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A Profile of Gamblers

by

*Gabrielle A. Brenner*<sup>1</sup>

and

*Reuven Brenner*<sup>2</sup>

<sup>1</sup> Ecole des Hautes Etudes Commerciales, Université de Montréal

<sup>2</sup> Département de sciences économiques and C.R.D.E., Université de Montréal.

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## RÉSUMÉ

Cette étude présente une vue globale des écrits traitant de l'aspect empirique du jeu ainsi que des résultats récents de notre recherche basée sur des données fournies par Loto-Québec et Statistique Canada. Contrairement à l'image que l'on a généralement du joueur typique, ce dernier apparaît comme étant un col bleu ou un col blanc relativement peu payé, dont la carrière a plafonné et qui est relativement plus âgé et a plus d'enfants que le reste de la population. Mais ce n'est pas un criminel et il ne dépense pas sans compter. Le jeu lui donne un espoir qu'aucune autre possibilité ne lui donne. Cette étude révèle aussi que les gens ne disent pas la vérité sur leurs dépenses de loteries.

Mots-clés: jeux de hasard, loteries, risque, milieu socio-démographique des joueurs.

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## ABSTRACT

This study presents both a comprehensive survey of the empirical literature on gambling and our most recent research based on data provided by both Loto-Québec and Statistics Canada. In spite of all the excitement surrounding the subject, the typical gambler emerges with the relatively boring image of a regular, relatively lower paid blue or white collar worker, whose career stalled, who is relatively older and has more children than the rest of the population. But he is not criminal and does not spend recklessly. The game gives him hope, type of hope that no other existing spending opportunities can provide. The study also reveals that people do not tell the truth about their spendings on games of chance.

Keys words: games of chance, lotteries, risk, socio-demographic background of players.

### Why do people buy lottery tickets?

The answer seems, at first sight, misleadingly simple: they would like to become richer, and they don't see other opportunities open to them. Are there any other means by which one can win a million dollars or more with an investment of only a few dollars, even if the chances are small?

If this were the whole answer, it would be difficult to explain the frequent public condemnation of lotteries, condemnation that has led many times in the past in many countries, as we have seen, to outlaw them.<sup>1</sup> To understand these more complex events - sometimes the ban, the violent condemnation, sometimes the permissive attitude toward lotteries - one must first understand: Why do people play these games? Are there groups in society who are more likely to play them?<sup>2</sup> Only by examining these questions in detail can one hope to shed light on the broader issues of both explaining the changing attitudes toward gambling, and pragmatic matters concerning public policy (for example, the expected revenues of governments from selling lotteries).

We shall mainly discuss participation in games of chance like lotteries, where there is a probability of winning a large prize, and not others, like playing cards with friends, spending hours at Bingo games, or going to the Casino during vacations in Monte Carlo, Deauville or any of the other less well-known peaceful French resorts in the Alps or near the Riviera. The reason for this narrow interest is not a sign of today's dangerous trend of intensive specialization in the social sciences, but that as we looked closer and closer into the history of games of chance, we discovered that looking at all of them assuming that participation in them represented just one facet of human nature, was inaccurate. There are games of chance people play because it is mere entertainment, and there are others that they play because of the chance of winning the big prize and becoming rich. The groups who play the two types of games are different, and so are the attitudes toward them. Lumping all games of chance together is only blurring one's examination rather than illuminating it.

## 1. What Are People's Motivations?

A number of attempts have been made to understand gambling behavior. Economists have looked at all games of chance as if they belonged to one category - whether the prize was one dollar or a million (Arrow, 1970) -- and decided that gambling is a matter of "taste". Those who like risks gamble, while those who do not like risks, do not. While this viewpoint has led to the development of numerous mathematical models developed to esoteric depth, it could not, however, shed the slightest light on any facts. After all, "de gustibus non est disputandum", so no predictions could be derived from models assuming that gambling is a matter of "taste" (Brenner (1983, 1985)).

Freud explained gambling differently: he once wrote that a gambler is a man who, because of his death wish toward his father -- quite a taste -- had developed guilt feelings. In order to punish himself he gambles, unconsciously wishing to lose. This seems to be a rather strange theory (and one that cannot be falsified either), but it should be noted that, to his credit, Freud ultimately discarded it in a letter to Theodor Reik.<sup>3</sup> Psychoanalysts either related gambling to the Oedipus complex (another taste?), or dealt mainly with the behavior of compulsive, neurotic gamblers (Bergler 1957, Herman 1976), a subject we do not intend to deal with for reasons that will become clear once one looks at the facts.

In contrast to the economic and psychoanalytic literature in which few attempts have been made to relate gambling to social conditions, sociologists have done just that. Devereux (1980) and Tec (1964), among numerous others, have argued that when conventional avenues for social mobility are closed, people will find non-conventional ones, which may include crime and gambling. While evidence exists to support this view, evidence also exists which contradicts it: there have been numerous very inegalitarian societies where there was no social mobility, and yet there was not much crime and not much gambling either.<sup>4</sup>

Gambling will be examined here through the prisms of none of these rigid approaches. Rather, we shall suggest that one can examine these events - gambling, and the changing and confused attitudes toward it - by understanding that people's willingness to take risks, to deviate from customary behavior, is triggered when such behavior fails significantly to produce the expected results.<sup>5</sup> Such failures cause those who bear the brunt of failure to fear a decline of their relative standing in society, and who subsequently pin their hopes on undertaking risks they shunned before: sometimes playing games of chance and, at other times, venturing into entrepreneurial or criminal acts. Completely the opposite reactions occur when expectations are more than fulfilled and people suddenly outdo their fellows. In these circumstances, such people avoid taking risks, tend to take out insurances that they previously shunned, and may avoid committing non-customary acts that they had previously contemplated. One further observation can be made: when customary ways of behavior produce the expected results, the relatively rich spend a relatively greater fraction of their wealth on insurance, whereas the relatively poor spend a relatively greater fraction on games of chance in which they may lose relatively small sums, but have a chance to win big ones (if given such opportunity). At what type of facts should one look in order to know whether or not the view summarized above accurately captures the motivation to gamble? Based on the previous observations, one can make the following predictions:

- that a chance to win the big prize will be one of the main reasons for lottery-ticket buying;
- that a distinction must be made between games of chance that have no entertainment value (such as lottery tickets, where involvement in the game is not time consuming), and those that do have such value (playing cards, bingo, roulette in Monte Carlo and so forth). One should expect that there is a significant difference between the groups of people playing these two types of games of chance;

- that the relatively poor will plan to spend a greater fraction of their wealth on lotteries than the relatively rich. At the same time people of all classes (upper, middle, lower), who have not previously gambled, may decide to do so when they suddenly lose part of their wealth (for example, when some become unexpectedly unemployed). And on the contrary: gamblers may stop gambling, or gamble less, if they win a big prize. If the facts are found consistent with these predictions, one will be able to conclude that the majority gamble because they are poor, or have become poorer (or others in their reference group much richer), and not because they have a peculiar, destructive bent;
  
- that older, rather than younger, people (with the same measured income) will gamble. The reason is that a \$15,000 income for a fifty-year-old is a different indicator of wealth from the same income for a twenty-year-old. The older man, knowing that he had passed the peak of what he had earned from his traditional occupation, but still wanting to leave an inheritance to his children, is poorer than his younger counterpart with a similar income. But gambling can still make him rich;
  
- that people who have more children will tend to gamble more. The rationale behind this prediction is that for a person with one child, a \$15,000 income assures a higher position in the distribution of wealth than it does for one with four children: the greater the number of children, the poorer the family (for the same income).

These predictions already suggest why many studies about gambling have been misleading. The researchers have gathered information on the income of the buyer or his household without looking at either the gamblers' age or family structure. At times, such information on income only was sufficient to reach the conclusion that lower-income groups tend to gamble more. At other times, the incomes of the gambling population seemed too high to support this claim. However, as the above makes it

clear, income may provide very biased information about changes in one's position in the distribution of wealth, unless some further analysis is made. And now let us check the facts.

## 2. Some Stubborn Contemporary Facts

### The Attraction of Big Prizes

If people want to become richer, or restore their wealth after losing a significant part of it, games of chance giving away small prizes will not be perceived as attractive, but others giving away big ones will. Indeed, most market researchers of lotteries operated in the United States found that "while people like to be winners, they also want to win "a lot of money". This is a universal dream, and apparently is the primary reason why people buy lottery tickets" (p. 36, Weinstein and Deitch (1974)).

A survey done by the New York State Lottery found that the typical ticket buyer was motivated by the hope of winning a big prize (Sullivan (1972), p. 111) and another done by the Massachusetts State Lottery Commission found that the public overwhelmingly favors a single top prize of \$100,000 over a large number of top prizes of \$1,000 each. The Commission on the Review of the National Policy toward Gambling has also found that 77% of the people polled gambled in order to get rich (p. 157), and Landau (1968) in his guide on how to create a successful lottery concluded that experience shows that there must exist a prize which would improve people's circumstances in a way they could not achieve otherwise (p. 34).<sup>6</sup> Rubner (1966) too, after examining a number of lotteries in several countries (England, Columbia, Spain, Australia, Ghana, West Germany), reaches the conclusion that "it is mainly the size of the top prizes that determines their succes" (p. 17), and that "the number of small prizes is being constantly cut down to make way for even bigger top prizes" (p. 45). Also, both a report of the Royal Commission on Gambling carried out in the United Kingdom in 1951 and a 1977 market -

research study for Loto Québec reveal that the expectations of a large prize is the main reason given by people for purchasing lottery tickets.

