NBER WORKING PAPER SERIES

LESS OF A LUXURY: THE RISE OF
RECREATION SINCE 1888

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Working Paper 6054

Less of a Luxury: The Rise of Recreation Since 1888
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NBER Working Paper No. 6054
June 1997
JEL Nos. D12, N11, N12
Development of the American Economy
and Labor Studies

ABSTRACT

I show that recreation has become much more egalitarian over the last hundred years by estimating recreational expenditure elasticities in 1888-1890, 1917-1919, 1935-1936, 1972-1973, and 1991. I find that expenditure elasticities have fallen from around two at the beginning of the century to slightly more than one today and attribute this decline to rising incomes, declines in the price of recreation, and investment in public recreational goods. My findings have implications for trends in the well-being of the poor relative to the rich and for long-term trends in work hours and labor force participation rates.

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One of the most dramatic alterations in the past one hundred years in the way we live has been in the rise of recreation. New products, such as movies, radio, television, and the automobile revolutionized recreational possibilities. Sports became a national past-time. Between the two world wars, local, state and federal governments made tremendous investments in recreational facilities. Technological change, combined with a mass market, has created low cost activities with universal appeal, such as motoring, movies, radio, and television. Work time has declined.

The variety of activities available to rich and poor and young and old has expanded. Now the hours between dinner and bed time can be spent on either live entertainment, spectator sports, movies, movie rentals, television, listening to the radio or to compact discs, or reading. Week-ends can be spent at distant or nearby ski resorts or beaches, at the neighborhood pool or park, or on hobbies. This increase in the variety of recreational activities has made leisure more attractive. At the same time, rising incomes, falling prices, and the provision of public recreational goods have made recreation more affordable.

Changes in recreation occurred over the span of many years. The introduction of new goods and their diffusion throughout the population requires time. I will therefore focus on a century of change, showing that over the last hundred years recreation has become more egalitarian. The findings have implications for trends in the well-being of the poor relative to the rich. Most researchers who have examined trends in well-being have focused on inequality in income, food consumption, or health. Although these are more basic needs than recreation, for many recreation is what makes free time worthwhile. In addition, income spent on recreation rather than on necessities such as food, may well make consumers feel better off.

My findings also have implications for long-term trends in work hours and labor force participation rates. Abbott and Ashenfelter (1976) find substantial evidence of complementarity and substitutability between commodities and non-market time. The complementarity of recreational goods with leisure suggests that the value of leisure depends upon the goods enjoyed

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during leisure. Innovations in recreational goods that have lowered the price of recreation and increased the variety of recreational activities may have increased demand for leisure.

I will first discuss trends in the use of recreation. I will also argue that the most feasible way to quantify whether recreation has become more or less egalitarian is by estimating recreational expenditure elasticities for 1888-1890, 1917-1919, 1935-1936, 1972-1973, and 1991, years during which consumer expenditure surveys are available. These elasticities indicate just how limited by income the consumption of a good is. I will then determine whether changes in income, prices, or the increased provision of public goods can explain the secular pattern in expenditure elasticities.

1 Trends

The consumption of recreational activities depends upon the availability of both time and money. The availability of time for recreational activities has increased sharply. Since the end of the nineteenth century, the average work week has fallen, paid vacations, holidays, sick days, and personal leave have increased, and male labor force participation rates have decreased.[1] Since 1940 hours of work have been rising for the well-educated and declining for those with little schooling (Coleman and Pencavel 1993). Evidence for the years preceeding 1940 is scanty, but suggestive. Early surveys indicate that at the turn of the century workers earning low wages spent little time on recreation relative to better paid workers (e.g. Bevans 1913).

The distribution of the consumption of recreational activities by income class can also be

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[1]The trend in declining hours has continued even in recent times. Among employed males aged 18 to 64 total hours of work declined by 14 percent between 1965 and 1985 and hours spent at work, including commute time and work breaks, declined by 17 percent. Although increasing participation rates among women have increased women's average paid market time, total work hours of couples still has fallen. (Estimated from Robinson (1993) and Converse and Robinson (1980). See Shor (1991) for a contrary view.

measured by the fraction of people within an income class engaging in a given activity. Although numbers are almost impossible to obtain, specific cases can be cited. Automobile touring and golf began as prerogratives of the rich, but then rapidly diffused to the general population. Listening to the radio rapidly became the most popular amusement across all social classes before World War II. Today television is.[2] Participation has become even more egalitarian than these examples suggest. Technology and a mass market have made entertainment "superstars" available to all (Rosen 1981). Sports events that could barely be seen from stadiums can now be seen from many angles in living rooms at virtually no cost. Music is no longer provided by musical instruments such as guitars or the family piano, an expensive piece of furniture, but by a noted artist on a relatively inexpensive stereo. If the more illusive nature of entertainment goods, such as the possibility of hearing a noted artist, could be quantified, then the price of entertainment has fallen tremendously and consumption has become much more egalitarian.

