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Social impacts of casino gaming in Macao: A qualitative analysis

Abstract

The casino gaming sector has witnessed rapid growth worldwide in the past three decades. As the casino industry has been developing rapidly, it is important to understand the pros and cons of casino development and seek ways to minimize the potential negative impacts. This study investigates the social consequences of casino gaming in Macao since the liberalization of casino licensing in 2002, using a qualitative research method. The results reveal that the expansion of casino gaming did bring certain social benefits to the community, such as increased personal incomes and improvement in the city's financial power, landscape, infrastructure and facilities, and the enlargement of entertainment and recreation facilities. There were also many negative social costs, including: uncontrolled urban development, reduction of public leisure and green spaces, heavy traffic and traffic congestion, a high drop-out rate among school students, increase in problem gambling and crime, increased demand for counselling services and public health treatment, deteriorating quality of life and finally the difficulties of many small and medium-sized businesses in competing with the larger casino businesses. The results indicate that the challenges outweigh the benefits. Policy implications for destination managers in Macao and in other locales intending to open casinos are offered.

Keywords:

casino gaming; social impacts; Macao; China

Introduction

The casino gaming sector has witnessed rapid growth worldwide in the past three decades. The number of legal casinos worldwide increased from just 15 in 1970 to 77 in the 1980s. In 2003, there were legal casinos in 48 of the 50 states of the USA and in 130 of the world's 202 countries (Siu, 2007). In the Asia-Pacific region, casino development is booming, with the introduction of casinos in Australia, New Zealand, South Korea, Cambodia, Myanmar, the Philippines and, recently, Singapore (Hsu, 2006). The unprecedented growth and expansion of gambling since 1990 has been accompanied by a range of economic, socio-cultural and environmental impacts, both positive and negative (Carmichael, Peppard & Boudreau, 1996; Lee & Back, 2006).

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As the casino industry has been developing rapidly, it is the responsibility of government policymakers, casino operators, and academics to understand the pros and cons of casino development and seek ways to minimize the potential negative impacts (Carmichael et al., 1996; Lee & Back, 2006).

Issues about the impacts of casino gaming have been examined extensively in the context of Western countries (Giacopassi, Nicols & Stitt, 1999; Garrett, 2004; Janes & Collison, 2004; Lee & Back, 2006; Kang, Lee, Yoon & Long, 2008), yet little attention has been paid to Macao. Since the liberalization of casino licensing in 2002, Macao's gaming industry has experienced very rapid growth. Its gaming revenues reached a record high of US\$10.33 billion in 2006, far exceeding the US\$6.6 billion made on the Las Vegas strip (Central Intelligence Agency, 2008). Rapid economic growth has come at a price, however. There have been many social dislocations and challenges for public policy that can be attributed to the expansion of the gaming industry.

Vong (2004, 2008, 2009) and Vong and McCartney (2005) have conducted formal academic studies that comprehensively address Macao residents' perceptions of casino gaming. However, they employ quantitative methods and their data extends only up to 2007, when not all of Macao's major casinos had yet been completed. This study aims to fill some of the gaps in the research area. It investigates the social impacts caused by casino gaming in Macao in the period from the liberalization of casino licensing in 2002 to 2009 – a period in which all the major casinos currently operating in Macao were built and completed. We adopted a qualitative research approach, through the use of the primary and secondary sources of data, which is believed to be able to provide another perspective and understanding of the degree and types of impacts of gaming development on the local communities in a more objective way. It is hoped that the findings will further the knowledge obtained in existing impact studies, and will also be of use to Macao's policymakers in formulating strategies to limit the ills of gambling. The results will also serve as a reference for cities that are planning to open casinos.

Literature review

Extensive research on the perceptions of the possible impacts of casino gaming have been conducted in the past (Perdue, Long & Kang, 1995; Long, 1996; Hsu, 2000). Most of these studies were based on the tourism impact studies of the 1970s (Hsu, 2000). The impacts are often categorized into social, economic and environmental impacts (Lee & Back, 2003) and are both positive and negative. Amongst these impacts, social impacts are regarded as more difficult to measure than others. As Oh (1999) argues, measuring the social consequences of gaming poses many conceptual difficulties because it is difficult to separate socio-economic from economic impacts. There are many definitional overlaps between economic and social impacts. Despite the difficulties in assessing the social impacts of gaming, tourism policymakers and casino operators have the responsibility to identify those impacts and develop appropriate policy and management responses to minimize the potential negative ones. Social impact

studies are crucial, as the ability to identify the negative consequences and addressing them appropriately will affect the extent of community support for the government's gaming and tourism policies and plans (Hall, 2000). Support for tourism development has been recognized as a fundamental precondition for a sustainable industry (McGehee & Andereck, 2004).