Finally, one may also note that lotteries characterized by many unequal prizes -- some very large ones included -- are not phenomena of our times. This has been their characteristic feature since the seventeenth century. While the differences between the largest and smallest prizes differ across countries and time, Sprowls (1954, p. 354) speculated that the difference depends on the discrepancy between being poor and rich in the respective countries. For example, he found that the largest prizes in England in the late 18th and early 19th centuries were greater than in the U.S. during the same period, and he links this difference with the fact that discrepancies in wealth in England at that time were also greater.

While many lotteries are indeed of this type - giving away large prizes - some are not. In bingo games the maximum prize is around \$5,000. However, the fact is that bingo, which requires one's presence during the game, is viewed by the participants as a way to spend their time rather than as a means for getting rich. The 1976 Final Report on Gambling in America states that "middle-aged and elderly women, widows, and those earning under \$5,000 a year are highly represented among the 'heavy' bingo players... Bingo is viewed more in 'social' terms than other forms of gambling; most players play to have a good time" (p. 163, see Table 1).

#### The Poor, and those Falling Behind

Many surveys of lottery ticket buyers have indeed found that poorer people spend a greater proportion of their income on them than those with relatively higher incomes. In modern times, this was the conclusion reached by Rosen and Norton (1966) who examined the buying patterns in New Hampshire, Brinner and Clotfelter (1975), who did the study for Connecticut, Massachusetts, and Pennsylvania, Clotfelter (1979) who did an additional study for Maryland, and Heavey (1978) who did it



for Pennsylvania. The 1976 Final Report on Gambling in America reported that families whose yearly income was below \$5,000 were spending on average 0.3% of it on lotteries; families in the \$5,000 - \$10,000 income range were spending 0.23% of their income on lotteries, while those in the \$10,000 - \$15,000 range were only spending 0.13%. These results were obtained without even making adjustments for age and family structure, adjustments that, as we shall see below, could only have strengthened them.

Similar conclusions can be reached when one examines data on Swedes who bet on soccer games. While this game seems at first sight different from a lottery in that it may require both knowledge of the game and the relevant information about the teams, the difference disappears if one assumes that all the participants in the betting have access to the same information (that is, if no "behind-the-scene" deals among teams are made). Thus participation in soccer pools and lotteries can be compared, especially when it is recalled that both offer a possibility of winning big prizes.

The information is derived from answers to questionnaires given to 812 men between the ages of 18-55 (see Tec (1964)). Since the tables that have been built from these answers relate participation in the game to the incomes of the participants, but mention neither ages, nor family structures, no useful insights can be obtained from them. But when one looks at the classification according to occupations, one observes that 60% within the lower-class respondents are regular bettors compared to 45% within the middle class and 40% within the upper class (p. 47, Tec (1964)). When one relates class background to habitual gambling one finds that among those who come from upper-class homes, 38% gamble regularly, from middle-class homes 46% and from lower-class origins 61%. In addition, one finds that of those whose parents own a business, 43% gamble regularly, compared with 54% of those whose parents do not own such a property, and that 43% of those who have had higher education gamble regularly compared with 55% of those who have only finished grammar school. As for the age composition: besides the fact that the

sample is biased (since people more than 55 years old have been, for some reason, eliminated from the sample), the way the tables have been put together enables the reader to learn only that 54% among those between the ages of 18-24 gamble regularly, while 58% of those between 25-34 do so. Thus, on the whole, it seems that the relatively poor participate disproportionately in games of chance in Sweden, too.

In order to get more information, we examined surveys of the winners of big prizes. One survey was made of the big winners (\$1 000 000) in Michigan for the years 1973-80. There were forty-six such winners. The survey included their age at the time of winning, their occupation and, for some, the number of children and grandchildren. In New York there were eight winners in 1977-78, and for each of them, age and occupation were given. Since the winners of the big prizes must represent an unbiased sample of the lottery-ticket-buying public (unless the lottery is rigged), let us compare the winners' sample characteristics with the total Michigan and New York population (as given in the 1970 Census).<sup>7</sup>

The average age of the Michigan and New York winners was fifty-four, while the average age of the Michigan and New York population above sixteen was 27.9. Among the winners, 10% (seven, to be precise), were below the age of thirty-five, while 60% (thirty-four of the fifty-four) were above the age of fifty. This comparison enables one to reject the possibility that the winners are an unbiased sample of the general population (at the 2% level). Further, the winners' average number of children was five (for the twenty-nine winners that this datum was given), while the average number of grandchildren was six (these averages do not even include one winner who had seven children and thirty-two grandchildren). Occupations, when non-retired, were all characteristics of the poor or the lower middle class: janitors, factory workers, and so forth. In conclusion, the probability that such a sample is a random one for the population above sixteen years old is very small.

Similar evidence on the differences in age distribution was found by Kaplan and Kruytbosch (1975) when comparing the age distribution of winners and the population at large in the states of New York and New Jersey. The more than forty-one year olds are over-represented among winners (72 percent of the winner sample and only 52.9 percent in the New York population, and 78 percent versus 53.2 percent in New Jersey), while the 16-30 age group is under-represented (see Table 2).

This evidence thus strongly suggests that the lottery-playing population tends to be older, poorer and having more children than the rest of the population. Other evidence, at first sight, seems, however, to provide a different picture. For instance, in Quebec, 63 percent of the people whose annual income is between \$10,000 and \$15,000 are occasional or regular buyers (see Table 3). Though these incomes may be average for a young, childless worker, they are low for an older one with four children. Thus it would be misleading to conclude that in Canada, in contrast to the United States, the middle class is the major player.

We thus took a closer look at the data, taking into account education and age. The reason for looking at education is that education is positively correlated with income. Thus, if one finds that the lottery-ticket buying public is relatively less educated, we can conclude that relatively poorer and older people bought the lottery tickets in Canada too.

This is indeed what we found: 58 percent of people polled with up to 7 years of schooling, 53 percent with 8 to 12 years, 42 percent with 13 to 15 years and 39 percent with more than 16 years have answered that they are either regular or occasional buyers of Inter-Loto tickets, and similar trends existed for the other lotteries too (see Table 4). At the same time, the 45-54 and 55 and older age groups represent the highest percentage of the lottery ticket buying public. Considered alone, this finding may have two explanations: either that these are the ages when people are at the peak of their earning power, or that only when one attains these ages one finally realizes that the only way to still become

rich is by buying lottery tickets. But considering the previous data indicating that people with less schooling bought more tickets, the second explanation seems to be the valid one.

Indeed, a detailed survey of 93 (out of 190) big prize winners of Loto Canada between the year 1974-1978 supports this conclusion.<sup>8</sup> The 15-24 age group represents 7.6 percent of the winners, but 26.2 percent of the population, while the proportion of 45 years old and older is 46.6 percent in the sample versus 37.3 percent in the general population. These facts may explain why, in the same survey, the average family income of the winners was \$18,962, while the mean Canadian family income was \$16,095.<sup>9</sup> While at first sight these numbers do not seem to indicate a poorer population of lottery ticket buyers, the impression is again erroneous because of the lack of adjustment for age. Indeed the mean family income whose head belonged to the 45-54 age group was \$21,237, (and recall that the age of the winners in the survey was 45 and their income only \$18,962).<sup>10</sup>

But we do not wish to press this point any further, since it should be recalled that we expected two groups to gamble. Not only did we expect the poor and the old to play more, but also others whose realized wealth suddenly turned out to be significantly less than expected (whether due to illness, accident, loss of job, etc.). The resulting decision to purchase lottery tickets, a reaction to a sudden loss and frustration, will not be a regular, planned one, but rather a spontaneous one. But this kind of sudden illness or accident may happen to anybody, either rich or poor, young or old, with or without schooling. Bad luck may strike any category of people. Thus, if one puts together the two categories of people - the poorer who plan, and the unfortunate who may decide suddenly to buy lottery tickets - one may misinterpret the data and recommend erroneous policies. Just how misleading such aggregate data are depends on the percentage of people who decide to buy spontaneously relative to the percentage who plan to buy the tickets. We have found only one survey which raised this question (Robert Sylvestre (1977), vol. 4, tables 1-5, series 9) and found that 50 percent buy them

spontaneously and the rest plan to purchase them (see Table 5). This evidence may suggest that only less than 50 percent of the lottery ticket buyers may be old and poor. The other 50 percent may be young, may have no children but may have just been subjected to an unexpected, unfortunate event (losing a job, not getting the significant raise expected, and so forth). Devereux (1949) reached a similar conclusion in his massive, classic study on gambling, when he wrote that "the well adjusted middle class salaried employee may lose his job for a variety of causes that lie partially or wholly beyond his control ... excessive gambling may appear as one of the by-products of this sequence" (p. 807). Indeed Scodel (1964) labels gambling as a safety valve for that fraction of the middle class who is afraid of losing their position or, in the case of upwardly mobile ethnic minorities, insecure about their "social insurance" as Americans. Anecdotal evidence on this point was revealed in a recent (1982) poll in Quebec (where unemployment had reached an all-time high of 15 percent): People reported that the money they had previously allocated to beer and wine was now allocated to lottery tickets.<sup>11</sup>

Other evidence supports this interpretation: Tec (1969) too concludes that in Sweden gambling behavior is well correlated with a gambler's dissatisfaction at work, and Brunk (1981) concludes that in the U.S. dissatisfaction with current income is a strong reason for lottery ticket buying. Further evidence on this point can be found in the already mentioned detailed survey of 93 (out of 190) big prize winners of Loto Canada between the years 1974 and 1978. To the question whether or not before they won their prizes, the buyers thought that they could still "advance" in their careers, 51.5 percent of the 68 winners who answered the question, said "no". Moreover, 41.6 percent answered that they expected their situation either to stay unchanged or deteriorate. To the question "would you choose the same job again", 29 percent answered "no", and 36 percent answered that they would not like to see their children do the kind of work they were doing (only 19 percent answered that they would). These answers suggest two things: first, that the winners come from both groups (the poor who plan to spend

relatively large amounts and those who suddenly became poorer and dissatisfied and decided to gamble). Second, that the winners cannot be a random sample of the population. For, it is hard to believe that 51.5 percent of the working population consider themselves as already being at the dead point of their career.

