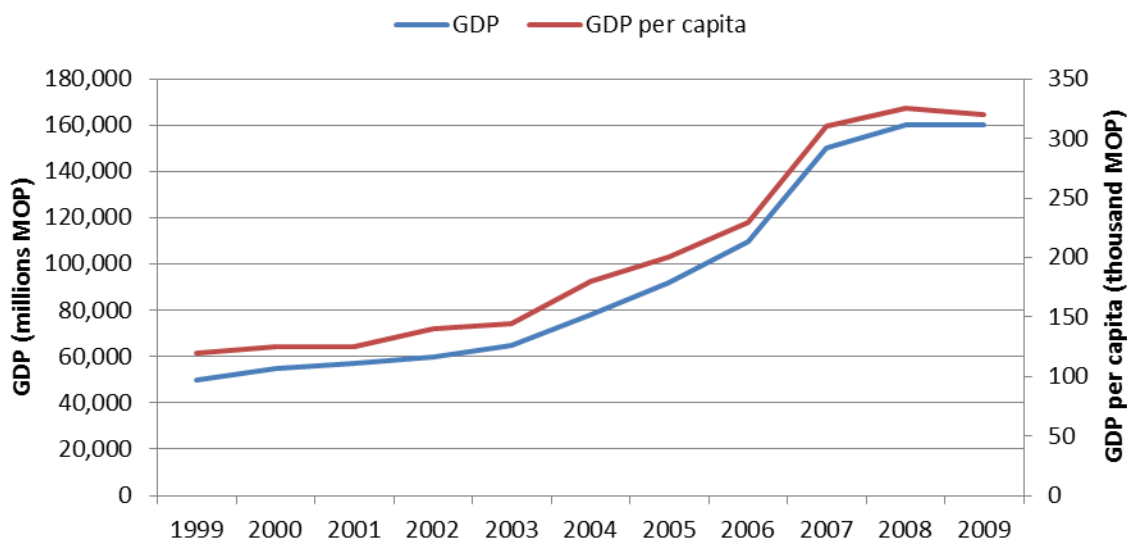


Figure 1. Macau’s total GDP and GDP per capita (DSEC, 2010a)

Visitation

This large economic expansion would not have been feasible without the large addition of tourists, specifically visitors from mainland China. The creation of the IVS (Individual Visit Scheme) in 2003, which allowed mainland Chinese tourists to enter Macau and Hong Kong on a leisure basis, increased the total visitation to 16.6 million in 2004 (Hung & Zheng, 2011). This represented an increase of 40.3% from the previous year. Prior to 2003, Chinese tourists could only visit Macau and Hong Kong during business trips or group tours (Legislative Council Secretariat, 2014). Since the creation of the IVS, mainland visitors have accounted for more than 50% of total visitation to Macau. With the completion of more casinos in 2007, total visitation reached 27.0 million during that year. This represented a 250% increase in total visitation from 1999, and an 800% increase in mainland visitors (DSEC, 2010b) (Figure 2).

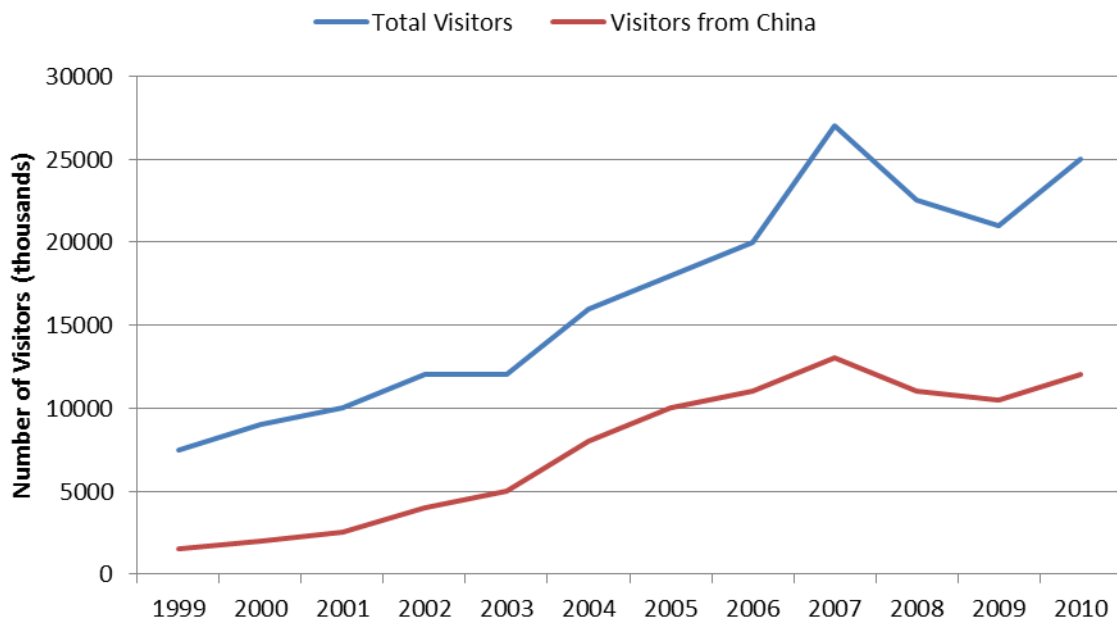


Figure 2. Total Macau visitation and Chinese tourists (DSEC, 2010b)

