

# The Impact of Electronic Gaming Machines on Retail Trade in Victoria

– the first four years, 1992-96.

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## Abstract

*This paper sets out to examine the emergence of electronic gaming in Victoria and its impact on retail trade during the first four years of operation. A multiple regression model for retail trade involving gaming revenue, employment and seasonal variation was developed. Initial findings suggest that electronic gaming has been negatively associated with only a small number of retail industry groups and subgroups. For total retail trade and for a majority of retail sectors however no negative links were detected with some sectors (including hotels and licenced clubs) showed positive relationships.*

## **Aim of the Study**

Despite the dearth of research into the impact of gambling, including electronic gaming machines, on economic activity, there has been no shortage of opinions offered on this issue. Urban myth, supported at best by anecdotes and at worst by preconceived convictions, add little to our understanding. Commenting on the American scene, Goodman (1995, p.xi) offered the following:

*Huge portions of discretionary consumer dollars are being diverted into gambling, resulting in losses to restaurant and entertainment industries, movie theatres, sports events, clothing and furniture stores, and other businesses.*

This assertion was repeated several times by Goodman but at no time was this claim supported. Similar claims have been made by retailers and their retail associations. It would be fair to say that such views are widely held and reflect commonly held views but it is equally reasonable to seek out hard data to quantify such effects.

At the local level in Victoria, Australia, there have been a number of media comments about the impact of gambling, particularly electronic gaming machines (EGMs), by industry and corporate leaders associated with the retail industry. Reports have linked gambling to the downgrading of the valuation of regional shopping centres, a marked decline in retail trade and the closing down of retail businesses.

To shed some light on this issue it was decided to examine the economic impact of EGMs on retail trade in the State of Victoria. With a history of four years of EGMs, it was felt that such a study was possible and timely. It was decided to examine this impact, not only on Victorian retail trade overall, but also on the seven retail industry groups defined under the Australian and New Zealand Standard Industry Classification (ANZSIC). The study was then widened to examine the 19 retail subgroups in order to better isolate and pinpoint these effects.

## **Methodology**

Retail data covering total retail sales and the seven industry groups was obtained from the Australian Bureau of Statistics (ABS) beginning in July 1986 up to June 1996. As the period covered a redefinition of the industry groups, unpublished ABS information had to be obtained. Material linked to EGMs was limited to the number of machines at venues and the date of their establishment. This was provided by the Victorian Casino and Gaming Authority (VCGA). It was then possible to build a month by month picture of the number of EGMs appearing on the scene. Following industry standards, an attempt was made to estimate the total revenue of gaming machines, that is the net losses to the community, as opposed to gambling turnover, a less than useful concept given that machines must return a minimum of 87% of turnover to the players.

To obtain monthly gaming revenue figures, estimates of daily revenue per machine were matched with the growing number of gaming machines operating across the State over the four years under review. Estimates of daily revenue per machine were based on the Prospectus and Annual Reports of Tabcorp, one of the two machine owners and operators licensed to operate in Victoria. Monthly figures were aggregated to annual totals and then checked against available annual figures from the Tasmanian Gaming Commission (1999).

To isolate the effects of price, all monthly figures for retail trade and gaming activity were converted back to 1989/90 prices using the Consumer Price Index for the State. Retail trade for the various sectors was then examined using a multiple regression model incorporating gaming revenue, the number of persons employed and a seasonal dummy variable.