Further evidence to support the view that there is a positive relationship between the propensity to gamble and being relatively poor and frustrated also comes from another direction. Numerous studies have found that French Canadians earned less than English Canadians<sup>12</sup> (although this difference has narrowed in the 1970's<sup>13</sup>). Thus one would expect that French Canadians would gamble relatively more and be disproportionately represented among the winners. Indeed out of the 93 winners in the previous sample, 45 (or 48.9 percent) were francophones, while in 1975 they represented only 25.6 percent of the population.

But one must be careful with the interpretation of these data. For, one also finds that 67.8 percent of the winners were Catholics, whereas 28.9 percent were Protestants. In 1976, in Canada only 47.3 percent were Catholics and 43.4 percent were Protestants. Thus Catholics are also over-represented among the winners. Two interpretations can be given to this fact. First, the Catholic Church has tended to be much less disapproving of gambling than the Protestant Churches (see Tec (1964), p. 93 and the next chapter), and one may thus expect that people belonging to the former will gamble more than those belonging to the latter (among the winners, 62.3% of the Catholics and 50% of the Protestants told that their religion was either "very important" or "important" to them).<sup>14</sup>

The second interpretation to the non-proportional participation according to the religious classification is linked to the previous information on francophones and non-francophones. Since the overwhelming fraction of francophones are Roman-Catholics, and since francophones are disproportionately represented among winners, one would immediately expect that Catholics would be therefore over-represented too in the

sample. However, there are more Catholic winners in the sample (61) than are francophones (45). Since in Canada, Catholics have lower average incomes than other religious groups (Tomes (1982) has found that male Catholics earn 7% less than the mean income of his sample, while protestants 12% more), one could predict that they will tend to spend relatively more on lottery tickets and be thus disproportionately represented among the winners. There are not enough data to be able to say which interpretation (the religious or the one based on the Catholics' lower wealth) has a greater predictive power.

This same survey also reveals that two provinces -- the Maritimes and Quebec -- which had relatively lower incomes were over-represented among the winners. Among the million dollars single winners (i.e. without co-winners) 50% were residents of Quebec, whose proportion of the 1976 population was only 27%. The Maritimes were the residence of 40.5% of the winners whose residence was neither Quebec nor Ontario, whereas their population represented only 25.6% of the Canadian population outside Quebec and Ontario.<sup>15</sup>

#### Statistical Analysis, and its Pitfalls

Detailed data on lottery buying patterns are available in Canada. We hoped that with their help we could carry out the best confrontation between theory and facts. A closer examination of the data reveals, however, that we were too optimistic: detailed data are indeed available, but they are inaccurate, very inaccurate.

Two samples were at our disposition. One is based on a study commissioned by Loto-Quebec in 1980. A random sample of 2,015 Quebecers were interviewed on their spending patterns on several types of lotteries, on their socio-demographic characteristics and on their attitudes toward lotteries and gambling in general. When analysing this sample we considered only the spending on lotteries which had a relatively large prize (\$50,000 and up). We also had to eliminate part of the observations because of missing variables and were thus left with only 851 usable observations.

The second sample used is based on a survey of expenditures of 10,937 Canadian families, made by Statistics Canada in 1982, where one of the items on the list was spending on lotteries. While these data sets seemed, at first sight impressive, we soon discovered that one cannot rely on them too much. First, in these data sets no distinction is made between expenditures on lotteries which offer a relatively large prize and others that do not. But this is the least of the problems. For, we found out that one cannot have much confidence to the numbers given: if one adds up the sums people said they spent on lotteries (using the appropriate statistical procedure), one comes up with 47.3 million dollars for the Atlantic Provinces, \$264 million for Quebec, \$308 million for Ontario and \$137 million for Western Canada.<sup>16</sup> If the answers are accurate, these numbers should be equal or close to the respective Provincial Lotteries' revenues (since, it should be noted they each have a local monopoly). But they are off the mark by 35 percent in Western Canada, 39.2 percent in Ontario, 40 percent in the Atlantic Provinces and 49 percent in Quebec!! (see Table 6).

Although some of the differences may be explained by the fact that foreigners too buy these tickets, they do not generate 40 percent of the revenues. Thus there is a large unexplained discrepancy between what Canadians say and what they do, at least as concerns their gambling expenditures. It is interesting to speculate on explanations for the discrepancy: one may be that people simply do not remember well how much they spent during the year since the sums involved were relatively small. Also, we saw that older people gamble relatively more. Since memories of older people may be less reliable, they might not have precise recollections of these expenditures. But these two explanations are insufficient: for, they could explain over as well as underestimation. Whatever the explanation is, however, one thing is clear: the data are totally unreliable.

Another notable property of the data set comes to the fore when one looks at the answers to the question whether or not they spent any money on lotteries. 40 percent in the Atlantic Provinces, 26.5 percent



in Western Canada answered that they never bought lottery tickets in 1982. But penetration studies of Loto-Quebec have found that in 1984, 84 percent of Quebecers have bought such tickets, while 92 percent admitted that they bought at least once in their life.<sup>17</sup> These and the previous answers therefore suggest that either on purpose or unwillingly people answered misleadingly the Statistics Canada survey. One explanation for such answers may be that since spending on lotteries still has some negative connotations, people did not write down the truth. The second explanation may be that one in a couple may not reveal to the other if he or she is spending a few dollars a week on lotteries. This is not the first time that for these and other reasons people do not tell the truth about their expenditures on games of chance.

McKibbin (1979) notes that already in 1895 Henry Higgs, a pioneer investigator of people's expenditure patterns, noted that his efforts to collect data gain ground very slowly since "many people talk about it as being a stomach policy of the bourgeoisie, whereby the bad management of the working classes should be demonstrated" (p. 151). Thus, although Higgs provided data on housing, food, clothing, there was not much about "pleasures". Indeed, Higgs' American publisher commented that it is strange that he "made no reference to any allowance in ... budgets for amusement expenditure. The budget of an American workman of the same class would assuredly include a regular weekly outlay for amusement..." (p. 151). McKibbin adds that so did the budget of the British workman, even if for the reason mentioned above the category "amusement" was not included in the statistical data. More recently, the compilers of Family Expenditure Survey for the year 1964, report, what Statistics Canada does not, that when families are asked to make returns on their personal expenditure, they understate the expenditures on items of which they feel guilty: tobacco, alcohol and gambling (see Rubner (1966), p. 123). So much about the meaning of "exact" numbers. Thus, it is useful to emphasize that one cannot be too optimistic of the statistical results, no matter how sophisticated is the technique used.

So it was quite surprising that not only the Loto Quebec, but even the Statistics Canada data led to results that, on the whole, seem consistent with the pictures drawn until now (for the detailed analysis, see Appendix), and there were no surprises: the poorer, the older, those who fall behind play more, whereas the upwardly mobile play less. How can one explain that with such unreliable data one gets the expected results? There are two possible answers: either the results are a statistical artifact, or the proportion of people who don't tell the truth is the same in each group.

### 3. Do Gamblers Spend Recklessly? Are They Criminals?

"Moral" authorities as well as some social scientists have had rather negative attitudes toward gamblers, arguing that gamblers, in general, overestimate their chances, are unstable, destroy their family lives and thus recommend outlawing all forms of gambling.

There is no evidence whatsoever to support these views, and thus one must explain the prevalence of such opinions and the regularity in their emergence and impact as disguising something else.

First, the previously quoted Royal Commission concluded that gamblers were as aware as non-gamblers of the unprofitable nature of gambling, and did not overestimate their chances to win.