Gaming Tax & Gaming Revenue

As a result of the increase in tourist arrivals, an increase in gross gaming revenue also took place. This supports the “export” theory of casino gaming discussed in the previous

section. While gaming revenue increased by 66.1% between 1999 and 2002, the start of the IVS and the creation of the first foreign-based casino caused gaming revenues to increase by 300% from 2003 to 2009 (Hung & Zheng, 2011). Although total visitors dropped by 15.1% during the 2008 U.S. economic recession, gaming revenues still increased during the year.

In addition, the rapid growth of government gaming tax also increased at an extremely high rate. In 2000 and 2001, total gaming taxes were MOP 5,646 million (\$706.5 million) and MOP 6,292 million (\$787.3 million), respectively (DSEC, 2010c) (Figure 3). However, in 2005 and 2009, total gaming taxes reached MOP 17,318 million (\$2.2 billion) and MOP 44,309 million (\$5.5 billion). Between the years 2002 to 2009, total gaming tax revenue increased 470.6%, which represented an average annual increase of 67.2% (DSEC, 2010c).

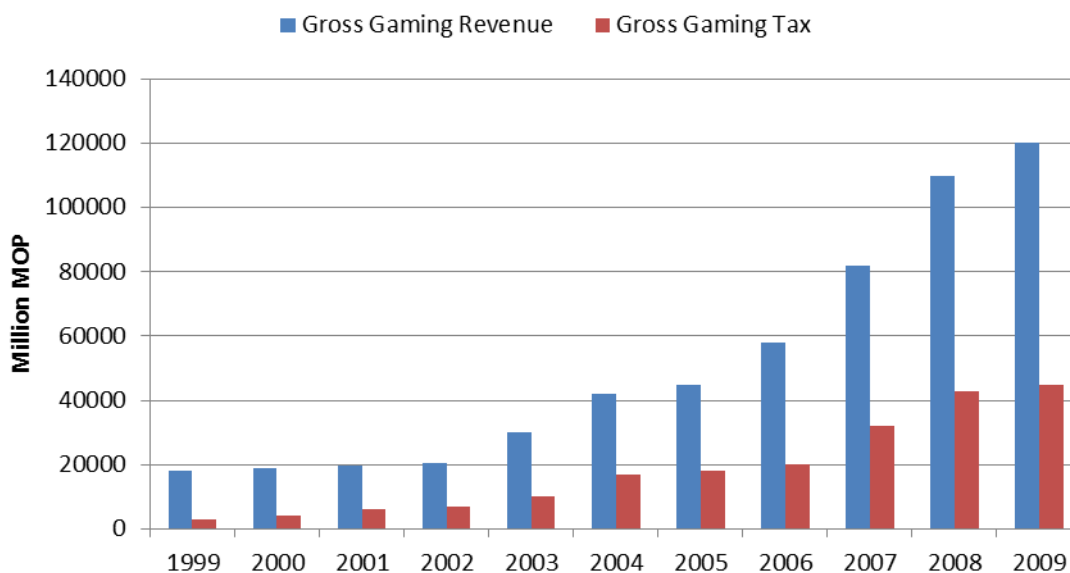


Figure 3. Gross gaming tax and gross gaming revenue (DSEC, 2010c)

Employment

Before the first foreign-based casino was built in 2004, gaming employment had never accounted for more than 10% of total regional employment in Macau. With the extensive expansion of casino development, the number of casino jobs increased significantly. In 2004, 2006, and 2008, the percentage of gaming employment in relation to total regional employment

increased to 10.5%, 16.1%, and 20.6%, respectively (DSEC, 2010d) (Figure 4). The global economic recession only had a minor impact on the gaming labor market, as can be seen in the slight decrease to 19.7% in 2008. Not only did gaming taxes increase after the expansion of new casinos, but total gaming and regional employment also increased at an extremely high rate (Hung & Zheng, 2011).