Lastly, expenditures on recreational goods provide some clues on egalitarianism in the consumption of recreation. In the late 1880s less than 2% of household expenditures were devoted to recreation. Approximately 75% of the household's income went to food, shelter, and clothing. By 1917 the budget share of food, shelter, and clothing had fallen to less than 70% and the share of recreation had risen to 3%. Declines in the food, shelter, and clothing shares to less than 60% had occurred by the mid-1930s and to less than 40% by 1991. Recreational budget shares, however, continued to rise, reaching 5% in 1972 and 6% in 1991 (see Table 1).[3]

Egalitarianism in the consumption of recreational goods can therefore be measured by

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[2]Forty-seven percent of all time spent on recreational activities in 1985 was spent on television watching among those with household incomes of less than $15,000, $15,000 to $25,000 and $25,000 to $35,000. Those earning $35,000 or more spent 43 percent of all recreational time on television watching (calculated from Robinson 1993).

[3]The increase in budget share since 1917-1919 is underestimated because earlier definitions of recreation included the amount spent on vacations and excursions. Travel and lodging was not included in the 1934-1936, 1950, and 1991 definition of recreational expenses. Recreational expenditures in 1972-1973 were calculated excluding travel and lodging.

Table 1: Budget Shares for Specific Items

Item's budget share (%)	1888-1890	1917-1919	1934-1936	1950	1972-1973	1991
food	44.5	39.2	34.7	30.7	20.7	14.4
shelter	13.7	13.6	10.9	10.6	16.2	17.5
apparel	16.7	16.2	10.9	11.5	5.7	5.9
utilities	6.0	5.4	7.4	4.2	5.5	6.7
furniture and equipment	3.2	3.9	4.1	7.1	3.8	4.1
transportation		3.0	8.5	13.8	16.1	17.4
health	3.3	4.5	4.0	5.1	5.8	5.2
education		0.4	0.5	0.4	0.7	1.5
recreation	1.9	3.2	3.5	4.5	4.6	5.6
other	10.7	10.6	15.5	12.1	20.9	21.7
number of observations	6,716	12,817	14,469	7,007	19,975	97,918

Note. Estimated from *Cost of Living of Industrial Workers in the United States and Europe, 1888-1890* (ICPSR 7711); *Cost of Living in the United States, 1917-1919* (ICPSR 8299); *Survey of Money Disbursements of Wage and Clerical Workers, 1934-1936*, covering families of employed workers in cities of 50,000 or more (United States Department of Labor 1939); *Study of Consumer Expenditures, Incomes and Savings, 1950* covering wage-earner and clerical worker families in cities of 2,500 or more (Bureau of Labor Statistics 1956); *Survey of Consumer Expenditures, 1972-1973*; and *Consumer Expenditures in 1991*. Reading is included in the recreation budget share. The shelter category includes only rent in 1888-1890.

the relative expenditure share of rich and poor households devoted to recreation. If the budget share of poorer relative to richer households has increased then the consumption of recreational activities has become more egalitarian. Of course, recreational expenditures are a very narrow measure of recreational consumption, excluding many non-market forms of recreation that are the most most popular leisure time activities, activities that might be used disproportionately by poorer households.[4] But, as I will show, the shift from non-market to market goods is unlikely to have an impact on the measurement of egalitarianism from recreational expenditures.

2 Engel Curves

The relationship between income and budget share within a single year is given by Engel curves. These relate the demand for a commodity to income or total expenditures at constant prices. At a specific time t the budget share of good i is therefore related to total expenditures through a functional form, $w_{it} = f_{it}(z)$, where prices have been absorbed into the functional form. Engel curves for the years 1888–1890, 1917–1919, 1935–1936, 1972–1973, and 1991 are shown in Figure 1. These curves show that if over time only income were to change then consumers would remain on the same Engel curve but might be at either a steeper or flatter part of the curve. But, prices also have changed, whether because of technological change or because of the public provision of complementary goods. Not only have technological advances lowered the price of existing products, but they have also introduced new products that have lowered the price of elusive goods, such as listening to a piece of music or watching a comic skit. The price for a

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[4]In 1913 the most popular leisure time activities among working men were reading, an inexpensive activity thanks to public and private lending libraries, and time spent at home (Bevans 1913). In the 1930s the most popular activities were visiting friends, reading, and listening to the radio (Komarovsky *et al.* 1934). The most popular activities in 1985 were watching television, conversations, and time spent with friends (calculated from Robinson (1993). The marginal cost of radio and television is close to zero and the fixed cost is small when amortized.