SOCIAL IMPACTS

Studies of the social impact of casino gaming have yielded conflicting results, with both positive and negative impacts reported.

Recreation, leisure and entertainment

The establishment of casinos could enhance the recreation, leisure and entertainment opportunities of the local community. The Crown Casino in Melbourne (Australia) offers not only gaming opportunities but also other forms of entertainment, restaurants, bars, pubs and retail outlets (Buultjens, 2006). Janes and Collison (2004) examined the perceptions of community leaders in India of the social and economic impacts of gaming over a five-year period, and they observed that although additional entertainment options such as accommodation and restaurants were available, visitors limited their participation to the gaming facility rather than attending other recreational activities. Room, Turner and Ialomiteanu (1999), however, reported that people spent less money at other entertainment venues because of the opening of some casinos. Some studies even find that there is no improvement or no impact on recreation options (Carmichael et al., 1996; Long, 1996).

Traffic conditions

Long (1996) found that although the residents of South Dakota and Colorado generally perceived casinos to have had a positive impact on employment, they also mentioned such negative effects as traffic congestion and overcrowding. Stokowski (1996) also reported a 200-per cent growth in traffic on Colorado State Highway 119 (the primary access road to the Central City and Black Hawk casinos from the Denver metropolitan area) in the first month following the casinos' openings. Carmichael et al. (1996) surveyed local residents in communities in proximity to the Foxwood casino in Connecticut and found they perceived casino gaming to have led to crowding, traffic congestion and driving hazards. In the case of Macao, Vong (2008) reported worsening traffic congestion and air pollution and overcrowding to be the major negative environmental impact of casinos perceived by residents.

Quality of life

Giacopassi et al. (1999) interviewed 128 community leaders in seven new casino jurisdictions in the USA and found that 59 percent of them favoured having casinos and 65 percent believed that casinos enhance the quality of life. Gonzales, Lyson and Maurer (2007) associated casino gaming with improvements in the quality of life in terms of the social and economic well-being (as judged by house prices, poverty, income,

employment and home ownership) of both Indian and non-Indian populations in Arizona and New Mexico. Janes and Collison (2004) compared the statistics on property value in a gaming county and a non-gaming county. They found that the housing value in the gaming county did increase over the ten years studied, but it increased even more in the non-gaming county. They concluded that there was no evidence that the rise in property value was tied to the expansion of casino gaming.

The studies of Long (1996) and Carmichael et al. (1996) mentioned above obtained different results, however. These and other studies have found evidence that in cities with gaming facilities, residents felt a decrease in their sense of community as well as reduced overall quality of life. For example, Long (1996) found that Colorado residents were less positive when asked whether the casino made their town a better place in which to live. Roehl (1999) reported that only one-third of the respondents agreed that legalized gambling had made their community a better place to live, although one-half of them did agree that legalized gambling had made Nevada in general a better place to live. Pizam and Pokela (1985) explored residents' perceptions toward a hotel-casino prior to its development in the Adams and Hull areas in Massachusetts. The results showed that residents did not perceive it as improving their standard of living but instead perceived that it had increasing their cost of living. Vong (2008) found that the majority of Macao's residents believed that casino gaming and the booming economy had led to a high cost of living, inflation and rocketing property prices.

City improvement

Casino gaming in Atlantic City, New Jersey, was reported to have led to the redevelopment of tourist and convention facilities and improved infrastructure and tourism capacity (Nicholas, 1998). Stokowski (1996), however, observed that two of the Colorado gaming towns, Black Hawk and Central City, suffered from lack of planning control and concluded that gaming operators had served their own interests at the expense of the residents.

Small business development

Casino gaming can foster local economic development and bring more business opportunities (Boger, Spears, Wolfe & Lin, 1999; Kang et al., 2008). As Hashimoto (2008, p. 29) notes:

As casinos begin to operate, they buy goods and services from the surrounding areas. Therefore, more businesses grow or develop to meet the increasing demands for products from the casino. Many businesses will spring up to satisfy the higher incomes of the new employees. New hospitality services, such as hotels, restaurants, and rental cars, begin construction to meet the needs of the tourists, locals, and corporations. With new businesses, there are more suppliers, both in gaming and hospitality that need hospitality services.