## **Electronic Gaming in Victoria - July 1992 to June 1996**

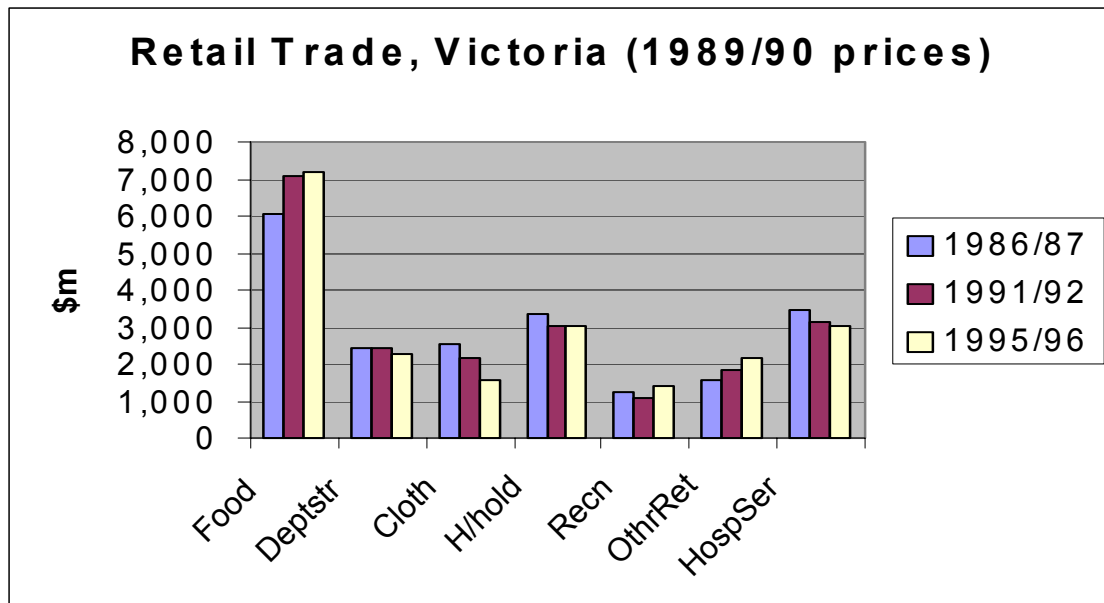
Electronic gaming machines were introduced into Victoria in July 1992. In a period of four years, the annual revenue generated by gaming machines had grown from nothing to \$1.3 billion for the 1995/96 financial year. This growth was shared by licensed clubs and hotels which were approved for electronic gaming activities in Victoria, with each sector allowed half of the share of gaming machines. Two companies own the actual machines, namely Tattersalls and Tabcorp, each licensed to supply 50% of the machines. The machines are set by law to return a minimum of 87% of turnover to gamblers over a twelve-

month period. The owners of the machines, the venue and the government share the revenue (defined as the net losses of gamblers).

By July 1996, there were 22,254 gaming machines operating in Victorian clubs and hotels and a further 1,400 in the temporary casino. Due to a public outcry, a temporary ceiling of 27,500 machines was set in place around this time. This quota was later supported and maintained following an inquiry by the Victorian Casino and Gaming Authority (1997). When the permanent casino opened in 1997, it was allowed to operate another 1,100 gaming machines taking the total number of machines in the Casino to 2,500. With the exception of the Casino, venues are restricted to 105 machines if they are within a 100-kilometre radius of the Casino. By 1996, average daily revenue per machine was estimated to be \$142 or \$51,830 per year.

### **The Retail Industry in Victoria - July 1986 to June 1996**

Total retail trade in Victoria declined from \$23 billion in 1986/87 to \$21.5 billion when gaming began in 1992/93, and then recovered to 23.2 billion in 1995/96 (1989/90 prices) . Overall it can be said that retail trade has shown little growth over the ten years under study in spite of a continued growth in retail shopping space.



**Figure 1. Retail turnover in Victoria by industry group at 1989/90 prices.**

### **Retail Trade by Industry Group**

An outline of industry groups and subgroups is set out in Appendix 1. Looking at the broad industry groups depicted in Figure 1 up to June 1992, Food Retailing (RFood) has shown steady growth, as has Other Retailing, covering such diverse areas such as pharmaceuticals, toiletries and garden supplies. Other industry sectors have either remained flat or declined over that period. It should be noted that electronic gaming machines were introduced into Victoria in June 1992 so any changes up until that period cannot be attributed to gaming. Any examination of the impact of gaming machines will relate to retail trade after that date.

Since June 1992, the decline in Clothing and Softgood Retailing (RCloth) has continued and Department Store sales (RDeptSt) have remained flat. Total retail sales and the other five industry groups have all shown some growth coinciding with the introduction of gaming machines.

To examine changing patterns of retail behaviour over the three periods, Table 1 sets out retail sales in the various industry groups as a percentage of total retail sales. From the table an emerging pattern of behaviour is observable. Food sales have grown as a percentage of retail trade while Clothing and Softgoods have fallen dramatically, more so in the years since the introduction of gaming. In that same period, Recreational Good Retailing (RRecn) reversed its trend and grew strongly as a percentage of total retail sales. Household Goods (RHhold) including furniture, hardware and appliances together with Hospitality and Services (RHospSer) both levelled off after falling as percentages of retail trade up until June 1992.