Second, while no distinction has been made between gamblers playing just lotteries and others who played other games of chance as well, according to the Final Report on Gambling in America (1976, p. 68) these leisure activities characterize gamblers: they watch somewhat less T.V. than non-gamblers, read more newspapers and magazines and read about as many books as the non-gamblers. Gamblers devote more time to opera, lectures, museums, nightclubs, dancing, movies, theater and active sports. They also socialize more with friends and relatives and participate more in community activities. The few things that they spend

much less time on include home improvements, gardening, knitting, sewing and going to church. In their book Gambling, Work and Leisure (1976), Downes and his associates provide little evidence to support the view that the majority of gamblers squander their money recklessly whether it is money spent on stakes or money earned from winnings. The facts are that people budget for their expenditures that gamblers use any large win thriftily and sensibly (Gallup (1972), Cornish (1978)), spending it on home-centered items (Smith and Razzell (1975), Downes et. al. (1976)). Devereux (1980, p. 827) too noted that, in the more stable working class neighborhoods, gambling takes the form of disciplined petty gambling. In horse race bettings, too, small wins are rebet more often than large ones, while rebetting itself is largely confined to regular punters, although even among this latter group three times as many save their winnings or spend them on household goods as rebet them (Downes et. al. 1976).

This same result was found by a Swedish survey, which reveals that gamblers and non-gamblers discharged their familial, occupational and social duties in a similar fashion. Tec (1964) found that gambling did not interfere with attempts to advance through conventional channels of social mobility; rather it seemed to provide an additional strategy that served this goal, and when gamblers and non-gamblers were compared, neither their intentions to establish business nor their participation rates in training to improve their jobs, differed. Nor did Tec find any relationship between gambling and crime, marital instability, or the degree of participation in community activities. In fact, she found that gamblers participated in adult-educational courses more than non-gamblers did (41 percent of gamblers versus 33 percent of non-gamblers in the same age group).

Igor Kusyszyn found five psychological studies done since 1928 comparing people who gambled with those who did not. The studies reached the same conclusion: the differences were insignificant. Kusyszyn did his own study (in collaboration with Roxana Rutter) in 1978, comparing 35 heavy gamblers, 42 who gambled less, 19 nongamblers, and 24 lottery

players. They not only found heavy gamblers to be "as psychologically healthy as the non-gamblers", but also found that light gambling did not lead to more intense one (the light gamblers were playing for 15 years, on average).<sup>18</sup> Thus their conclusion was similar to Weinstein and Deitch's (1974) that light gambling is not a stepping stone to heavy one, just like the majority of lottery players persist in their habits to bet small amounts.

The Royal Commission on Gambling in the United Kingdom (1951) also found that "generally speaking, the average expenditure on gambling must be considerably less than the average expenditure on other indulgences such as alcoholic liquor or tobacco" (pp. 49-50)... "The great majority of those who take part in gambling do not spend money on it recklessly and without regard to the effect of their expenditure on the standard of living of themselves and their families" (p. 53)... "We find no support for the belief that gambling, provided that it is kept within reasonable bounds, does serious harm either to the character of those who take part in it or to their family circle and the community generally" (p. 45). The report also concluded that "whatever the extent of gambling in this country, we have been unable to find any conclusive evidence to support the view that it interferes seriously with production" (p. 40)... "The conclusion we have reached on the whole from the evidence, is that gambling is of no significance as a direct cause of serious crime, and of little importance as a direct cause of minor offences of dishonesty" (p. 52).

Not only in Sweden and England, but also in Ireland, Gibraltar, and Norway was there any evidence that gambling and crime are related. Nor was such evidence found in the U.S., where the myth of gamblers being criminals seems to prevail: the evidence is that the American bettor was not involved in criminal acts, other than placing of the illegal bet itself (an inaccurate association for condemning gambling).<sup>19</sup>

Cornish (1978) summarizes additional, similar evidence: in England a 1951, a study carried out by the Principal Medical Officer in

Wakefield Prison showed that out of 800 consecutive admissions examined in 1948, only in 2 percent of cases was gambling "a factor in the offender's downfall". Even among this 2 percent gambling was considered to be merely one aspect of the "generally slack and dissolute life", while only in seven cases was betting a significant factor. Similar studies of criminal populations have been carried out more recently: Sewell (1972) conducted a survey to determine the prevalence of frequency of gambling for a sample of short-term prisoners at Pentonville, and found little evidence that prisoners were any more likely to bet than comparable social groups from national samples, such as provided by Gallup (1972) or Borill's (1975) surveys. Of course, if one examines the relationship between crime, and gambling when gambling is outlawed, the results would be tautological and could shed no light on the discussion of whether or not gambling and crime are correlated.

The Swedish experience is revealing in this context: when gambling was outlawed (until 1930), the Swedes gambled on the English soccer games, thereby smuggling out substantial amounts of Swedish currency. But once gambling was legalized, the criminal elements that were involved with smuggling and gambling disappeared (recall the very similar French and other experiences presented in the previous chapter).

These findings are not novel. McKibbin (1979), in his earlier mentioned study of working-class gambling in Britain between 1880-1939, concluded that even gambling on all games of chance lumped together, made few demands on the economy of those who practised it:

"Even at the time no significant material consequences were ever detected, and critics were driven either to untruths or simple ideological statements: "Very likely his house is not broken up, his furniture is not sold, his wife and children never see the inside of the workhouse. He is degraded that is all, and his descent is progressive...". Although it was not for want of trying, the various commissions could find no general relationship between gambling and poverty, or between gambling and crime, other than that most gambling was illegal to start with. Witnesses repeatedly confessed that they found poverty or crime unaffected by gambling, and one actually admitted

that "there are cases where the prisoner alleges that his downfall is due to betting where the police, on making enquiry, can find no truth in his statement at all" (p. 157).

At first sight these facts, concerning the lack of correlation between gambling and crime, may be surprising, and for two reasons.

First, recall that according to our departure point, two classes of people were expected to gamble more: the poorer and those who suddenly became significantly poorer. The first group planned participation, whereas the second decided suddenly to participate. However, the motivation to commit crimes could not be linked at all to the first group - only to the second. But if the first group represents the majority of the buyers, while only a small fraction of the second gambles on criminal acts (the rest bet on mere games of chance or on entrepreneurial acts), it should not be expected that, in general, gambling and crime will be strongly correlated: Only some who have suddenly lost a significant fraction of their wealth and see no avenues for climbing back, may decide to gamble both on games of chance and on criminal acts - and they may represent only a small fraction. Thus the lack of correlation is not surprising, after all, once one takes a second, closer, look at the problem.

The second question, which is more difficult to answer, is why, in spite of the quite clear cut evidence, popular discussions associate the introduction of gambling with crime.

The easiest answer is that people are ignorant of the facts, and those who preach banning gambling do it because of religious beliefs. While this answer is not quite satisfying, we shall later see, when examining gambling in a broader context, how can one understand such reactions and their impact on other people's opinions, in spite of the lack of evidence.

The other answer is that the negative attitude toward gambling in the U.S. may stem from a reason already mentioned: namely, that when it was outlawed, the games were supplied by the underworld (as in Sweden

too). But to condemn gambling on this basis is erroneous: for, it was the very fact that gambling was outlawed that created the incentive for the underworld to capture this sector. But, as already pointed out, gamblers even then did not commit crimes (besides the illegal bet). Also, arguments are made that when games of chance are introduced in a locality, the crime rate will rise because of prostitution, mugging etc. These arguments seem to confuse as well: for, the rise of crime in this case seems to be attributed to the increased numbers of expected tourists. But the problem may then be with tourism rather than gambling, for it is the influx of tourists that leads to expectations of a rise in the crime rates, since such transitory crowds provide an easy prey. But one must be careful in extrapolating the U.S. experience to other countries: the calm, French resorts, where the Casino is the center of the town, do not provide the slightest support for making such correlations. Also, one must be skeptical in even interpreting the U.S. data. Recall that in the U.S. the tax laws allow one to deduct thefts, up to some amounts, at the end of the year. Why then shouldn't gamblers who lost a few hundred dollars go to the nearest police station and announce that they have been mugged? As police everywhere is overwhelmed with work, there is not even a chance that they will look for muggers and find out that the declaration was a mere invention.

Briefly, the picture of the typical gambler that emerges from all the evidence presented until now seems to fit a description reported in Campbell (1976):

"He is a white employed male ... earning between five and ten thousand dollars a year. He worked regularly, steadily, dependably, wearing a blue or a white collar. Yet the frontiers of his career expectations have been fixed since he reached the age of 35, when he found that he had too many obligations, too much family, and too few skills to match opportunities with expectations".<sup>20</sup>

#### 4. The Behavior of Winners

Is it true, what many writers have said, that winners of big prizes waste their money, don't work, gamble more, abandon their families and so forth?

The facts, once again, confirm the boring, stable image of the lottery players. Kaplan (1978, 1985) did several such studies. Although in the first, preliminary one (based on his interviews with 100 winners), he agreed with the critics of lotteries and concluded that, indeed, the winners stop working, in the later, more precise and reflective study, he gives a very different interpretation to the facts. The more recent research is based on information of 576 winners in the United States, who won prizes of \$50 000 and above: 25 percent in the sample won a million dollars and more, 29 percent won between \$200 000 and one million, 38 percent won between \$100 000 and \$199 999 (only 8 percent won between \$10 000 and \$100 000).