However, casinos can also kill other businesses (especially small businesses) by stealing their customers, revenues (MacIsaac, 1994; Garrett, 2004) and employees (Wan & Kong, 2008). For instance, Truitt (1996) found that riverboat casinos in Illinois did not generate the anticipated tourism and economic growth. This is because gamblers do not stay long enough to rent hotel rooms, or eat in local restaurants, and they purchased goods and services outside the casinos. Local customers may also be drawn to spend and eat in the casino facilities (Rephann, Dalton, Stair & Isserman, 1997). Oddo (1997) also reported that, four years after casinos were legalized in Atlantic City (New York), the number of retail businesses in the city had declined by one-third. The number of restaurants also dropped from 243 to 146 between 1977 and 1987. Just 10 percent of the small businesses near the casino locations in 1976 were still open in 1997.

Social issues

Stokowski (1996) studied the two Colorado gaming towns of Black Hawk and Central City and reported that crime had increased with the development of casino operations. Similarly, Long (1996) observed that residents of South Dakota and Colorado generally perceived that casinos had led to increased crime. On the other hand, Janes and Collison (2004) reported that there was no direct tie between casino development and criminal activity. The study by Giacomassi et al. (1999) also noted that casinos have little effect on crime. Lo (2005) and Vong (2004) both reported less organized crime in Macao following the liberalization of casino licensing in 2002. They concluded that market competition had forced local casino concessionaires to improve their management systems to minimize infiltration by triads (organized crime groups). Long (1996) observed that some communities with gaming facilities were experiencing a decrease in the need for financial assistance programs. Similarly, Hsu (2000) also reported that some gaming communities had experienced a reduced need for social services. There are also studies that suggest that casinos do not lead to problem gambling (Braunlich, 1996; Room et al., 1999).

Different results are obtained from other studies. Janes and Collison (2004) observed that problem gambling had increased in the community over the five-year time frame from 1995 to 2000. Community leaders also reported increasing challenges to community social and child neglect issues over the study period. Long (1996) found that there were increasing demands for child protection, marriage counselling, and other social service programmes in gaming communities. Giacomassi et al. (1999) noted that the case loads of social workers had increased in communities with casinos. They also observed that the casino added stress to individuals with existing finance, drinking, and family problems. Gambling treatment agencies often referred the problem/pathological gamblers to social service providers and economic development officers to obtain assistance. Chhabra (2007) examined residents' perceptions of casino gaming in Iowa and reported that residents perceived that there were increases in bankruptcies, mental health problems, domestic disputes, money problems for people who could not pay their bills or control their addiction, and alcohol and drug abuse.

**Research
context:
Macao**

Macao is located on the south-eastern coast of China to the west of the Pearl River Delta. It has a total land area of 29.2 square kilometres including the peninsula of Macao, Taipa, Coloane and the CoTai Strip. It has a total population of about 544,200 (Statistics and Census Service (DSEC), 2009a). It is traditionally famous for its tourism industry and is ranked twenty-first among the world's top destinations (World Tourism Organization, 2006). As a tourist city, Macao is famous for its gaming facilities. It is the only place in China where gambling is legal. Macao is also famous for its rich cultural heritage. Macao has experienced a boom in its tourism and gaming industry since 2002 as a direct result of the liberalization of casino licensing in 2002 and the implementation of the Chinese government's new visa regulations in 2003, which permitted many mainland Chinese to travel to Hong Kong and Macao under the Individual Visitation Scheme (IVS). The number of tourists grew from 9.16 million in 2000 to over 21.7 million in 2009 (DSEC, 2009b).

The casino gaming sector, in particular, has expanded rapidly. Casino operators increased from only one in 2002 to three in 2009 (managed by six companies). The number of casinos jumped from 11 to 33 over the same period (up to June 2009) (Gaming Inspection and Coordination Bureau (DICJ), 2009). Foreign investment (i.e., in the Venetian, Sands and Wynn casinos) has boosted Macao's reputation as an international gaming destination, and has also brought many positive economic benefits. Economically speaking, the gaming industry currently accounts for more than 50 percent of Macao's gross domestic product (GDP), 14 percent of its total employment and 70 percent of government revenue (DSEC, 2009b). As a result of the rapid development of casinos, tourism and infrastructure, there has been a sharp rise in employment opportunities. The unemployment rate dropped significantly from 6.0 percent in 2002 to 3.5 percent in the second quarter of 2009 (DSEC, 2009b). The total employed population also rose from 202,000 to 321,000 in the same period. Growth in employment was particularly rapid in the gaming related sectors. The percentage of people employed in the hotel, entertainment and gaming industries rose from 25.3 percent in 2004 to over 35 percent in 2008. The number of people working in the gaming sector alone doubled from 21,264 in 2004 to 43,975 in the second quarter of 2009, according to statistics from the Labour Affairs Bureau (DSAL, 2009).