The big winners have been Food Retailing and Other Retail while the losers have been clothing and softgoods and household goods. These trends were well in place prior to the introduction of EGMs. It should be noted that the Hospitality and Services sector was in decline up until the advent of EGMs but then levelled out.

	<b>Year Ended</b>		
	<b>June 1983</b>	<b>June 1992</b>	<b>June 1996</b>
	%	%	%
Food Retailing	39	42	43
Department Stores	9	10	10
Clothing & Softgoods	11	10	7
Household Goods	15	13	13
Recreational Goods	5	4	6
Other Retailing	6	8	8
Hospitality & Services	15	13	13

**Table 1. Retail Sales as a percentage of total retail sales.**

### **Retail Trade by Industry Subgroup**

To provide more information on changing spending patterns, retail trade by industry subgroup was also examined. Figure 2 sets out this information.

Under the industry heading of Food Retailing, Supermarkets and Takeaway food have both shown growth over the ten-year period. In the case of Supermarkets, that growth slowed over the four years under review. Other food has shown a decline over the last period examined, some of this may be attributable to a switch to supermarkets for items including meat, vegetables and bread.

The major fall in the Clothing and Soft Good Retailing sector can be attributed to the Clothing sector over the ten year period. This decline appears to have hastened in recent years, as had the decline in the Other Clothing sector. The Household Good Retailing sector is a mixed bag. Furniture and Floorcovering Retailing and Domestic Hardware and Houseware have both shown a steady decline over the whole period while Domestic Appliances and Recorded Music retailing (combined) show very strong growth over the four year study period.



**Figure 2. Retail Trade in Victoria by Industry Subgroup.**

Behaviour in the Newspapers, Book and Stationery subgroup is reflected by the general decline and subsequent growth in the Recreational goods sector overall. However Other recreational goods made up of Sport and camping equipment, toys and game retailing and photographic equipment show increasing growth over the ten-year period.

The growth in Other Retailing over the ten years is attributable to the Pharmaceutical, Cosmetic and Toiletry sector while Other Retailing (Antiques, Garden supplies, Flowers and Watches) have grown over the past four years after a period of zero growth.

The serious decline and modest recovery in the Hospitality and Services group could easily be interpreted as the resultant boost to hotels and clubs following the introduction of EGMs. Closer examination at the subgroup level reveals that this was not the case. While Hotels and Licensed Clubs continued to decline, albeit at a slower pace, Cafes and Restaurants and Selected Services (Video hire and Hairdressing) both generated the growth in this industry group over the past four years.

## Changing Patterns of Retail Trade

Overall then it can be said that certain dynamics were operating in the retail sector for at least six years prior to the introduction of gaming machines. Spending in supermarkets had been increasing, possibly at the cost of retail sectors such as food. Takeaway food sales were also increasing as were Pharmaceuticals, Cosmetics, Toiletries, Cafes and Restaurants. The losers over the six-year period were Clothing, Furniture and Floorcovering, Domestic Hardware and Houseware and Hotels and Licensed Clubs. All this suggests changing lifestyle patterns reflected in a move away from the big-ticket items and more spending on day-to-day and convenience items found in supermarkets, takeaway food shops and restaurants. Total retail activity in real terms fell over the six-year period to June 1992.

In the four years following the introduction of EGMs, the above mentioned dynamics have continued with few exceptions. These exceptions include a fall in Department store sales, and increases in the sales of Appliances and Recorded Music, Newspapers Books and Stationery, Other Retailing, and the services of Video Hire and Hairdressing. The period also saw an accelerated fall in Clothing and Domestic Hardware and Houseware. Any influence of EGMs is likely to be associated with these recent changes rather than the longer term trends outlined above.

# Analysis of the Impact of EGMs on Retail Sales

## 1. Analysis of Retail Trade by Industry Group

### Model Outline

The difficulty facing any economic impact analysis is that no one change occurs in isolation. To help overcome this problem it was decided to carry out an analysis of regression where factors in addition to gaming were also added to the equation. Retail activity has been shown to vary from month to month so in order to control this variation, a seasonal variable linked to the months of the year was added. To cover gaming activity, it was decided to use monthly gaming revenue adjusted to 1989/90 prices to avoid any inflationary effects.