The average age of the winners was 54, 64 percent being 50 years old and more, 16 percent being between 40 to 49 years old, and only 20 percent being under the age of 39. Thus, it is not surprising that the majority of those who won large prizes either retired earlier or quit their jobs. What should one expect from people 54 years old and more, who suddenly become rich, and who worked hard all their lives? The next answers are typical and provide a flavor of what is going on, a flavor hidden by the dry statistics: a 57 year old clerk at the New York Subway System (who won 3.5 millions) said "I was able to retire from my job after 31 years. My wife was able to quit her job and stay home to raise our daughter. We are able to travel whenever we want to. We were able to buy a co-op, which before we could not afford" (p. 6). Another winner said "Since we have raised eight children and educated them in catholic schools in the amount of 112 years tuition paid, it was a help to be able to pay without depriving ourselves for years as we did ... We feel very secure that we can travel more and have helped our family" (p. 8); whereas another "My husband retired in 1981, as he had cancer surgery in 1978 and we wanted to enjoy the remaining years of the income. The end of this year, we expect to turn our home over to the ones left at home, travel for six months -- which we could never have done". A sixty year old lady from Massachusetts said "A year after I won the money, my sister had an operation and had a year to live. I was able to retire and care for her" (p. 16); and another 68 year old winner said that "winning the



lottery was a Godsend for us. My husband was sick for two years... and passed away this year. I had to close my ... shop and make bedroom for my mother and sister-in-law" (pp. 16-7). This is an age when one can hardly be expected to start a new career; anyway, 45 percent of the winners were only high school graduates and another 25 percent not even that, and the majority of the winners were laborers putting in for years long hours of work. The quits should not be viewed as an "erosion of the work ethic", or be interpreted as a sign that this group of players was anyway predisposed toward an unstable participation in the labor force. At the time of the winning, these people worked at their jobs approximately 13 years, 25 percent of the winners for 20 years or more (in contrast, the American labor force as a whole, has an average job tenure of 4 years). This, of course, is not only a sign of stability but can also be interpreted as a block in one's career's opportunities. Kaplan also found, as one would expect, that the higher was one's education and income, the more likely it was for the winners to continue to work.

What did the winners do with their money and the greater leisure? 18 percent gave more time to their family and children, 32 percent worked more at home (for, as one would expect, a large percentage of the winners either bought a house, made improvements in the ones they owned, bought furniture and so forth), 5 percent did more volunteer work, 4 percent took graduate studies, 32 percent to various leisure activities. Indeed, after reviewing this evidence, Kaplan calls into question the popular myth about marriages or family lives being destroyed -- on the contrary, the winning seems to stabilize them. Although there were a few divorces, the respondents admitted that their home lives were boring and bad before they won (the winning, in fact, "stabilized" husbands and wives enabling them to live apart after years of not getting along). But it is the stronger ties, reflected in the previous quotes that were typical. And what else did the winners do with their money? As noted, they spent on housing, traveling -- but no gambling.

In conclusion: all the evidence presented until now does not lend the slightest support to the rationale for which lotteries are condemned today. Indeed, Rubner (1966) already noted that "gambling, particularly in Britain, is clouded by hypocrisy, cowardice, and sanctimoniousness ... Like Anthony Crosland [a well-known British politician], I, too, have come across this mixture of puritanism and paternalism so curiously common among the British intelligentsia, which is exemplified in the 'pubs, pools, and prostitutes' argument. It combines a belief in the moral virtues of abstinence with the conviction that the working class wastes all its surplus income on alcohol, tobacco, and gambling, if not actually women. Crosland defiantly says this of himself: 'If I suddenly had a large increase in income, I have no doubt that I should spend a large part of it on smoking, eating, drinking, gambling, and similar deplorable recreations; and I decline to debase myself on that account'" (p. 25).

It is this inaccurate extrapolation of the relatively fortunate, their inability to enter the minds of the relatively poor or those who fell behind, that explains, in part, their biased attitudes toward lotteries. For, as we have seen in the previous chapters, the unfortunate, when they buy lotteries, do not think at all in these terms: they think about educating their children, buying a house, buying household products, and when they win the big prize, this is indeed what they do with their money rather than spend it recklessly. Recall the eloquent articulation from below of the benefits of lotteries quoted earlier and contrast them with Crosland's views. The latter captures the view from above, the way some of the fortunate may think: when they already have their cottage, when they already have provided for their children's education, for their retirement, for their vacations -- what will they do with still more money? The fortunate may attribute the negative effects of being bestowed with sudden, large, unearned income to their own experiences with similar events, like when being already accustomed to a comfortable life, they suddenly receive a large inheritance. But such situation should not be confused with that of the less fortunate who suddenly win, and who can better appreciate the value of money and decide to husband it more prudently.

Perhaps George Bernard Shaw in Pygmalion captures best, in words, the different attitudes (the facts captured them here). Recall the scene in which Lisa's father pleads with Professor Higgins to make the reward for her surrender five pounds instead of ten, on the ground that, with the smaller sum, he would feel free to treat himself to a glorious binge, whereas with the larger sum he would feel constrained to use it sensibly -- as indeed he later does when he gets the even larger sum (then he even stabilizes his family life and marries his mistress). Shaw's opinion, which is consistent with the facts, contrasts with Crosland's, which is not.

This contrast is illuminating for an additional reason: note that Shaw distinguishes between the effect of a relatively small sum and a relatively large one on Mr. Doolittle's behavior. The unexpectedly received small sum from Professor Higgins, cannot move him up in society, and is spent on insuring friendships, on strengthening already existing social contacts. However, when he gets the large inheritance, he decides to husband it prudently. Of course, what is large for Mr. Doolittle, may not be large for somebody already comfortably established in the middle class.

Getting a sudden \$250 000 inheritance, when one expects annual income of \$50 000 and more, is not bad, but is insufficient to move one to the "upper" middle class, and may be spent as recklessly as Mr. Doolittle spends his five pounds. An anecdotal case, known personally to Devereux (1980), and described by him, is revealing:

"A college student inherited a modest fortune of \$250 000 on his twenty-first birthday, and set about quite deliberately to spend it all within a year. He rationalized, with rather shrewd insight, that the fortune was too trivial to live on permanently, but that its presence would effectively deflate his motivational drives toward academic and pecuniary success, would "ruin his

character" and spoil his life. So he took the year off, with a few college friends, and "blew the works" in riotous living; after which they all returned to college and continued their careers from their previous footings in the social structure" (p. 785).

(but we could find no evidence that would enable us to infer just how typical such behavior is.)

##### 5. Compulsive Gamblers - in Parentheses

As the data clearly show, compulsive gamblers are a tiny fraction of the gambling population -- the majority of those who gamble do so in order to become richer -- and those who commit crimes an even smaller one of this subgroup. Yet, obviously, they are the ones who capture the writers', the journalists' and the film makers' attention. Ashton's History of Gambling in England (1898), Chafetz's History of Gambling in the United States (1960), Sullivan's By Chance a Winner (1972) are full of stories about such compulsive gamblers, and Dostoyevski's The Gambler (1867) is one that left its mark on people's imagination.

However, such stories and histories can hardly be viewed as attempts to understand "gambling": the authors have chosen interesting stories, and such stories are not provided by the lives of "moderate", "average" people, but by those who, in one way or another, deviated from the norm. Although Dostoyevski's book certainly captures one side of human nature, Dostoyevski's own life reveals that the picture is more complex, and not quite consistent with the moral of his book. His brother's death, the closing of the review which he had been editing, and his passion for gambling, left Dostoyevski bankrupt (but, by the way, he immediately and voluntarily assumed to care for his brother's family). To cope with these burdens, Dostoyevski did not commit crimes, but worked feverishly and his most famous works, Crime and Punishment (1866), The Gambler (1867), The Idiot (1868), The Possessed (1872) were, according to Nabukov (1981), written under constant stress, when Dostoyevski worked in a hurry to meet deadlines with hardly any time left to re-read what he had written. But, in his stenographer he found a woman full of devotion and with whose help he met his deadlines and gradually began to extricate himself from his financial mess. In 1867, he married her and, in four years, from 1867 to 1871, they had achieved some financial security.

Thus The Gambler, telling the story of the weak schoolteacher's life who promises every evening to himself to abandon his addiction, reflects a possibility. Dostoyevski's life reflects another.

Still, we do not doubt that compulsive gamblers impose a cost on their families and thus on society. But can the existence of such a tiny minority be used as an argument against lotteries and gambling? There are compulsive eaters, compulsive drinkers, compulsive workers, compulsive watchers of T.V. Their lives and their families' lives may be as miserable as those of the compulsive gamblers', and they too impose a cost on society; whether due to accidents, hospital treatments or frequent divorce. Yet not only are prohibitions of drinking rare, but even eating, drinking, working "too much", and watching "too much" T.V. are activities that, although some of them are recommended to be carried out in moderation, excesses are not legally forbidden.

## 6. Conclusions

What then makes gambling on lotteries an act that has frequently attracted special condemnation?

These gamblers are not criminals, they do not spend recklessly on games, they do not seem to differ significantly from non-gamblers in their leisure activities, they do not seem to be ignorant of their small chances to win the big prizes (how can they be when articles on the winners of big prizes are front page news and they always point out the precise tiny probability of winning?) These characteristics, therefore, cannot explain the special indignation. Neither can it be explained by the fact that a tiny minority of gamblers are compulsive players, considering the fact that drinking, when heavy, although it has similar consequences as heavy gambling may have (destroying family life, crime), is not condemned today in such severe terms: few recommend banning all drinking because of the small percentage of heavy drinkers.