While the boom in casino gaming in Macao has brought tremendous positive economic benefits, at the same time it has created many social consequences to the community, both positive and negative, which have been separately reported by different scholars. The reported positive social effects of casino liberalization include a reduction in organized crime, due to the more controlled gaming management system (Vong, 2004; Lo, 2005), and improved infrastructure (Sheng & Tsui, 2009). The negative effects include increased domestic strife due to gambling debts (Vong, 2004), the scarcity of public facilities and urban land for casino development (Wan, Pinheiro & Korenaga, 2007), overcrowding (Institute For Tourism Studies, 2008), and a rise in crime (Sheng & Tsui, 2009). Vong (2009) used quantitative surveys in her impact study and has concluded that the benefits of casino development in Macao have lagged behind

the negative impacts of this development, as property prices rose faster than average salaries, demand for casino workers grew faster than the supply of appropriately skilled and trained local people to fill them, and public services and infrastructure improvements could not be completed rapidly enough to address the additional demand.

Methodology

This study aims to examine the social impacts of the boom in casino gaming in Macao from 2002 to 2009. The literature review above provides a framework for evaluating the social impacts, which include evaluating the impacts of casino gaming on recreation, leisure and entertainment opportunities, crime, traffic conditions and crowding, quality of life, city landscaping and infrastructure, small business development and social problems. Primary and secondary sources of data were used to measure both the positive and negative impacts in order to give a more objective measure and understanding of those impacts. This method is commonly adopted by many other gaming and tourism impact studies (Teo, 1994; Moufakkir, 2005). We collected data from a variety of sources including the existing studies of tourism development and gaming impacts in Macao, material published in journals, books and working papers, government statistics and reports, newspapers and magazines. The results obtained from these sources were then synthesized and compiled and presented in the tables and figures below.

Findings

POSITIVE SOCIAL IMPACTS

Higher personal income and government financial power

One positive social impact of gaming in Macao is the large tax income, which has given the city a very solid financial foundation and which helped the Macao SAR government to cope with the recent global financial crises. The city has enjoyed surplus revenue since the liberalization of casino licensing and, in 2008 alone, Macao registered a surplus of US\$13.6 billion (Xinhua News Agency, 2008). The personal incomes of Macao residents overall have also increased. The median monthly income of workers increased from US\$580 in 2002 to US\$1081 in 2009 (DSEC, 2009c). For those who are employed in the 'recreational, gaming and cultural' sector, median income jumped from US\$2450 in 1999 to US\$3612 in 2008 (DSEC, 2009c). Personal income also increased due to the government sharing its surplus by giving residents cash allowances amounting to US\$625 and US\$750 each in 2008 and 2009, respectively (Vong, 2010).

Improved urban landscape, infrastructure and public facilities

Casino gaming development in the past few years also accelerated the construction of the Light Rail Transit system (LRT). In 2006, the proposal to build the LRT was passed, after more than 10 years of community debate on the issue. The LRT is intended to provide a better transportation option between the Macao Peninsula, Taipa Island and CoTai. It will help to bring a large number of tourists from the border gates

and ferry ports to large casino resorts in the CoTai area, and relieve traffic congestion on roads and bridges. The construction of the Hong Kong–Zhuhai–Macao Bridge (HZMB) was also confirmed in 2008 and construction has been underway since 2009. Expected to be completed in 2015, this project is considered as a solution for shortening the travelling time and distance between Hong Kong, Macao and Zhuhai. It will yield significant impacts on these regions and also facilitate tourist flows between the destinations (Hsu & Zheng, 2010). It will make Macao more accessible for international visitors via Hong Kong's international airport. In addition, with greater budget surpluses, public expenditure on environmental protection more than doubled between 2004 and 2006, from US\$75,178,601 to US\$160,039,975 (Environmental Council of the Macao Government (DSPA), 2006).

More entertainment and recreation facilities

Casino development has also led to more entertainment and recreation facilities in Macao. According to Article 27 of Decree Law 16/2001 from the Gaming Inspection and Coordination Bureau (DICJ, 2009), in addition to the annual tax and premium paid to the government, each concessionaire is required to contribute 2.4 per cent of its gross revenue toward urban development, tourism promotion and social security, and 1.6 per cent for promoting, developing or studying culture, society, economy, education and science and engaging in academic and charity activities. The number of entertainment and recreation facilities has increased significantly. Not only did the number of casinos increase from only 24 in 2006 to 31 in 2008, but also the numbers of restaurants, bars, sauna and massage premises and karaoke venues jumped from 460 to 537 within the same period (Macao Government Tourist Office (MGTO), 2010) (Table 1). The number of public performances and exhibitions in Macao grew from 8713 in 1998 to 13,491 in 2008, and sports facilities increased from 284 to 720 (Government Information Bureau of the Macau Special Administration Region, 2008; see also Suntikul, 2010). New and modern casino resorts also bring new shopping experiences to the locals and to tourists. Total retail spaces jumped from only 28,000 square meters in 2006 to 390,000 square meters in 2009 (Wan & Pinheiro, 2009).