A measure was still required to explain cyclical economic variation, which would be clearly separable from retail sales. Unemployment was dismissed because it did not take the participation rate into account and as a result, the unemployment rate could rise as a consequence of a rising participation rate. The total number of persons employed in Victoria was eventually selected because it was not just another measure of consumption, yet it was expected to reflect economic change and the impact on retail sales. If workforce numbers fall then this can be linked to a tightening economy. If the numbers expand, we can link this to either an improving business cycle or a growing economy; either way, we would predict that retail sales would increase. As a result of a number of trials, it was decided to lag employment for six months.

The following equation sets out the adopted model:

$$Y = a + bX1 + cX2 + dX3 \text{ where:}$$

Y = monthly retail sales  
a = residual term  
X1 = monthly gaming revenue  
X2 = persons employed-lagged 6 months  
X3 = monthly seasonal variable  
b,c,d = various coefficients

Analysis was carried out using an analysis-of-variance (ANOVA) - (single factorial) procedure. The expectation was that gaming revenue would be negatively associated with various aspects of retail trade and with retail trade overall. General community views suggested that if money is spent on gaming activity then it must come out of other forms of expenditure including retail. This view was supported, but only in the cases of Department Stores and Clothing and Softgood retailing which showed negative and statistically significant relationships. Total Retail plus four other retail sectors plus showed positive relationships, which were statistically significant. A negative but not significant relationship was found with Household Goods.

### Findings

Details of the findings regarding the negative and positive relationships between gaming revenue and retail trade by industry group is set out in Appendix 2.

In the case of Department Stores, the negative coefficient suggests that for every dollar spent on gaming, a corresponding 11.88 cents has been lost to department store sales. The probability of this behaviour being explained by random variation is just 2.6 times in a hundred ( $P=0.026$ ). The coefficient of determination ( $R^2 = 0.37$ ) suggests that the regression model is accounting for just under 37% of the variation of department store sales. While not highly significant it appears that employment levels do have some effect on sales. Full details of the results are set out in Appendix 2.

The gaming coefficient for Clothing and Softgood Retailing is also negative and suggests a much larger effect. For every dollar spent per month on EGMs there is a corresponding 34.98 cents lost to the clothing and softgood sector. This result is statistically significant. The employment coefficient is also negative but not statistically significant.

More difficult to explain is the behaviour of four of the industry groups which show positive and statistically significant relationships with gaming activity. These occur in the areas of Food Retailing, Recreational Good Retailing, Other Household Good Retailing, and Hospitality and Service Industries. For Total Retail activity, the relationship between gaming revenue is positive and statistically significant. For every dollar spent on electronic gaming, the corresponding effect ranges from an additional 30 cents for food retailing to 51 cents for Other Household Good Retailing (pharmaceuticals, cosmetics, toiletries etc.) and 91 cents for total retail sales.

With the exception of Clothing and Softgood Retailing and Other Household Good Retailing, the coefficient for employment, lagged for six months, is positive and statistically significant in the cases of Food Retailing, Recreational Goods Retailing, and for Total Retail Sales, and mildly significant in the case of Department Stores. For the industry groups, the effect ranges from an additional \$12.96 per month spent on household goods for each additional job to \$551.18 in the case of food retailing. Overall retail sales show an increase of \$801.60 per month for every additional position added to total employment or a corresponding decrease for every lost position. A summary of the findings regarding the negative and positive relationships between gaming revenue and retail trade by industry group is set out in Table 2.

***Industry Groups Negatively Related to Gaming Revenue \****

Clothing and Softgood Retailing  
Department Stores

***Industry Groups Positively Related to Gaming Revenue \****

Food Retailing  
Recreational Good Retailing  
Other retailing  
Hospitality and Services  
***Total Retail***

Significant to at least the 10 percent level (See Appendix 2 for full details).

**Table 2. Summary of negative and positive relationships between gaming revenue and retail turnover by industry group.**

## **2. Analysis of Retail Trade by Industry Subgroup**

### **Outline**

Unpublished figures for the breakdown of the industry retail groups into industry subgroups were obtained from the ABS. National retail data is based on a monthly survey covering 20,000 outlets from 7,000 retail businesses. Because of the sample size, reliable figures for subgroups were not always available at the State level.

### **Findings**

The Food group figures were broken down into Supermarkets and Groceries, Takeaway Food and Other Food. The overall effect of gaming on the industry group was positive and significant. This was supported by the Supermarket subgroup but not by Other Food Retailing (fresh foods inc. meat, fruit, and liquor, bread etc.) where the relationship was negative and statistically significant. The result for takeaway food was positive but not statistically significant. The next group, Department Stores, has already been discussed above.