So what makes lotteries with big prizes so special? Answers to this question are given in Brenner and Brenner (1987).

Table 1  
Lottery and Bingo Participants and Family Income

Percentage of income bet per capita	Family income					
	Under \$5,000	\$ 5,000- 10,000	\$10,000- 15,000	\$15,000- 20,000	\$20,000- 30,000	Over \$30,000
Lottery	0.3	0.23	0.13	0.06	0.06	0.02
Bingo	0.49	0.64	0.18	0.07	0.06	0.04

Source: Final Report on Gambling in America (1976), pp. 156, 163.

Table 2

Age Distribution: Lottery Winners vs. General Public

Age	Winners		Population
	Percentage	Absolute	
a) New York			
16-30	10%	5	31.2%
31-40	18%	9	15.9%
41+	72%	37	52.9%
b) New Jersey			
16-30	8%	4	30.4%
31-40	14%	7	16.4%
41+	78%	41	53.2%

Sources: Kaplan and Kruytbosch (1975).  
General Population: 1970 Census.

Table 3

Regular or Occasional Purchases of Lottery Tickets by Income of Purchaser, 1976 Annual Income (% of people polled in each category)

Type of lottery	Annual income, \$0-1976	\$5,000-5,000	\$8,000-8,000	\$10,000-10,000	\$15,000-15,000	\$25,000-25,000	over \$25,000
Inter-Loto		41	48	52	63	52	59
Super-Loto		28	36	44	41	40	47
Loto-Perfecta		11	26	23	27	23	28

Source: Sylvestre (1977), vol. 3, tables 3b, 4b, 5b.



Table 4

Regular or Occasional Purchases of Lottery Tickets by Years  
of Schooling (% of people polled in each category)

Type of Lottery	Years of schooling	0-7	8-12	13-15	over 16
Inter-Loto		58	53	42	39
Super-Loto		43	38	33	24
Loto-Perfecta		25	20	21	11

Source: Sylvestre (1977), vol. 3, tables 3b, 4b, 5b.

Table 5

Regular or Occasional Purchases of Lottery Tickets by  
Age of Purchaser (% of people polled in each category)

Type of lottery	Age less than 20	20-24	25-34	35-44	45-54	over 50
Inter-Loto	12	33	46	58	68	59
Super-Loto	11	23	32	43	47	46
Loto-Perfecta	12	12	20	24	25	18

Source: Sylvestre (1977), vol. 3, tables 3a, 4a, 5a.

Table 6

Actual Revenues and Sample's Estimate of Lotteries  
of Provincial Lotteries Corporation, 1982.

Corporation	Actual Revenues (millions \$)	Revenues Estimate (millions \$)	Difference (%)
Atlantic	78.6	47.3	39.8%
Quebec	515.87	264	48.8%
Ontario	506.89	308	39.2%
Western Canada	210.56	137	34.9%

## APPENDIX TO CHAPTER II

### The Statistical Results

#### Quebec Data

In order to test the views presented in the text, the following relationship was estimated (by a multiple regression model and a log-linear function):

$$\begin{aligned} \text{TOT}_i &= \beta_0 + \beta_1 \text{SCHOL}_i + \beta_2 \text{AGE}_i + \beta_3 \text{WEALTH}_i + \beta_4 \text{CHIL}_i \\ &+ \beta_5 \text{INC}_i + \beta_6 \text{PER}_i + \beta_7 \text{FAM}_i + \epsilon_i \end{aligned}$$

where the variables used are defined as follow:

$\text{TOT}_i$  - annual total spending on lotteries' tickets of respondent  $i$  as percentage of his total family income.

$\text{SCHOL}_i$  - number of years of schooling of respondent  $i$ .

$\text{AGE}_i$  - age of respondent  $i$ .

$\text{WEALTH}_i$  - an index giving the actual family's wealth position of respondent relatively to what it was when he was young. If it did not change, the index was equal to 1; if it was worsened, the index was smaller than 1 and if his position was improved, the index was greater than 1.

$\text{CHIL}_i$  - number of children of  $i$ .

$\text{INC}_i$  - personal income of  $i$ .

$\text{PER}_i$  - personal income of  $i$  as percentage of his family income.

$FAM_i$  - family income of  $i$ .

$\epsilon_i$  - an error term.

The reasons for including these variables are the following: recall that the views presented in the text make predictions on the relationship between one's relative position in the wealth distribution, fluctuations in this position and expenditures on lottery tickets. The sample does not allow a straightforward testing of such relationships since the information on "wealth" is not available. Also, as noted, the motivation for buying lottery tickets stems from two entirely different reasons: a) people who are relatively poor plan to spend a larger fraction of their wealth on tickets relatively to richer people, and b) people who have suddenly become poorer may decide to buy such tickets. But this last group may be found in any wealth bracket as misfortune may strike all categories of people. Thus, if one does not separate the two groups when collecting the data, one may not necessarily observe that the average income of the lottery ticket buying public is significantly lower than that of the public at large. Only if the fraction of people who plan to buy lottery tickets because they are poorer constitutes a large fraction of the buyers, can one expect such an outcome.

Second, the data available refer to monetary income and not to wealth. But, as noted, monetary income is a misleading indicator of wealth since adjustments are not made either for age or for the number of dependants. One would expect that holding monetary income constant, older people and people with more dependants will be disproportionately represented among the lottery ticket buyers. Another variable which may complement the information on one's relative wealth is the level of education. One may expect that, ceteris paribus, the lower the level of education the lower one's expectations for future increases in income, and thus the lower is one's wealth. If so, people with less education will plan to spend a greater fraction of their wealth on lottery tickets.

In addition to the prediction on the relationship between planning to buy lottery tickets and wealth, the other prediction that one can test concerns people whose anticipations as to their place in the wealth distribution have been frustrated. According to the model's predictions they will tend to spend more on lotteries than before. If one takes one's wealth relative to the wealth one's family owned during one's childhood (and we assume that one's family's wealth shapes one's aspirations), one would expect that people who bettered their own position in the wealth distribution tend to buy less lottery tickets than before while those whose position worsened will tend to buy more.

Thus, we expect  $\beta_1$ ,  $\beta_3$ ,  $\beta_5$  and  $\beta_7$  to be negative and  $\beta_2$  and  $\beta_4$  to be positive. We expect  $\beta_6$  to be positive, since the higher one's contribution to one's total family income, the less secure will this family's relative wealth be perceived (since its income depends much more on just this person's income).

The results of the estimation are given in Table I, column (1).  $\beta_2$ ,  $\beta_3$  and  $\beta_6$  are of the expected sign and significant while  $\beta_3$  is of the expected sign but insignificant. On the other hand, neither the coefficient of schooling,  $\beta_1$ , nor the coefficient of number of children,  $\beta_4$ , nor the coefficient of family income  $\beta_7$  have the expected sign,  $\beta_4$  being also statistically insignificant. After having ascertained by an F-test that  $\beta_4$  is really insignificant, we rerun the regression without the number of children. The results are given in column (2) of Table I. There are no major changes in the other coefficients.

The results in Table I seem quite consistent with the prediction of the model: the higher one's income, the less one's spending on lottery tickets; the older one is, the more lottery tickets one buys. It also seems that the more upwardly mobile one is, the less one buys lottery tickets. The reasons for the non-significance of the number of children may be the following: some may play the lottery games in order

Table 1  
Regression Results  
QUEBEC SURVEY  
(LOG-LINEAR FORM)

Coef. (Hyp. <sup>1</sup> )	Dependent Variable	(1)	(2)
	CONSTANT	-5.2* (-3.3)	-5.1* (-3.3)
$\beta_1(-)$	SCHOL	0.4** (2.3)	0.4** (2.4)
$\beta_2(+)$	AGE	0.5 (2.0)	0.45 (1.97)
$\beta_3(-)$	WEALTH	-0.58 (-1.1)	-0.57 (-1.08)
$\beta_4(+)$	CHILD	-0.07 (-0.5)	
$\beta_5(-)$	INC	-5.6* (-9.0)	-5.6* (-9.0)
$\beta_6(+)$	PER	7.4* (4.1)	7.4* (4.1)
$\beta_7(-)$	FAM	4.2* (5.8)	4.2* (5.8)
	F-statistics	77	90
	R <sup>2</sup>	0.38	0.38

(<sup>1</sup>) the signs in parantheses are the expected ones.

\* these coefficients are statistically significant at the 1% level.

\*\* these coefficients are statistically significant at the 5% level.

no. of observations : 851.

t-statistics are in parentheses.

to afford one more child (if one wins), a hope which the data on the actual number of children does not reveal. A result which seems to contradict a prediction is the one on the influence of schooling and family income.