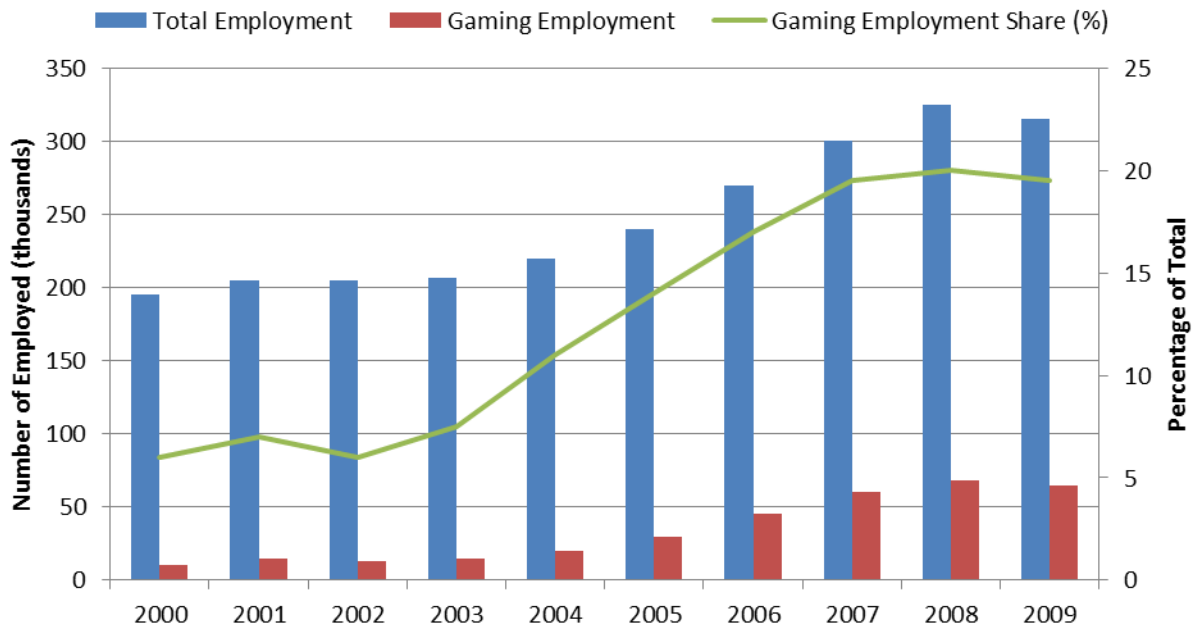


Figure 4. Total employment, gaming employment, and % of gaming employment (DSEC, 2010d)

Income

Macau has significantly increased tax income to the region. The city has enjoyed surplus revenue since 2002, which has led to an increase in personal income for Macau residents. The average monthly wage of local citizens increased from \$581 in 2002 to \$1,080 in 2009 (DSEC, 2009a). Average wages in the tourism/gaming industry increased from \$2,460 in 1999 to \$3,613 in 2008 (DSEC, 2009a). In addition, personal income increased due to the government giving citizens cash allowances of \$635 in 2008 and \$740 in 2009 (Vong, 2010).

Social Effects of Casino Gaming

Due to the complexity of social variables, social issues are viewed as the most difficult subject for researchers to measure (Oh, 1999). Some of the most common social effects deal with crime, problem gambling, and the quality of life. Many opponents of gaming suggest that the social “costs” of gaming outweigh the economic benefits that casinos bring. Many different measurement techniques are used to quantify the actual costs of these social issues. Before we can evaluate each type of social cost, it is necessary to start with the technical definition and methodology behind measuring social costs.

Social Costs

Many studies use the term “cost” to accurately measure the social impact of casino gaming. This has resulted in the term “social cost” being used as the standard measure to illustrate the different types of social impacts. This approach, which is based on economic effects to evaluate social costs, has caused many controversial arguments regarding the actual definition of social costs and how they should be measured. Walker (2007) suggests that a different methodology is needed when evaluating the social costs of gaming. He recommends that three key criteria are needed in order to classify an effect as a social cost of gambling. These three criteria include: (1.) The cost must be social rather than personal or private, (2.) The cost must decrease societal wealth, (3.) The cost must be generated solely from casino gambling. Even if the impacts are measured accurately, there could be many factors (such as community size and the scale of casino development) that might result in different positive and negative social impacts on host communities (Eadington, 1996). A detailed study by Fong, Fong, and Li (2011) found seven unique social costs that may occur when a casino is added to a community.

These social costs include treatment costs, prevention costs, psychological impacts, legal fees, rent-seeking costs, government expenses, and public costs (training, promotion and research).

Crime

Casinos have long been assumed by the greater population to be connected with crime, particularly organized crime. However, most casinos are now owned by corporations, which are highly regulated by the government (Walker, 2013). The real question is whether these casinos have resulted in an increase in local crime such as theft, abuse, and other offenses. Research regarding the relationship of casinos and crime have proven inconclusive

Early studies suggest that the introduction of a new casino will result in an increase in crime for the host community. Grinols and Mustard (2006) represents one of the most comprehensive studies done on the relationship between casinos and crime. The study analyzed the crime rate between two years prior to casino introduction and five years after the casino was built. These crime rates were then compared to communities without casinos. The study found that crime rates in communities without casinos were lower than communities with casinos. Additionally, the study found that casinos appear to increase crime at around four years after the introduction of the casino (Grinols & Mustard, 2006).

Additional studies also support the theory that casinos increase crime in local communities. Evans and Topoleski (2002), who studied the effects of tribal casinos, found that approximately 8% of regional crime could be attributed to casinos. The study estimated that the cost of casino crime was \$75 per adult per year in the U.S. Stokowski (1996) evaluated two Colorado cities and analyzed crime data before and after casinos were implemented. The study concluded that crime had increased after casino gaming was introduced to the area. Similarly, Long (1996) used the same methodology for towns in South Dakota and found similar results.