The Clothing and Softgood Retailing sector has been divided into Clothing (where the effect of gaming was negative and significant) and Other Clothing, consisting of footwear, fabric and softgoods. This subgroup was also linked negatively with gaming and was also statistically significant. Both subgroups were in line with the overall industry group. The impact of employment differs. For Clothing there is a negative and significant relationship while Other clothing is positively linked and significant.

Household Good Retailing was further broken down into Furniture and Floorcovering and Domestic Hardware and Houseware retailing. In both cases the link with gaming was also negative and significant. It should be noted that the effect was small with the associated decrease in sales ranging from 20-23 cents per dollar spent on gaming machines. The exception in this group was Domestic Appliance and Recorded Music retailing where there was a positive and highly significant relationship with gaming revenue. The link with employment was statistically significant and negative for Furniture and Floorcoverings, creating another difficult area for explanation. For every additional job generated, expenditure dropped \$75. There was no significant link with employment levels and Domestic Hardware and Houseware but a positive and significant link with Domestic Appliances and Recorded Music and employment levels.

Newspapers, Books and Stationery retailing and Other Recreational Good retailing are the two available subgroups for Recreational Goods Retailing industry group. The latter group includes sport and camping equipment, toy and photographic retailing. Both of the subgroups match the industry group with positive and statistically significant relationships with both gaming and employment.

Other Retailing is broken down into Pharmaceutical, Cosmetic and Toiletry retailing, and Other Retailing which consists of antiques, garden supplies, flowers, watches and jewellery retailing. Both subgroups match the industry pattern in terms of a positive and significant relationship to gaming. Pharmaceutical etc. is negatively related to employment while Other Retailing is positively related. Both are statistically significant.

In the Hospitality and Services group there are three subgroups available. These are Hotels and Licensed Clubs (positively and significantly related to both variables as one well expect), Cafes and Restaurants (positively and significantly related to gaming only) and Selected Services, including video hire and hairdressing, which show no significant links with gaming and are positively and significantly related to lagged employment.

A summary of the findings regarding the negative and positive relationships between gaming revenue and retail trade by industry subgroup is set out in Table 3.

***Industry Subgroups Negatively Related to Gaming Revenue \****

- Other food retailing
- Department Stores
- Clothing retailing
- Other clothing related retailing
- Furniture and floorcovering retailing
- Domestic hardware and houseware retailing

***Industry Subgroups Positively Related to Gaming Revenue \****

- Supermarkets and grocery stores
- Domestic appliance and recorded music retailing
- Newspaper, book and stationery retailing
- Other recreational good retailing
- Pharmaceutical, cosmetic and toiletry retailing
- Other retailing
- Hotels and licensed clubs
- Cafes and restaurants

Significant to at least the 10 percent level (See Appendix 2 for details).

**Table 3. Summary of negative and positive relationships between gaming revenue and retail turnover by industry subgroup.**

**Discussion of Results**

Contrary to expectations, it is clear that retail performance including total retail activity is more often linked positively with gaming revenue. The clear exceptions were Department Stores, the Clothing and Softgood industry sector covering Clothing and Other Clothing related retailing, and industry subgroups comprising

Other Food retailing, Furniture and Floorcoverings, and Domestic Hardware and Houseware retailing. In all, there were only two out of a total of seven industry groups and five out of the fifteen industry subgroups that demonstrated a negative link with gaming.

Going back to the unsupported claims made by Goodman (1995), and quoted in the opening paragraph of this paper, it is possible to suggest that his claims regarding clothing and furniture sales are supported by the evidence in Victoria but this is not so in the case of restaurants. His comments on the entertainment industry and sporting events are outside the scope of this paper but recent ABS statistics suggest that there has been 104% increase in cinema revenues across Australia over the past five years of the study and a 32% increase in spectator sports revenues. A closer scrutiny of these figures at the State level would be required. It is also possible to add to Goodman's list the examples of department stores, food stores (other than supermarkets and takeaways), and domestic hardware and housewares as examples of sectors that appear to have been negatively affected by gaming activity.