Since several previous studies, relying on somewhat more detailed data set (summarized in the text) have found that there seems to exist an inverse relationship between years of schooling completed and expenditures on lotteries, we did some further testing with this data set but without improving the results. The only explanation we can think of is the following. As noted earlier, the model makes predictions on gambling behavior for two sets of people: the relatively poor, who plan to buy tickets and the ones whose expectations are frustrated. The latter may belong to any class and any level of schooling. Only if the data set would include people from the first group (i.e. people who plan to buy lottery tickets) would one expect to obtain a positive relationship between schooling and relative expenditures on gambling. For the other group, not only should such a relationship not be expected, but one may argue that the opposite is true. For, suppose that somebody with few years of schooling loses his job. Then, transfer payments and other benefits significantly diminish fluctuations in his wealth and he may neither start gambling nor spend more on it. However, for those with relatively more years of schooling, such compensations are far from reaching the expected level of wealth (and the status it defined). Thus, he may start gambling. This explanation is reinforced by the result we obtained in the following test. We split the data set in two: one set included people with less than ten years of schooling, whereas the other included people who had ten and more years of schooling. We then rerun the regression on each subset of data. For the sample with ten and more years of schooling, the relationship between years of schooling and relative expenditures on gambling is negative while it is positive for the ones with less than ten years of schooling. This same explanation may hold true for the positive relationship between relative expenditures on gambling and family wealth.



The Canadian Data

In spite of the strong reservation mentioned in the text, we tested the views on the data set provided by Statistics Canada Survey of Consumer Expenditures done in 1982, and the following relationship was estimated

$$\begin{aligned}
 \text{TOT}_i = & \gamma_0 + \sum_{j=1}^3 \gamma_1^j \text{NAC}_i^j + \sum_{j=2}^6 \gamma_2^j \text{AGE}_i^j + \sum_{j=1}^4 \gamma_3^j \text{REG}_i^j + \sum_{j=1}^2 \gamma_4^j \text{STAT}_i^j \\
 & + \sum_{j=1}^4 \gamma_5^j \text{ED}_i^j + \sum_{j=1}^2 \gamma_6^j \text{LANG}_i^j + \sum_{j=1}^3 \gamma_7^j \text{ENF}_i^j + \gamma_8 \text{INC}_i \\
 & + \sum_{j=1}^2 \gamma_9^j \text{IM}_i^j + \eta_i
 \end{aligned}$$

where the variables used are defined as follows:

$\text{TOT}_i$  = annual spending on lotteries of the family unit  $i$  as a percentage of its total after-tax income.

$\text{AGE}_i^j$  = dummy variables which characterize the age of the head of the family unit when

$\text{AGE}^1 = 1$  if the head is between 30 and 39 years old and 0 otherwise

$\text{AGE}^2 = 1$  if the head is between 40 and 49 years old and 0 otherwise

$\text{AGE}^3 = 1$  if the head is between 50 and 59 years old and 0 otherwise

$\text{AGE}^4 = 1$  if the head is between 60 and 69 years old and 0 otherwise

$\text{AGE}^5 = 1$  if the head is 70 years old and older.

The omitted age category is the 20 to 29 years old one. Thus all the coefficients are relative to this category.

$\text{REG}_i^j$  = dummy variables to indicate the province or region where the family unit lives when

$\text{REG}^1 = 1$  if the family lives in the Atlantic provinces, 0 otherwise

REG<sup>2</sup> = 1 if the family lives in Quebec, 0 otherwise  
REG<sup>3</sup> = 1 if the family lives in the Western Provinces except  
British Columbia, 0 otherwise  
REG<sup>4</sup> = 1 if the family lives in British Columbia, 0 otherwise.

The omitted category is Ontario.

STAT<sub>1</sub><sup>j</sup> = dummy variables to indicate the marital status of the head of the family unit when

STAT<sup>1</sup> = 1 if the head was never married, 0 otherwise  
STAT<sup>2</sup> = 1 if the head was neither married nor ever married, 0 otherwise.

The omitted category is when the head is married.

ED<sub>1</sub><sup>j</sup> = dummy variables to indicate the level of education of the head of the family when

ED<sup>1</sup> = 1 if the head of the family has either some secondary education or completed his secondary education.  
ED<sup>2</sup> = 1 if he has some post-secondary education, 0 otherwise  
ED<sup>3</sup> = 1 if the head has a college degree or certificate of post-secondary education, 0 otherwise  
ED<sup>4</sup> = 1 if the head has a university degree, 0 otherwise.

The omitted category is less than 9 years of primary education.

LANG<sub>1</sub><sup>j</sup> = dummy variables to indicate the maternal language of the head of the family when

LANG<sup>1</sup> = 1 if his maternal language is french, 0 otherwise  
LANG<sup>2</sup> = 1 if his maternal language is neither english nor french, 0 otherwise.

The omitted category is english as maternal language.

NAC<sub>1</sub><sup>j</sup> = dummy variables to indicate if members of a family receive unemployment insurance, when

NAC<sup>1</sup> = 1 if one member of the family received unemployment insurance, 0 otherwise.  
NAC<sup>2</sup> = 1 if two members of the family received unemployment insurance, 0 otherwise.

$NAC^3 = 1$  if three or more members of the family received unemployment insurance, 0 otherwise.

$ENF_i^j$  = dummy variables indicating the number of children in the family. We defined three such variables, depending on whether there are one, two or three and more children in the family. The category omitted is when there were no children in the family.

$INC_i$  = income of the family unit.

$IM_i^j$  = dummy variables indicating the immigration status of the family unit.

$IM^1 = 1$  if the head of the family unit immigrated before 1960 and 0 otherwise

$IM^2 = 1$  if the head of the unit immigrated between 1961 and 1970 and 0 otherwise

$IM^3 = 1$  if the head of the unit immigrated since 1971 and 0 otherwise.

The omitted category is when a native-born is the head of the family.

We expect both  $\gamma_1^j$  and  $\gamma_2^j$  (corresponding to the receipt of unemployment insurance and the age variable, respectively) to be positive. The coefficients  $\gamma_3^j$  may be of either sign, depending on regional differences which are not captured in other variables. As noted in the previous section, evidence exists showing a greater participation in the traditionally poorer regions of Canada, Quebec and the Maritimes: this would mean a positive coefficient for both  $\gamma_3^1$  and  $\gamma_3^2$ .

We also expect that the coefficients  $\gamma_5^j$  will be negative as the reference category for education is the least educated one (less than 9 years of primary education).  $\gamma_7^j$ , the coefficients of the number of family members, should be positive and  $\gamma_8^j$ , the coefficient of income negative.

The signs of  $\gamma_7^j$ , the number of children living with the family,  $\gamma_6^j$ , the language spoken in the family and  $\gamma_9^j$  and the immigration status of the family unit are not determinate. Nevertheless, the following arguments may give some ideas on the expected signs of  $\gamma_6^j$  and  $\gamma_9^j$ . Several studies (see summary in Tec, 1964) have mentioned that Catholics are more prone to gamble than Protestants. As there are relatively more Catholics among French-speaking Canadians than among English-speaking ones, we expected that  $\gamma_6^1$ , the coefficient of francophone families would be positive. This argument is reinforced by the fact that, as noted in the text, French-Canadians have earned less than their English-speaking brethren. As for the immigration status: since immigrants are persons uprooted from their traditional way of life, and who possibly did not yet settle in their new country, we would expect that new immigrants would play relatively more than native-born Canadians. We would also expect older immigrants to play more than native-born Canadians, *ceteris paribus*.

As noted in the text, a significant percentage of families have answered that they did not buy lottery tickets. We are thus in presence of a dependent variable equal to 0 in a significant number of observations. The correct way to estimate the equation above is thus through probit analysis (see Theil, 1971, pp. 628 ff.). The results of this analysis are given in Table II below.

Quite surprisingly, the results in Table II mostly reflect our predictions: all age categories except the last (seventy and over) gamble more than the younger group pointing toward a positive relation between lottery spending and age. Why didn't we get the result for the seventy and older group? First, elderly people may be in poor health, and thus less able to buy lottery tickets. Second, they may have more problems than the average recalling how much they spent on the tickets during a year. But note that if we compare these results with those in Table II I below, where we estimated, by a least-square method, the relationships described above concerning only the families who answered that they bought lottery tickets (we thus eliminated all the families who

Table II

Coefficient	Hyp <sup>1</sup>	Independent Variable	Estimate	t-statistics
$\gamma_1^1$	(+)	NAC1	0.08*	6.7
$\gamma_1^2$	(+)	NAC2	0.07*	2.9
$\gamma_1^3$	(+)	NAC3	0.10	1.4
$\gamma_2^1$	(+)	AGE1	0.04*	3.2
$\gamma_2^2$	(+)	AGE2	0.05*	3.1
$\gamma_2^3$	(+)	AGE3	0.08*	5.0
$\gamma_2^4$	(+)	AGE4	0.06*	3.4
$\gamma_2^5$	(+)	AGE5	-0.04**	-2.2
$\gamma_3^1$	(+)	REG1	-0.11*	-5.9
$\gamma_3^2$	(+)	REG2	0.01	0.6
$\gamma_3^3$	(?)	REG3	-0.11*	-10.6
$\gamma_3^4$	(?)	REG4	-0.12*	-7.9
$\gamma_4^1$	(?)	STAT1	-0.11*	-7.4
$\gamma_4^2$	(?)	STAT2	-0.11*	-8.4
$\gamma_5^1$	(-)	ED1	0.03*	2.8
$\gamma_5^2$	(-)	ED2	0.06	0.2
$\gamma_5^3$	(-)	ED3	-0.05*	-3.2
$\gamma_5^4$	(-)	ED4	-0.21*	-10.3
$\gamma_6^1$	(+)	LANG1	0.03**	2.0
$\gamma_6^2$	(?)	LANG2	0.01	0.8
$\gamma_7^1$	(+)	ENF1	-0.006	-0.4
$\gamma_7^2$	(+)	ENF2	-0.008*	-2.5
$\gamma_7^3$	(+)	ENF3	-0.07	0.9
$\gamma_8$	(-)	INC	0.03*	9.4
$\gamma_9^1$	(+)	IM1	-0.02	-0.1
$\gamma_9^2$	(+)	IM2	-0.003	-0.1
$\gamma_9^3$	(+)	IM3	0.004	0.1

<sup>1</sup> The signs in parentheses are the expected signs.  
Number of observations: 10,938

F = 33

\* These coefficients are statistically significant at the 1% level.  
\*\* These coefficients are statistically significant at the 5% level.

said that they did not buy lottery tickets at all), we see that families whose heads were seventy years old and older, bought more tickets than the younger aged groups although less than the categories 50 years old to 69 years old. Considering the bad data there is not much reason to speculate on the reasons for these results.