The most significant research that suggests that casinos do not increase crime is Reece (2010). The study utilized the same model from Grinols and Mustard (2006), but added additional variables. These variables included casino activity, tourism volume, and law enforcement. The study concluded that there was limited evidence that connected casinos with an increase in crime. Although certain types of crime did go up, these increases were most likely generated from the excess tourism volume and new hotels that were built in the area. Although the model focused exclusively on Indiana crime statistics, other studies such as Janes and Collison (2004) and Giacomassi, Nichols, and Stitt (1999), who utilized tribal and commercial casinos in numerous states, came to similar conclusions.

Pathological Gambling/Family Issues

Another debated topic is whether casinos have negative effects on pathological gaming and the need for social assistance. Similar to the studies on casino crime, current literature regarding these issues have produced mixed results. Janes and Collison (2004) found that problem gambling had increased in select gaming communities from 1995 to 2000. Additionally, city leaders stated that problems dealing with child neglect and family issues had become more widespread during that time period. Thompson and Schwer (2005) evaluated the dollar amount of the social costs of gambling in southern Nevada and found that each pathological gambler cost \$19,711 in social costs. In contrast, other studies such as Braunlich, (1996) and Room, Turner, and Ialomiteanu (1999), suggest that there is no significant evidence that proves that casinos create problem gambling. The two studies argued that individuals who are pathological gamblers will participate in some form of pathological activity regardless of if gaming is locally available.

Many opponents of casino gaming also point to the negative family issues that are caused by gambling. Long (1996) compared the social issues in gaming and nongaming communities, and found that there was an increase in child protection, marriage treatment, and other social programs in gaming centric regions. In addition, Giacomassi, Nichols, and Stitt (1999) found that the total number of social workers had increased in communities with casinos. The study also concluded that local casinos add stress to individuals with existing financial and social problems. These individuals are often referred to social service providers and economic development officers to obtain assistance. Chhabra (2007) studied the perception of casino gaming in Iowa and found that residents perceived that there was an increase in bankruptcies, mental health issues, domestic violence, financial difficulties, and alcohol/drug abuse. Long (1996) found that the need for social service programs increased in gaming communities, however the need for financial support decreased. Similarly, Hsu (2000) found that many gaming communities saw a reduced need for financial services once gaming was introduced to the area.

Recreation & Entertainment

In many cases, the addition of a casino may enhance the recreation, leisure, and entertainment options of the local region. Janes and Collison (2004) evaluated the views of city leaders in Indian gaming communities over a five year period. The study found that although entertainment choices such as hotels and restaurants were available, customers limited their participation to gaming activities instead of participating in other recreational activities. In support of these findings, Room, Turner and Iomiteanu (1999) found that customers spent less money on other entertainment options because of the opening of new casinos. Other studies have found that there is no improvement to recreation options once a casino is introduced to a region (Carmichael, Peppard, & Boudreau, 1996; Long, 1996).

Traffic

For casinos to generate economic benefits for host communities, it must draw in visitors from outside the local area. It has been suggested that this increase in tourism negatively impacts traffic conditions in the region. Long (1996) surveyed citizens of South Dakota and Colorado and found that residents believed that casinos had a negative impact on traffic congestion and overcrowding. Stokowski (1996) also noted a 200% increase in traffic volume on Colorado's Highway 119 during the first month following the opening of new a casino. Carmichael, Peppard and Boudreau (1996) studied the perception of local residents of gaming centric communities in Connecticut, and found that casinos had led to an increase in traffic problems and driving hazards.

Life Quality

Another issue that is often brought up by gaming opponents is the negative impact that casinos bring to the overall quality of life for local residence. Given the ambiguous nature of measuring life quality in gaming communities, the research regarding this issue has resulted in mixed results. Giacomassi, Nichols, and Stitt (1999) interviewed 128 community leaders in seven gaming jurisdictions and found that 59% of them favored having casinos and 65% noted that casinos increased the quality of life for the community. Gonzales, Lyson, and Mauer (2007) connected casino gaming with an increase in the quality of life in terms of the social and economic well-being in Arizona and New Mexico. The variables that were used to measure life quality were house prices, poverty, income, employment, and home ownership. A more focused study on property values found that house prices in gaming communities increased over a 10 year time span, however house prices increased even more in nongaming communities (Janes & Collison, 2004).

Other studies have concluded that casinos decrease the sense of community within a region and decrease the overall quality of life. For example, Long (1996) found that Colorado citizens did not believe that local casinos made their community a better place to live. Roehl (1999) concluded that only 33% of local Nevada residents believed that local casinos increased the quality of their life, although 50% agreed that casino gaming had made Nevada (as a whole) a better place to live. Pizam and Pokela (1985) evaluated resident's views on a hotel/casino resort in the Adams and Hull regions of Massachusetts. The results indicated that residents did not perceive that the casino improved their standard of living, but instead increased their cost of living.