Alongside these we have the unexpected and positive relationships between gaming and a larger number of eight retail subgroups. So while Furniture and Housewares are negatively associated with gaming, Domestic Appliances and Recorded Music which are part of the same industry group, are positively associated. The same goes for Newspapers, Books and Stationery, Other Recreational (sport and camping), Pharmaceutical, Cosmetic and Toiletry retailing, Other Retail (antiques, garden, flowers, watches and jewellery), Cafes and Restaurants, and less surprising, Hotels and Licensed clubs. Positive, but not significant links with gaming were detected for both Takeaway and Selected Services.

Overall it must be said that there is some evidence to support the hypothesis that gaming activity has impacted on retail trade but those areas which have not been affected outweigh this. At best it can be said that the negative effects have been very specific. It suggests that expenditure on gaming has accentuated already existing retail trends. Areas of retail trade that were static or already in decline such as department stores, clothing, furniture, hardware and housewares have been the ones most vulnerable to the introduction to EGMs. Retail sectors not in decline including supermarkets, takeaway food, appliances and recorded music, pharmaceuticals, cosmetics and toiletries and cafes and restaurants appear as sectors to have escaped the impact of electronic gaming. How and why gaming has impacted positively on these sectors is beyond the scope of this study and will require further investigation.

## **Explaining Positive Relationships**

Apart from hotels and clubs, it is difficult to attach any obvious association between gaming and those subgroups with which it showed a positive relationship. People do not appear to be reading reference books or magazine articles on "winning with poker machines", are not camping out at gaming venues, or purchasing domestic gaming machines as part of the increase in household appliances. They may however be going out more, and as a result using more cosmetics, jewellery and dining out or eating more takeaway food; all part of changing lifestyles which were emerging prior to 1992. The arrival of electronic gaming might even complement rather than threaten such lifestyle changes. Clothing would appear to be the obvious exception although falling tariffs may explain some of the behaviour in this sector.

One possible explanation that will need testing is that gaming has led to an increase in jobs on two fronts. The initial stage is linked to the capital expenditure needed to set up gaming venues. It would be expected that the level of capital expenditure would decline over future years even though a certain level of upgrading is likely to persist. In an economy operating below its capacity, such a level of initial expansion must impact on income and jobs, which in turn will generate more consumption expenditure. Whether the positive links between gaming revenue and the retail sector will persist will depend on the relative impact of capital expenditure on employment.

On the second front, it is clear that the gaming industry has generated jobs, many of them part-time, which were linked with the day-to-day operations of gaming venues. If the net employment effect of gaming in a recessed economy were a positive one, then once again, income and consumption would be expected to increase. It might also be possible that the recipients of these part time jobs may have different spending patterns tending to spend mainly on immediate needs and pleasures rather than the "big ticket" items such as

furniture and floorcoverings. Then again are we really entering the period of the “dual economy” where those gambling are not the same group who are eating at restaurants or buying notebook computers, designer suits and mobile telephones? One can only speculate at this stage.

The negative relationship between employment and various retail sectors remains a mystery. Why would clothing sales decrease by \$55.62 a month every time a new job is created or rise by the same amount when a job is taken away? The same goes for pharmaceuticals etc. (\$145.16) and furniture (\$75.47). Is this the effect of people taking retirement packages or having more time to shop for these items or a very generous system of social security? This opens up the possibility of data error or model design. It should be repeated that retail data is based on monthly national surveys covering 20,000 outlets. By the time that this data is disaggregated to retail industry subgroups for one state, there is room for considerable error. It should be noted however that there are reasonably consistent outcomes when industry group results are compared with industry subgroups. The economic model used produced coefficients of determination (R<sup>2</sup>) ranging from 0.26 to 0.77 thus explaining between 26% and 77% of the behaviour of retail sales for particular industry groups or subgroups. For retail trade overall, 39% of the behaviour was explained.