Table 1

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 and Massage	50	46	45
Karaoke	58	56	66

Source: MGTO (2010)

The per-capita spending of visitors increased after the liberalization of the gaming industry (Table 2) (DSEC, 2009a). It increased from US\$171.8 in 2003 to US\$213 in 2009. Visitors' spending could be on non-shopping items (i.e. accommodation, transportation and entertainment but excluding gaming); and shopping items (i.e. cloth-

ing and fabrics, jewellery and watches). Table 2 shows that visitors' spending on the non-shopping items (including entertainment) increased from US\$ 99 in 2003 to US\$ 104.9 in 2009 per capita. This may imply that the entertainment opportunities are enhanced due to the expansion of casino gaming facilities and the visitors are willing to spend more on entertainment.

Table 2

VISITOR PER-CAPITA SPENDING (excluding gaming expenses) 2003-2009 (US\$)

	2003	2004	2005	2006	2007	2008	2009
Per-capita spending	171.8	190.7	181.7	191.6	200.9	215.8	213
Non-shopping spending (Accommodation, F & B, local transport, outbound transport, entertainment and others)	99	106.2	103.9	104.9	118.5	128.4	104.9
Shopping spending (Clothing and fabrics, jewellery and watches, Chinese pastry, candy and food, cosmetics and perfume and others)	72.8	84.5	77.8	86.7	82.4	87.4	108.1

Source: DSEC (2009a)

(Note: 1 US\$ = approximately MOP8)

NEGATIVE SOCIAL IMPACTS

High school drop-out rate

On the other hand, there have been negative consequences of gaming in Macao. One is the rising number of school drop-outs, from 1886 in 2002/3 to 2388 in 2007/8. The drop-out rate is particularly high among junior high school students (Secondary 1 to Secondary 4) (Table 3). The main reason for this was good employment prospects in the gaming industry, and in particular the low educational level required for relatively well-paid jobs in casinos, such as dealers. Only around two-thirds of students of secondary school age manage to complete their secondary education, according to the Education and Youth Affairs Bureau (DSEJ, 2009).

Table 3

NUMBER OF STUDENT DROP-OUT IN MACAO

Academic 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	1,886
2003/2004	78	80	74	70	129	146	437	366	316	374	217	115	2,402
2004/2005	64	44	45	72	88	111	513	352	371	353	220	125	2,358
2005/2006	45	47	45	47	81	104	344	370	361	383	207	172	2,206
2006/2007	56	39	40	75	97	118	430	388	323	401	234	187	2,388

Note: P: Primary education S: Secondary education

Source: DSEJ (2009)

The prevalence of problem gambling

Another negative social impact is the prevalence of problem gambling. According to two surveys conducted by the Institute for the Study of Commercial Gaming at the University of Macau, the percentage of problem gamblers increased from 4.3 percent (or 13,666 people) in 2003 to 6 percent (or 24,162 people) in 2007. The problem in the two neighboring cities of Hong Kong and Singapore is less acute. In Hong Kong,

the average rate of problem gambling decreased from 5.9 percent in 2001 to 4.5 percent in 2008, whereas in Singapore it shrank from 4.4 percent to 2.9 percent between 2004 and 2008 (Institute for the Study of Commercial Gaming, 2009).

Higher crime rate

A high crime rate is another concern of the community. Since the liberalization of casino licensing in 2002, crime in Macao has increased drastically, from 9088 incidents in 2002 to 13,864 in 2008. It has also grown rapidly since 2005, when the Individual Visitation Scheme (IVS) was implemented to enable more visitors from China, and the completion of all the major casinos in 2007 (Table 4). In particular, it is noted that the incidence of gambling-related crimes has increased by 37.8 percent, from 1093 in 2005 to 1506 in 2008 (Judiciary Police of the Macao SAR Government, 2010).