Community Improvements

In some cases, new casinos may result in community improvements to local infrastructure, facilities, and regional planning. Casino gaming in Atlantic City, NJ, was found to have led to the improvement of tourist and convention facilities and increased infrastructure and tourism capacity (Nicholas, 1998). Stokowski (1996), however, found that the Colorado gaming towns of Black Hawk and Central City, experienced a lack of development control and stated that gaming companies had served their own interests at the expense of local residents.

Social Impacts of Macau's Casino Development

Although the economic health of Macau has significantly improved since the beginning of casino development in 2002, many studies have tested whether these developments have negatively affected the social climate of the region. Given the difficulty in measuring social costs, many of these findings are limited by the specific variables in the research. In addition, there is also conflicting research regarding the majority of issues such as crime levels, problem gambling, and overall life quality.

Education

The number of total school drop-outs increased from 1,986 in 2002/2003 to 2,388 in 2006/2007 (Education and Youth Affairs Bureau, 2009). As can be seen by Table 2, the drop-out rate was particularly high among junior high school students (Secondary 1 to Secondary 4). This may have been due to good employment opportunities created by casino development, and the low education level necessary for entry level positions such as dealers or waitresses (Education and Youth Affairs Bureau, 2009). This resulted in only 66% of secondary school students managing to finish their education.

Table 2

Number of Student Drop-Outs In Macau

Year	P1	P2	P3	P4	P5	P6	S1	S2	S3	S4	S5	S6	Total
2002/2003	67	57	73	91	125	119	310	316	359	258	131	80	1986
2003/2004	78	80	74	70	129	146	437	366	316	374	217	115	2402
2004/2005	64	44	45	72	88	111	513	352	371	353	220	125	2358
2005/2006	45	47	45	47	81	104	344	370	361	383	207	172	2206
2006/2007	56	39	40	75	97	118	430	388	323	401	234	187	2388

Number of student drop-outs in Macau (Education and Youth Affairs Bureau, 2009)

Problem Gambling

According to the Institute for the Study of Commercial Gaming at the University of Macau (ISCG, 2009), the total number of problem gamblers in Macau grew from 4.3% in 2003 to 6.1% in 2007. This supports the findings of Chan (2011) that found that the number of problem gamblers in Macau was directly linked to the number of gaming options in the region. However, problem gambling decreased in the surrounding cities of Hong Kong and Singapore (ISCG, 2009). In Hong Kong, the total number of problem gamblers decreased from 5.9% in 2001 to 4.5% in 2008, whereas the total number of problem gamblers in Singapore dropped from 4.4% to 2.9% from 2004 to 2008 (ISCG, 2009).

Crime

Since the end of the gaming monopoly in 2002, total crime in Macau has increased significantly, from 9,088 incidents in 2002 to 13,864 in 2008 (Judiciary Police of the Macao SAR Government, 2010). Total crime increased considerably in 2005, when the Individual Visitation Scheme (IVS) was created to permit more visitors from China, and in 2007 when the construction of all of the major casinos was completed (Judiciary Police of the Macao SAR Government, 2010). Specifically, gambling-related crimes grew by 37.8%, from 1,092 in 2005 to 1,506 in 2008 (Judiciary Police of the Macao SAR Government, 2010) (Table 3).

Table 3

Crime Rate and Crimes Related to Gambling				
Year	# of crime cases	% Increase	Crimes related to gambling	% Increase
2000	8,925	-	-	-
2001	8,905	-0.2	-	-
2002	9,088	2.1	-	-
2003	9,920	9.2	-	-
2004	9,786	-1.4	-	-
2005	10,538	7.7	1,093	-
2006	10,855	3.0	979	-10.4
2007	12,921	19.0	1,279	30.64
2008	13,864	7.3	1,506	17.75

Crime rates and gambling related crimes in Macau
(Judiciary Police of the Macao SAR Government, 2010)

Although the total amount of crime has increased since 2002, Lo (2005) concluded that there was a decrease in organized crime in Macau following the end of the gaming monopoly. Similarly, Vong (2004) found that market pressure had forced local casino companies to improve their administration processes to reduce the infiltration of organized crime groups.

Traffic

The increase in tourism volume in Macau has led to an increase in transportation issues and traffic related problems. A study done by the Inter-University Institute of Macau (IIUM, 2007) found that transportation problems were the issues causing the greatest frustration among locals. DSEC (2009b) also found that the number of licensed automotive vehicles grew from 122,345 in 2002 to 182,765 in 2008, with the highest growth rates occurring between 2004 and 2007. This coincided with the opening of large casino resorts such as the Sands, Wynn, and Venetian. Total traffic volume also grew significantly, with growth rates of 17.2% in 2004 and 15.4% in 2007 (DSEC, 2009b) (Table 4). A report by the Transport Bureau (2010) concluded that between 1999 and 2009 road construction only increased by 27.3%, while tourist and vehicle totals increased by 202.3% and 65.2%, respectively.