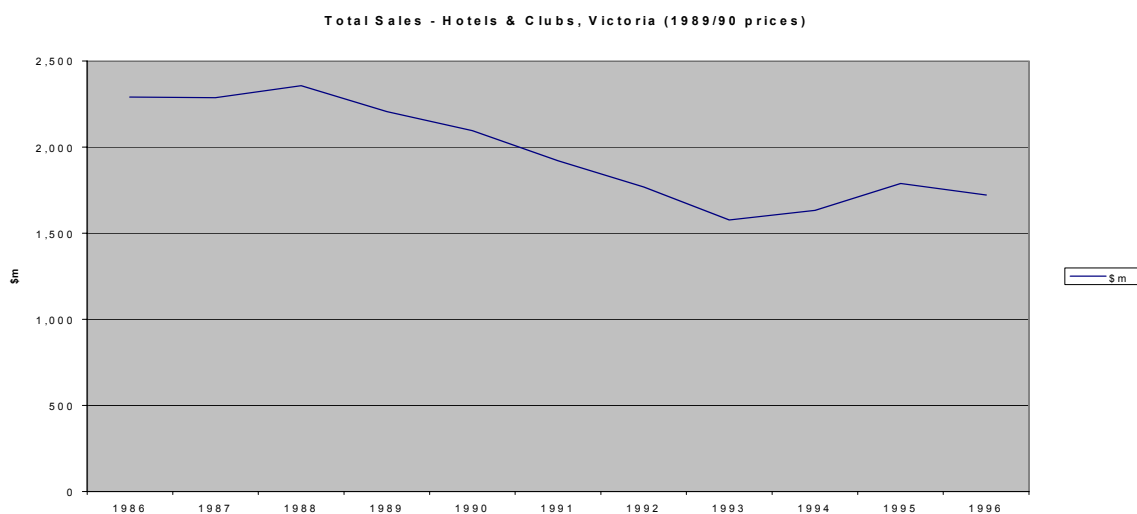
The conclusion must be drawn that further investigation of variables that might impact of consumer spending is required. This may overcome some of the presently unexplainable relationships appearing in the model.

### **Links between EGMs and the Hotel and Club Sectors**

An examination of the level of sales (measured at constant prices) by the Hotels and licensed clubs sector shows a decline from June 1988 through until the introduction of EGMs in June 1992. Falling sales have been attributed to the effects of drink-driving campaigns, health consciousness and the cannibalisation of packaged liquor sales by supermarkets.

Coinciding with the introduction of EGMs, the decline in sales by this sector was halted and by 1994, sales had lifted for the first time in six years. This effect is borne out by a positive regression coefficient of 0.22647, significant at the one percentage level and suggests that for every dollar spent on gaming, an additional 22.6 cents was spent on hotel and club sales, mainly in the form of food and beverages. People in the industry report an increased number of patrons associated with gaming and extended trading hours where food and beverage services were available. Increases in income of 3% (excluding gaming income) were experienced for hotels and 56% for clubs (VCGA, 1994, p2).

The effect on those venues not offering gaming is beyond the scope of the present study. Looking at this retail industry subgroup overall, gaming appears to have provided a lifeline to a sector already in decline by helping reverse this downward trend. Gaming has boosted revenue and cashflow and allowed a significant level of capital expenditure by those venues able to take part in a new and rapidly growing industry.



**Figure 3. Hotels & Licensed Clubs, Victoria - \$m (1989 prices)**

## Conclusion

The introduction of electronic gaming machines have had a complex and diverse impact on the retail sector overall. Over the ten years under review there were clear underlying trends in retail trade reflecting lifestyle changes. Rather than disrupting these patterns, gaming appears to have embedded itself into spending patterns which were already moving away from spending on large ticket items such as furniture, floor coverings, domestic hardware, houseware, clothing and footwear. In vogue was spending on cafes and restaurants, takeaway foods, pharmaceuticals, cosmetics and supermarkets. It could be suggested that the time was ripe for the introduction of gaming.

The general effect of gaming activity has been to accentuate the negative or static trends in spending and changing lifestyle but leave the growth areas unaffected. One important exception to this pattern was the case of hotels and club sector where the decline was at least slowed for the sector and reversed for those firms offering gaming services. There is little doubt that the hardships reported by many retailers in sectors such as clothing, furniture, floorcoverings, hardware, houseware and department stores was very real. It is not difficult to explain the positive links between EGMs and the hotel and club sector where positive economies are evident but not so easy in the cases of appliances and recorded music, newspapers, books and stationery, pharmaceuticals, cosmetics and cafes and restaurants or for total retail overall.

The present evidence makes it more difficult to blame gaming machines for all the ills facing the retail industry. While those areas adversely associated with gaming have been highlighted, they are not sufficient

to match recent retail performance at the level of the individual firm. Retailers may need to look more closely at the ever-increasing retail floorspace and the continued expansion of regional shopping centres and the emergence of “category killers” as well as the drift towards the supermarket sector and convenience shopping for some explanation. Depressed consumer expectations and concerns about job security in a time of “job thinning” in public and private sectors may be another factor. Equally important was the continuing level of unemployment.