Table 4

CRIME RATE AND CRIMES RELATED TO GAMBLING

Year	No. of crime case	% Increase	Crime 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	-10.43
2007	12,921	19.0	1,279	30.64
2008	13,864	7.3	1,506	17.75

Source: Judiciary Police of the Macao SAR (2010)

Uncontrolled development and reduced public leisure and green spaces

The gaming companies require a good deal of space for their new casino-hotels and if their needs are to be met, other important interests have to be sacrificed. In the past, great swathes of prime public land have been eaten up by real estate and gaming interests. Two critical examples include the NAPE plan proposed in 1991 (newly reclaimed areas in Outer Harbour and Nam Wan Bay) and the CoTai plan proposed in 1999 (the reclaimed land between Coloane and Taipa Islands). Although laws had been carefully drafted by the previous Portuguese government (which ruled Macao before the handover of the territory's sovereignty in December 1999), which aimed at comprehensive development of the two areas for residential use, tourism and community facilities, the land was all 'eaten up' by casinos and entertainment facilities (Lima, 2009; Wan & Pinheiro, 2009). On 16 August 2007, the NAPE plan was repealed by the Chief Executive of the Macao SAR government. The government justified its decision by stating that many concessions had already been made to build new casinos and it was necessary to take account of their needs. Moreover, the government argued the NAPE plan was outdated and difficult to follow (Macao SAR Government, 2006). Parts of the green and residential areas of the NAPE plan are now occupied by the Star

World Hotel, the Le Arch complex, and casinos such as Sands, Wynn, MGM and the Cultural Center. These high-rise casinos created a 'wall effect' that resulted in a negative visual impact and poor urban ventilation (*Macau Post Daily*, 2009). The CoTai area, meanwhile, has turned into a 'CoTai Strip' which is mostly occupied by casino and hotel projects, including the Venetian, Studio City, Galaxy Entertainment and the City of Dreams (*South China Morning Post*, 2008). Only the race-carting track and a small golf course remain untouched, because they are built on land reclaimed from a garbage dump. The priority given to the land requirements of the casinos over other public needs has resulted in the area of green/leisure zones being reduced from 13.5 square metres per capita in 2002 to 12.0 square meters per capita in 2008 (Land, Public Works and Transport Bureau (DSSOPT), 2008).

Traffic problems

A report released by the Inter-University Institute of Macau (IIUM, 2007) on quality of life in Macao concluded that transportation was the issue causing the greatest dissatisfaction among locals. According to the DSEC (2009c), the number of licensed motor vehicles increased from 122,345 in 2002 to 182,765 in 2008, with the highest growth rate recorded between 2004 and 2007, when large casino resorts such as the Sands (2004), Wynn (2006) and Venetian (2006) opened. Casino shuttles are blamed for the increase in the number of vehicles as well as air pollution. Vehicle traffic also increased tremendously, realizing growth rates of 17.2 percent in 2004 and 15.37 percent in 2007 (Table 5). Traffic congestion is the result, as road building has not kept pace. A recent report by the Transport Bureau reveals that between the beginning of 1999 and September 2009, although tourist and vehicle numbers grew by 202.74 percent and 65.19 percent, respectively, road building increased by only 27.27 percent (Transport Bureau (DSAT), 2010).

Table 5

VEHICLE TRANSPORTATION

Year	Licensed vehicles		Traffic accidents		Vehicle traffic	
	No.	% Increase	No.	% Increase	No.	% 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	6.6	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	17,452	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

Source: DSEC (2009c)

Impose constraints to small business development

The expansion of the casino businesses also affects many small businesses, which make up about 95 percent of all businesses in Macao (*Jornal Do Cidadao*, 2006). There is

some evidence that the casino businesses have harmed the small enterprises by drawing away their customers, revenue and employees. Shop rental in prime shopping areas trebled (from US\$10.8 per square foot to US\$30.6 per square foot) from the first quarter of 2005 to the fourth quarter of the same year (*Wen Wei Po*, 2006). It increased by 10 percent and 18.2 percent in 2007 and 2008 (up to the first six months), respectively (The Economy, 2008). Small businesses suffered as many tourists and local people were attracted to visit and spend in the new, modern and high-quality entertainment facilities. While the expenditure of non-residents in the gambling sector reached a record high growth rate of 31.06 percent, their spending in such local sectors as accommodation and other non-gambling services dropped 3.53 percent and 0.61 percent respectively. This also implies that although the overall tourist expenditure has increased over the recent past (as discussed previously and has shown in Table 2), tourists seem to spend more in the gaming sector than in the non-gaming SMEs.