Table 4

Year	Licensed Vehicles		Traffic Accidents		Vehicle Traffic	
	#	% Increase	#	% Increase	#	% Increase
	2000	113,231	-	8,278	-	2,052,528
2001	114,765	1.35	9,854	19.04	2,238,356	9.05
2002	122,345	6.60	10,523	6.79	2,445,579	9.26
2003	130,472	6.64	11,764	11.79	2,413,170	-1.33
2004	141,258	8.27	12,758	8.45	2,828,346	17.2
2005	152,542	7.99	13,318	4.39	3,101,421	9.65
2006	162,874	6.77	12,963	-2.67	3,300,312	6.41
2007	174,452	7.15	12,974	0.08	3,807,517	15.37
2008	182,765	4.72	12,834	-1.08	3,785,863	-0.57

Vehicle Transportation Data (DSEC, 2009b)

Infrastructure

The development of casinos has accelerated the construction of many regional projects that aim to improve the infrastructure of the city. In 2006, the proposal to construct the Light

Rail Transit (“LRT”) was passed, after more than 10 years of debate on the issue (SkyScraperCity, 2012). The LRT is intended to create a more efficient transportation option between the Macau Peninsula, Taipa Island, and Cotai. This will help increase the number of visitors from the border gates and ferry ports to the casino resorts on the Cotai Strip, and reduce traffic congestion on roads and bridges.

The creation of the Hong Kong–Zhuhai–Macau Bridge was also approved in 2008, and construction officially began in 2009 (Arup Group Limited, 2010). The project is expected to be completed in late 2016, and is considered a solution for shortening the travel time between Hong Kong, Macau, and Zhuhai. The bridge is projected to have an immediate impact to these regions to facilitate tourist traffic between the cities (Hsu & Zheng, 2010). It will make Macau more accessible for international visitors from Hong Kong's international airport.

Entertainment & Recreation

The introduction of new casinos has resulted in more leisure and recreation options throughout region. Table 5 shows that not only did the number of casinos jump from 24 in 2006 to 31 in 2008, but the total number of restaurants, bars, saunas, massage parlors, and karaoke venues also increased from 460 to 537 during the same period (Macau Government Tourist Office, 2010). According to Suntikul (2008), the total number of shows and exhibitions in Macau increased from 8,713 in 1998 to 13,491 in 2008. In addition, sports facilities and recreational complexes grew from 284 to 720 during that same time span. New casino resorts also brought new retail options to the local community. The total number of retail lots grew from 301,389 square feet in 2006 to 4,197,925 square feet in 2009 (Wan & Pinheiro, 2009).

Table 5

Number of Entertainment and Recreation Facilities			
	2006	2007	2008
Casino	24	28	31
Travel Agency	122	129	132
Restaurants	240	272	281
Bars	112	135	145
Sauna & Massage	50	46	45
Karaoke	58	56	66
Total	606	666	700

Total number of entertainment and recreation facilities
(MGTO, 2010)

Life Quality

In 2010, Macau was rated as the seventh best place to live in Asia, according to the ECA International's survey (ECA, 2010). The survey was based on numerous categories including climate, air quality, health programs, housing, social network, recreational facilities, infrastructure, personal safety, and political tension. However, casino development may have caused an increase in traffic volume, which has decreased the air quality throughout the region. A study by the Macao Meteorological and Geophysical Bureau (2008) concluded that there has been a decline in Macau's air quality since 2000. The study also projected that Macau's air quality will continue to decrease, which will damage the quality of life for local residence and negatively affect life expectancy of the population.

Home values have increased at a greater rate than average annual income since 2002, which is primarily due to the expansive casino development in the region (Vigers International Property Consultants, 2007). The average price for homes prior to 1989 was \$2,242 per square meter. After 2000, home prices more than doubled to \$5,096 per square meter (Vigers International Property Consultants, 2007). Although monthly incomes have increased for local

residents, it is still difficult for them to buy property (Vigers International Property Consultants, 2007). There has also been a consistent increase in the inflation rate since 2004, from -2.6% in 2002 to 8.6% in 2008 (DSEC, 2008) (Table 6). The price of food, non-alcoholic beverages, and clothing increased by 14.3%, 13.6%, and 9.3%, respectively, during this same time period (DSEC, 2008).

Table 6

Inflation Rate 2003-2008	
Year	Inflation rate (%)
2002	-2.6
2003	-1.6
2004	1.0
2005	4.4
2006	5.2
2007	5.6
2008	8.6

Inflation Rate in Macau (DSEC, 2008)

Summary

Although there is conflicting research regarding the economic and social impacts of gaming, there is enough data to create reliable assumptions about the effects of casinos. The research strongly suggests that casinos improve the overall economic landscape of host communities. This is a result of new job creation in the local market, and the additional consumption that results from the increase in labor. This was evident in the development of Macau's economy after the end of the gaming monopoly in 2002. Total GDP, per capita GDP, and total employment all increased at an exceptionally high rate once casino development began. Although a few local industries were negatively affected by the introduction of new casinos, the overall impact on the regional economy was extremely positive.