One very revealing statistic coming out of the study was the suggestion that for each additional person in the workforce, we can expect an increase of \$690 per month in retail sales. Accordingly, a drop in the unemployment rate for Victoria in 1996 from 8.8% to 5% would have generated an additional 84,500 jobs and an addition to annual retail expenditure of three percent or \$695.52 million.

### **Directions for further study**

One of the most promising areas for further study would appear to be in an examination of the gaming industry and its net impact on output, income and employment. Such a study may be better carried out in regional economic context where such data will be easier to track.

Given that gaming activity is linked to particular socioeconomic behaviour, there is a clear need to disaggregate information relating to consumer spending and gaming activity, which might better explain trends amongst particular socioeconomic groups.

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## **Appendices**

### **Appendix 1.**

#### **Details of Retail Industry Groups and Subgroups.**

##### FOOD RETAILING

Supermarkets & Grocers  
Takeaway Food  
Other Foods

##### DEPARTMENT STORES

##### CLOTHING AND SOFTGOOD RETAILING

Clothing  
Other Clothing

##### HOUSEHOLD GOOD RETAILING

Furniture & Floorcoverings  
Domestic Hardware & Houseware Retailing  
Appliance & Recorded Music

##### RECREATIONAL GOOD RETAILING

Newspapers Books & Stationery  
Other Recreation

##### OTHER RETAILING

Pharmaceutical's Cosmetics & Toiletries  
Other Retail

##### HOSPITALITY AND SERVICES

Hotels & Clubs  
Cafes & Restaurants  
Selected Services

## Appendix 2.

### Coefficients for Retail Sales by Industry Group in Victoria July 1992-june 1996.

Industry Group	Coefficients Gaming Revenue	R <sup>2</sup> Employment	DW	F	
Food Retailing	0.3033 **	551.18 ***	45.0	1.82	18.83
Department Stores	-0.11876 **	43.34 *	37.0	1.54	13.83
Cloth&Sftgood	-0.50765 ***	-34.98 *	40.6	1.60	11.72
Household Goods	-0.01873	12.96	31.5	1.38	8.21
Recreational Goods	0.40273 ***	107.60 ***	50.4	1.26	16.94
Other Retailing	0.51273 ***	-20.46	57.3	1.46	22.03
Hospitality&Service	0.34127 ***	30.56	44.6	1.25	13.62
Total Retail	0.9149 ***	690.2 ***	39.3	1.58	11.12

\*\*\* Significant at the 1 percent level

\*\* Significant at the 5 percent level

\* Significant at the 10 percent level

### **Appendix 3.**

#### **Coefficients for Retail Sales by Industry subgroup in Victoria July 1992-June 1996.**

<b>Retail Subgroup</b>	<b>Coefficients Gaming Revenue</b>	<b>R<sup>2</sup> Employment</b>	<b>DW</b>	<b>F</b>	
Supmkts&Groc	0.35690 ***	271.65 ***	44.4	2.07	13.51
Takeaway	0.00830	185.38 ***	56.3	1.23	21.16
Other Foods	-0.06071 *	93.64 ***	26.6	1.64	6.67
Dept Stores	-0.11876 **	43.34 *	37.5	1.47	10.41
Clothing	-0.34372 ***	-55.62 ***	42.2	1.59	12.44
Other Clothing	-0.16393 ***	20.64 *	33.9	1.56	9.04
Furniture&Floor	-0.20266 ***	-75.47 ***	77.4	0.98	54.56
DomHdwr&HsWr	-0.23565 ***	-16.79	30.6	0.71	7.92
Appl&RecMusic	0.46439 ***	117.31	59.4	1.63	23.88
NewsPBksStat	0.30011 ***	50.01 **	44.6	1.15	13.6
Other Recreation	0.12032 ***	41.09 ***	51.9	1.46	17.93
PharmCosToiltrs	0.37843 ***	-145.16 ***	67.5	1.76	33.49
Other Retail	0.13595 **	124.08 ***	47.2	1.40	14.98
Hotels&Clubs	0.22647***	6.30	38.9	1.17	10.97
Cafes& Restaurants	0.10930 ***	-19.99	32.7	1.34	8.62
Selected Services	0.00551	44.241 ***	42.5	0.97	12.59

\*\*\* Significant at the 1 percent level

\*\* Significant at the 5 percent level

\* Significant at the 10 percent level