The coefficients of the number of people receiving unemployment benefits are also positive, i.e. family units where one or more members receive unemployment benefits buy proportionally more lottery tickets than units where no member is unemployed. Although note that in table IV this result is inverted for families where 3 or more members receive unemployment benefits. On a geographical level, residents of the West both participate less in the lottery and buy less lottery tickets than Ontarians and the result is statistically significant. The result of the comparisons between Ontarians and the residents of the Atlantic Provinces and Quebec is not as clear-cut: the one in Table II suggests that residents of the Atlantic Provinces play less than Ontarians (and the result is again statistically significant). But the one in Table III, based on the families who did indeed buy lottery tickets, is not statistically significant. These two different results may be due to the difference in acknowledged participation rates in buying the lottery in the two regions: as noted in the text, 40% of families in the Atlantic Provinces and only 29% in Ontario said they did not buy lottery tickets. As for Quebecers, the numbers in Table II suggest that they play more than Ontarians although the result is not statistically significant, while those in Table III suggest that among the families who did play the lottery, Quebecers played less than Ontarians, although again the result is not statistically significant. Thus we cannot conclude that Quebecers buy more (or less) lottery tickets than Ontarians, contrarily to our previous findings. On the other hand, contrarily to our previous findings, the Maritime Provinces don't play less than Ontario any more. But we give more confidence to the previous data.

As predicted, there seems to exist a negative relation between level of education and lottery participation: people with either a

college or university degree buy relatively fewer lottery tickets than people who did not complete their secondary level of education. This result is statistically significant. On the other hand, people who completed their secondary education played more and people who had some post-secondary education played either more, as much or less than people who did not complete their primary education (the coefficient being statistically insignificant in all three regressions). As for the mother-tongue: people whose mother tongue is English buy relatively less lottery tickets than people whose mother tongue is not. Families whose head is married, participated more in the lottery than units whose head had any other marital status, although among the families who bought tickets, families whose head was never married may have bought relatively more tickets (but the result is not statistically significant). The only results that are contradictory to the predictions are the ones on families with children versus families without children and income: families with children play relatively less than families without children and families with higher income play relatively more than their poorer brethren. Possibly, we can relate this last result with the significant (40 percent) under-reporting on lotteries we found: richer families would possibly be more truthful as they would be subjected to less disapproving attitudes than the poorer ones.

Thus the results of tabel II and II<sup>7</sup> seem surprisingly consistent with the predictions of the theory. Maybe the proportion of people who gave inaccurate answers in any family category is more or less the same, in which case the results would not be biased. Or, as noted in the text, we tend to believe that the results may be a statistical artifact, and not much more -- that is why they are reported in an appendix.

Table III

Coefficient	Hyp <sup>1</sup>	Independent Variable	Estimate	t-statistics
Y <sub>1</sub> <sup>1</sup>	(+)	NAC1	10.3	1.7
Y <sub>1</sub> <sup>2</sup>	(+)	NAC2	32.9*	2.7
Y <sub>1</sub> <sup>3</sup>	(+)	NAC3	-36.7	-1.1
Y <sub>2</sub> <sup>1</sup>	(+)	AGE1	17.1**	2.2
Y <sub>2</sub> <sup>2</sup>	(+)	AGE2	27.6*	3.2
Y <sub>2</sub> <sup>3</sup>	(+)	AGE3	59.4*	6.7
Y <sub>2</sub> <sup>4</sup>	(+)	AGE4	51.1*	5.3
Y <sub>2</sub> <sup>5</sup>	(+)	AGE5	33.2*	2.9
Y <sub>3</sub> <sup>1</sup>	(+)	REG1	-18.1	-1.8
Y <sub>3</sub> <sup>2</sup>	(+)	REG2	-10.2	-1.1
Y <sub>3</sub> <sup>3</sup>	(?)	REG3	-48.9*	-6.5
Y <sub>3</sub> <sup>4</sup>	(?)	REG4	-44.6*	-5.4
Y <sub>4</sub> <sup>1</sup>	(?)	STAT1	1.9	0.2
Y <sub>4</sub> <sup>2</sup>	(?)	STAT2	-17.4*	-2.4
Y <sub>5</sub> <sup>1</sup>	(-)	ED1	7.3	1.1
Y <sub>5</sub> <sup>2</sup>	(-)	ED2	-16.3	-1.7
Y <sub>5</sub> <sup>3</sup>	(-)	ED3	-25.2*	-2.7
Y <sub>5</sub> <sup>4</sup>	(-)	ED4	-60.5*	-5.6
Y <sub>6</sub> <sup>1</sup>	(+)	LANG1	32.7*	3.5
Y <sub>6</sub> <sup>2</sup>	(?)	LANG2	26.8*	3.0
Y <sub>7</sub> <sup>1</sup>	(+)	ENF1	-25.1*	-3.4
Y <sub>7</sub> <sup>2</sup>	(+)	ENF2	-39.2**	-2.0
Y <sub>7</sub> <sup>3</sup>	(+)	ENF3	7.7	0.1
Y <sub>8</sub>		INC	0.002*	10.2
Y <sub>9</sub> <sup>1</sup>	(+)	IM1	-4.7	-0.5
Y <sub>9</sub> <sup>2</sup>	(+)	IM2	32.8**	2.5
Y <sub>9</sub> <sup>3</sup>	(+)	IM3	52.9*	3.8

<sup>1</sup> The signs in parentheses are the expected signs.  
 Number of observations: 10,938  
 F = 17.2      R<sup>2</sup> = 0.24

\* These coefficients are statistically significant at the 1% level.  
 \*\* These coefficients are statistically significant at the 5% level.



FOOTNOTES

- 1 See Brenner and Brenner (1987), chs. 3, 4.
- 2 These questions have been raised, and evidence was presented in Brenner (1983, 1985), G. Brenner (1985a, 1985b) and Brenner and Tremblay (1986).
- 3 See Freud (1929), pp. 155-6.
- 4 See Brenner (1983), chs. 1, 2.
- 5 For the mathematical translations of these arguments see the Appendix of chapter 1 in Brenner 1983, 1987. In the latter the model is somewhat revised and given greater precision.
- 6 Such findings are also reported in Kallick et al. (1979).
- 7 The sources for the information can be found in Brenner (1983).
- 8 This survey was undertaken by Kaplan et al. (1979) for Loto-Canada.
- 9 The sample included winners of \$1,000,000 and more in Ontario, \$100,000 and more in Quebec and winners of \$50,000 and more in the other Canadian provinces. Thus it is not exactly a random sample of lottery winners and thus of the lottery tickets buying population. However, if there is a bias, its direction is not clear. We will make the assumption that the sample is random.
- 10 It may be useful to note that in a 1984 survey of lottery winners in the United States, including 576 winners in 12 states, H. Roy Kaplan found that "prior to winning, [the] respondent's incomes were clustered in the lower range" with 69% of the winners and 75% of their spouses earning less than \$20,000 a year (1985a, p. 10). In a later study of this same data set, he also found that the average age of winners was slightly over 54 (1985b).
- 11 In an article in the Wall Street Journal, Ronald Alsop gives some examples of unemployed workers who in the midst of the recession see the lottery as their last hope. One of them says of his weekly bet: "The way things are now, I've got to try something". Li and Smith (1976) also found in their study of a 1971 Gallup survey of attitudes toward gambling that there is a weak statistical link between frustrated expectations and the propensity to gamble.
- 12 See Royal Commission on Bilingualism and Biculturalism (1967), vol. 3, p. 21; Vaillancourt (1975); Kuch and Haessel (1979).

- 13 See Lacroix and Vaillancourt (1981).
- 14 These are the winners of the survey of 93 Loto-Canada winners mentioned above.
- 15 These numbers are based on the 1976 Canadian Census.
- 16 These estimates are calculated by using the weights given by Statistics Canada, weights reflecting the different rates of response among regions, the kind of family units interviewed and so forth.
- 17 These numbers were privately given by Loto-Quebec.
- 18 See summary in Skolnick (1979).
- 19 See Allen (1952) and Tec (1964).
- 20 Campbell (1976) quotes Schragg.

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