SMEs also suffer from a severe shortage of workers. Although Macao's casino industry has tripled in size since 2002 (from one concessionaire to three) and the number of tourist arrivals has doubled (from 11 million in 2002 to 21.7 million in 2009), its population has increased by only about 23 percent. Although Macao's working population numbers about 312,800 (57.7 percent of the total population) (DSEC, 2009b), there is a serious lack of qualified, experienced and skilled talent, and many positions in the casino industry have not been filled by the local labour market. Casino concessionaires are willing to pay high salaries to attract qualified staff. The average monthly income of casino workers jumped from US\$1360 in 2004 to US\$1907 in 2009. Their income in 2008 and 2009 ranked second among all sectors, just behind the public administration sector (Table 6). Because of the higher salaries they offer, casinos have been blamed for taking workers away from other employment sectors, even professionals from the banking and insurance sectors. The number of those who changed their jobs went up from 25,100 (or 9.5 percent of the employed population) in 2006 to 39,000 in 2008. Recreational, cultural, gambling and other services are the most popular industries for the job changers (DSEC, 2009d; see also Suntikul, 2010).

Table 6

MEDIAN MONTHLY INCOME BY INDUSTRY	(US\$)					
	2004	2005	2006	2007	2008	2009 Q4
Transport & communication	744	806	865	975	1,062	1,250
Manufacturing	372	387	392	500	500	625
Construction	620	740	940	1,062	1,252	1,125
Wholesale and retail	568	611	697	750	875	875
Financial services	1,019	1,086	1,103	1,225	1,375	15
Hotels and restaurants	534	558	610	687	762	850
Real estate and business activities	464	524	584	687	700	750
Public administration and social security	1,736	1,815	1,849	1,862	225	2,875
Gambling	1,360	1,485	1,747	1,862	1,957	1,907

Source: DSEC (2009d)

(Note: 1 US\$ = approximately MOP8)

Deteriorating quality of life

Macao is ranked as the seventh best place to live in Asia, based on ECA International's annual survey (IPIM, 2010). The survey is based on categories such as climate, air quality, health services, housing and utilities, social network and leisure facilities, infrastructure, personal safety and political tension. However, shortage of land limits the scope of Macao's tourism development, and causes traffic congestion, which worsens the air pollution problem. A report by the Macao Meteorological and Geophysical Bureau (SMG, 2008) also indicates that there has been a slight increase in the air quality index since 2000. Although it remains in the moderate range (below 100), this tendency indicates that the air in Macao will become more polluted, damaging local quality of life and affecting the life expectancy of the population.

Property prices have risen faster than average salaries, and casino development is considered to be the main driver to the property market (Vigers International Property Consultants, 2007). The average price for residential units completed in 1989 and before stood at US\$2243 per square meter and the price for those completed in 2000 and after was US\$5095 per square meter, up by 8.6 percent and 5.1 percent respectively quarter-to-quarter (Macau News, 2010). Although workers' monthly incomes have increased, it is still very hard for them to own a property. For instance, a Macao resident working in a casino can earn a monthly salary of US\$1875 to US\$2250. For a 300-square meter flat costing US\$250,000, with 90-per cent financing over 30 years, the monthly installments at the current mortgage rate would be around US\$1250, which is about one-half to two-thirds of salary. With many Macao residents earning less than US\$1250, it seems difficult for the residents to buy a property nowadays.

High cost of living and residual prices are other issues. There is a continuous increase in the inflation rate since 2004, from -2.62 percent in 2002 to 8.6 percent in 2008 (DSEC, 2008) (Table 7). The price indices of food and non-alcoholic beverages, health and clothing, went up by 14.35 percent, 13.69 percent and 9.39 percent (DSEC, 2008) respectively.

Table 7
**INFLATION RATE (CONSUMER PRICE)
BETWEEN 2003 AND 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

Source: DSEC (2008)

Increased demand for social assistance

Casino gambling also brings social problems and leads to an increase in the demand for social services. According to the Problem Gambling Prevention and Treatment Center, since its hotline counseling service started in 2005, it has received 2005 phone calls, and 1795 (or 89.5 percent) of them are gambling related (Social Welfare Bureau, 2009).

Discussion and conclusion

This study has examined the social impacts of casino gaming in Macao from the liberalization of casino licensing in 2002 to 2009, using qualitative research. The results show that, similar to other impact research, the community has experienced a number of social impacts in the past few years. The positive social impacts are; increase in personal income and the city's financial power, improvement in the city's landscape, infrastructure and facilities, and enlargement of facilities for entertainment and recreation such as shopping and sport, and for meetings, incentive travel, conventions and exhibitions (MICE). The drawbacks include; uncontrolled urban development, the reduction of public leisure and green spaces, heavy traffic and traffic congestion, the high drop-out rate among students, increases in problem gambling, crime, and the demand for counseling services and public health treatment, the deteriorating quality of life, and finally the trade of local small business ventures being stolen by larger casino businesses. It can be concluded that the expansion of casino gaming in Macao has brought several social benefits, but there are more negative impacts than the positive ones, hence it appears that the challenges outweigh the benefits. The results of this study agree with the findings of Vong's (2009) study, that the benefits of casino development in Macao have lagged behind the negative impacts of this development.