In contrast, many reports suggest that casinos have a negative impact on the social wellbeing of the local community. These reports point to an increase in crime and a decrease in life quality due to the hardships created by problem gambling. However, given the difficulty in understanding the different variables that effect social measurements, most research lacks a consistent methodology when evaluating social effects. This has resulted in conflicting research on the different social impacts of casinos. Research regarding gaming development in Macau also suggests that casinos have had negative social impacts to the region. However, Macau's situation is very unique due to the extensive increase in tourism traffic and large creation of hospitality jobs. The following section will evaluate the effects that took place in Macau, and explain why these outcomes may or may not be consistent with the overall literature on casino gaming.

PART THREE

Introduction

To evaluate the economic and social impacts that took place in Macau, it is necessary to understand the unique circumstances that surround the region. Given the large economic benefits created by the casino development, many Asian countries are seeking ways to replicate this economic growth. The problem that many Asian countries face is trying to understand the variables that made casino development in Macau so successful, and whether these variables are comparable to other Asian markets. This section will analyze the effects that took place in Macau, and compare these results to the general research on casino gaming.

Analysis of Macau's Casino Development

Economic Impacts

A review of the data suggests that casino development was the primary source of economic growth in Macau from 2002 to 2009. According to DSEC (2010a), GDP grew from 60,000 MOP in 2002 to 160,000 MOP in 2009. This is to be expected as much of the literature regarding the effects of casinos suggest that a new casino acts as a stimulus to the local economy. Studies by Cotti (2008) and Long (1996) found that casinos create direct and indirect jobs from the labor required to run the casino and the supporting regional communities. However, this type of economic increase is diminished if there are existing gaming options in the host community. According to Rose (1998), the future growth potential for communities with existing gaming options is less than communities introducing gaming for the first time. This was the case in Macau as casinos had been operating in the city for many years. The reason why Macau was able to experience such substantial economic increases was the large influx of visitation and the

pent-up demand in China. According to DSEC (2010b) Macau's visitation increased from 12,000,000 visitors in 2002 to 27,000,000 million in 2007.

Before 2003, Chinese tourists could only visit Macau and Hong Kong during business trips or group tours. The creation of the IVS (Individual Visit Scheme) allowed Chinese residence to visit Macau for leisure purposes, which increased Macau's gaming market exponentially (Legislative Council Secretariat, 2014). Since the creation of the IVS, mainland visitors have accounted for more than 50% of total visitation to Macau (DSEC, 2010b). Due to this influx of new customers and lack of casinos in the region, the diminishing economic benefit of new casinos was nonexistent. This supports the study done by Eadington (1995) that states that the more customers that come from outside the host community, the more gambling goods and services will be "exported", which will result in economic benefits to the region.

It is important to note that many Asian countries that are introducing gaming into their local economies may not experience the type of economic growth that took place in Macau, due to Macau's pent-up gaming demand and the lack of gaming supply before 2002. Although the events in Macau support the theory that casinos induce economic growth, the unique circumstances of the region created the ideal environment for casino gaming. This type of "perfect storm" allowed casino operators to generate abnormally high levels of gaming revenue. Although the addition of new casinos in other Asian countries will have some benefit to local communities, the lack of pent-up demand will limit the amount of gaming revenue that is generated by these casinos.

As the gaming industry starts to mature, operators are focusing more on strategic locations rather than the number of locations. Gaming revenue is highly dependent on the number of gaming options in a targeted region, and the overall demand of gambling related

activities (Gu & Tam, 2014). This is why countries such as Japan are highly desired by gaming operators around the world. The country has many characteristics of Macau, because the population has a high demand for gaming activities, but the government currently limits the type of gaming establishments that can be built (Aruvians, 2013). Without this pent-up demand most other Asian countries will realize that the “build it and they will come” philosophy will not produce the desired results.

Social Impacts

As mentioned in the literature review much of the research on the social effects of gaming lack a consistent methodology for measuring social costs. The research regarding the casino development in Macau is no exception. Although most of the data on Macau support the general research that the social environment is negatively affected by new casinos, most of the studies do not factor in all the necessary variables. Many of these studies fail to address the increase in population and how the influx in tourism affected Macau’s social environment.

One negative outcome of Macau’s casino development was the increase in school dropouts, however it is important not to confuse correlation with causation. Research by the Education and Youth Affairs Bureau (2010) found that total school dropouts increased from 1,996 in 2002 to 2,388 in 2007. This supports the study by Long (1996) who found the gaming communities had higher amounts of social issues such as child protection services, lower educational attainment, and marriage counseling than nongaming communities. It is evident by the data that the number of school dropouts increased from 2002, but the data does not make a direct connection to casino gaming. Due to the large increase in Macau’s population, it is to be expected that the number of dropouts would increase. In addition, the development of casinos has increased the number of tourism sector jobs in Macau (DSEC, 2010d). This supports the

findings of Cotti (2008) who found that counties with casinos experience an increase in employment after a casino opens. It also supports the study by Long (1996) who found that casinos create direct jobs that are created from the actual gaming operations. These jobs require a low level of education, and many students are choosing these jobs over finishing school (Education and Youth Affairs Bureau, 2009). Although not ideal, this may show that students are dropping out to take advantage of job opportunities, rather than choosing gambling activities over school. This can be anticipated in other Asian countries in which new casinos are expected to substantially increase total population.

The connection between crime and casinos is another issue that has resulted in mixed findings in both Macau and other gaming jurisdictions. Similar to the research done on school dropouts, studies connecting crime to Macau's casino development do not take into account the large increase in tourism volume and population. These findings support the research by Grinols and Mustard (2006), Evans and Topoleski (2002), and Stokowski (1996) that suggest that communities with casinos have more crime than communities without casinos. However, all of these studies fail to account for the increase in visitor volume in their targeted regions. Studies by Reece (2010) and Janes and Collison (2004), which do account for the increase in tourism volume, suggest that casinos are not directly connected to an increase in crime. These studies argue that an increase in tourism volume will naturally result in an increase in total crime due to the simple fact of more people in the region. This theory is supported when comparing the increase in Macau's total visitation starting in 2002 (DSEC, 2010b), with the corresponding increase in total crime (Judiciary Police of the Macao SAR Government, 2010). Asian countries that are entertaining the idea of new casinos, must anticipate an increase in total crime if tourism volume is projected to increase.

Data regarding problem gambling in Macau suggests that there has been an increase in the number problem gamblers since 2003. According to the Institute for the Study of Commercial Gaming at the University of Macau (ISCG, 2009), the total number of problem gamblers in Macau grew from 4.3% in 2003 to 6.1% in 2007. Chan (2011) found similar results and concluded that the number of problem gamblers in Macau was directly linked to the number gaming options in the region. However, these studies do not take into account that pathological gamblers may partake in other pathological activities. Studies such as Braunlich, (1996) and Room, Turner, and Ialomiteanu (1999), suggest that there is no significant evidence that proves that casinos create problem gambling. The two studies argue that individuals who are pathological gamblers will participate in some form of pathological activity regardless of if gaming is locally available. An increase in pathological gamblers should be expected if an Asian country introduces gaming to the local community, however it should not be assumed that the gaming itself created pathological individuals.

Although the majority of research suggests that casino development decreased the social environment in Macau, studies also suggest that casino development increased the development of many regional projects. In 2006, the Light Rail Transit (“LRT”) was passed to create a more efficient transportation option between the Macau Peninsula, Taipa Island, and Cotai (SkyScraperCity, 2012). The creation of the Hong Kong–Zhuhai–Macau Bridge was also approved in 2008, and is a solution for shortening the travel time between Hong Kong, Macau, and Zhuhai (Arup Group Limited, 2010). These projects support the study by Nicholas (1998) who found that casinos result in an improvement of tourist and convention facilities, as well as increased infrastructure and tourism capacity. Asian countries must account for the necessary resources for improving the local infrastructure to accommodate the increase in tourism volume.

Conclusion

Although there are many studies on the social and economic effects that took place in Macau, the most accurate of these studies center on the economic impacts to the region. Key economic indicators such as GDP, per capita GDP, and employment demonstrate the type of economic stimulus that casino development brought to the region. In addition, the increase in gaming tax revenue generated from the new casinos has resulted in cash allowances for Macau's citizens, which has increased the average household income of local residence. Unfortunately, the research regarding the social effects does not result in a clear answer. Many of the studies do not take into account the influx of visitation to the region, and neglect how this may affect issues such as crime, education, and overall quality of life.

Asian countries who are introducing gaming to their local communities must understand two important concepts. First, the substantial economic benefits that were experienced in Macau are unlikely to occur in most jurisdictions, due to the lack of pent-up demand that Macau had readily available. In addition, the creation of the IVS allowed mainland Chinese citizens to visit Macau for leisure purposes, which substantially increased the size of Macau's gaming market. The second concept deals with the uncertainty in predicting the social effects that will take place once gaming is introduced. If new casinos are expected to increase tourism volume to the country, then it would be safe to assume that the county would experience an increase in total crime as well as an increase in traffic volume. However, given the lack of comprehensive research connecting casinos to low education levels, it would not be expected that educational attainment would drop once casinos are introduced.

Recommendations

There are many recommendations that can be made to improve the accuracy of the conclusions drawn from this study. The most important recommendation would be to improve the accuracy of the research regarding the social effects of gaming. This would involve creating a consistent methodology for all studies, which would improve the validity and comparability of the findings. This can also be accomplished for the economic research as well, specifically for analyzing how local industries are affected by new casinos. It is also important to note that the analysis of this report focuses on Macau's gaming environment from 2002 to 2009. Given that there were casinos prior to 2002 (although limited), it would be beneficial to evaluate research on Macau that dates prior to 2002. This would be used to compare how the market was affected by the limited casinos in comparison to the large casino development starting 2002.

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