In order to obtain a high level of community support for casino gaming development, the government, casino operators, academics, local community and community leaders have to try their utmost to minimize the negative impacts of gaming to the community. This study has several implications for tourism and social development.

First, school dropouts have been increasing in recent years because of the high and attractive wages offered by casinos. This will further worsen the quality of Macao's labour force, as presently about 56 percent of local workers have not completed secondary school education (Tuck, 2008). It is believed that a recently announced government policy of increasing the minimum age of casino workers from 18 to 21 years of age could help keep the young people in school. It is equally important that parents, teachers, social workers and the government should coordinate their efforts in encouraging young people to stay in school.

Second, faced with the escalating rate of problem gambling, the government, academics and casino operators have to join hands to plan and launch gambling prevention programmes. Apart from implementing greater control over gambling commercials to reduce gambling-related delusional beliefs, gamblers must be better informed of

the consequences of indulging in gambling through more diverse media, including television, radio, and the Internet. Collaborating on 'problem gambling awareness' campaigns with local universities and social organizations may be a particularly helpful means of reducing the numbers of problem gamblers. Casino operators should also exercise their social responsibility by putting more effort into identifying potential problem gamblers on the gaming floor and providing them with necessary information and advice.

Third, Macao needs better town planning. A sound town planning system coordinates all the different requirements of land use, transportation, employment, environment, and heritage protection into a town plan in a systemic manner. It provides a guideline for both public and private development (United Nations, 1999). A comprehensive urban master plan and development guidelines (i.e., building heights, buffer zone borders, impact assessments and urban sky limits) must also be in place to help reduce conflicts over land among various interests, and to create better infrastructure and a transportation network that reduces pollution and traffic jams and congestion.

Fourth, Macao needs to improve its transportation immediately, as people in the community have expressed a lot of dissatisfaction over traffic problems and air pollution. For the long term, the government already has plans to construct the Light Rail Transit to help bring tourists *en masse* from the border gates and ferry ports to the major entertainment facilities. However, some short-term solutions to alleviate the existing traffic problems must also be put in place, such as encouraging more residents and visitors to walk and providing visitors with a clear indication of which buses to take to travel directly between the ferries and border gates and their destinations in Macao.

Fifth, policy makers should also recognize that small and medium-sized businesses (SMEs) play a pivotal role in sustainable tourism development (Horobin & Long, 1996). Immediate attention and effort should therefore be paid to enhancing their ability to compete with the larger casinos, such as financial subsidies and practical business training courses to strength their internal capabilities.

Sixth, the escalating price of property and its effects on people's lives warrant more attention. For many local residents, especially young couples, owning a flat is not easy. If the basic housing needs of the local residents are not met, greater dissatisfaction toward the government and tourism development will be the result. Given the limited supply of land in Macao (29.2 square kilometers), a plan that identifies the future residential land supply and public uses is needed to cater for the different community interests. An articulated and clear housing policy and the right balance of the provision of public and private housing is also necessary in order to meet the different housing aspirations and needs of the residents of Macao.

Finally, we agree with the recommendations of Back and Lee (2005) that policy makers should identify the best methods for presenting and communicating the benefits of casino development to local residents. This study also echoes the comment made by

Vong (2010), that gaming operators have to demonstrate their social responsibility by working harder in contributing to the community in ways other than providing business and employment, such as in the areas of education, environmental protection and the promotion of responsible gambling etc., in order to justify gaming to further the development of gaming in Macao. Community leaders also play an important role in communicating with policy makers on the needs of the entire community.

As with other research, this study is not without its limitations. First, although the qualitative method we adopted has a number of advantages, additional insights could be gained by quantitative methods such as surveying a large number of local residents to collect their views on the impacts of gaming. Second, as the impacts of gaming are likely to vary according to the time period under study, it is important to revisit the gaming environment at different stages to determine whether residents' perceptions of those impacts have changed. Finally, this study focuses on the social impacts of casino gaming, but we believe that an evaluation of the economic and environmental impacts is also necessary to provide a holistic understanding of the impacts of the expansion of casino gaming on the community.

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