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Figure 1: Budget Share and Total Expenditures in 1917 Dollars, 1888-90, 1917-19, 1935-36, 1973-73, and 1991
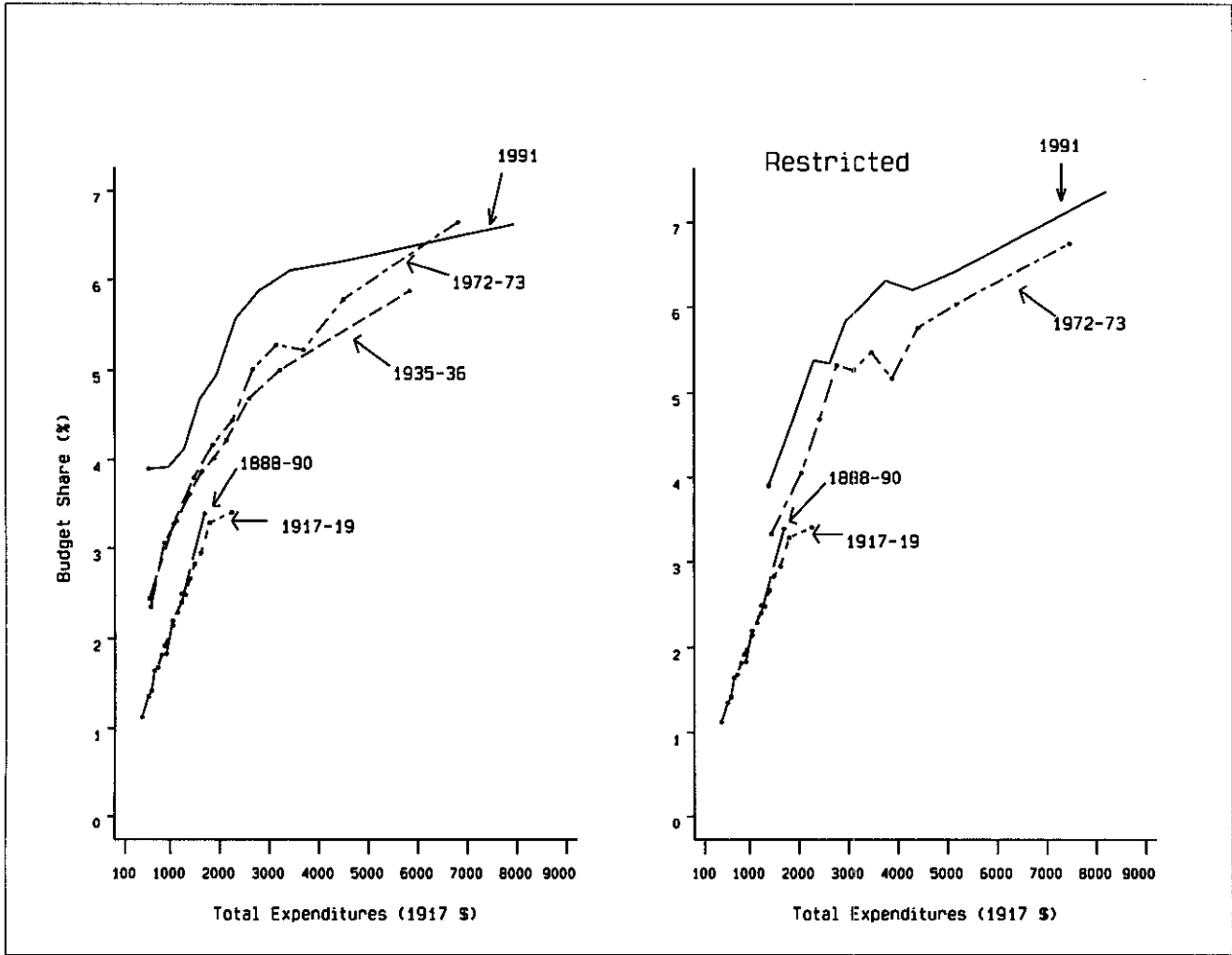
Note. Estimated from consumer expenditure surveys for 1888-90, 1917-19, 1935-36, 1972-73, and 1991. In the right hand side panel households in 1972-73 and 1991 were restricted to those in the labor force, at neither extreme of the income distribution, and below age 65 to ensure comparability with earlier surveys. The curves were estimated by taking averages within each decile of total expenditures.

quality adjusted quantity has fallen. Consumers have therefore moved to Engel curves with both different intercepts and different slopes.

In a single cross-section budget shares are related to total expenditures under the assumption that all consumers face the same price. Becker (1965) argues that when households combine time and market goods to produce commodities that they value they face different commodity prices because their earnings differ. Thus, because recreational goods are time intensive, their high relative price will lead consumers to substitute away from them and the effect of income on these goods will be understated. If the time costs of the wealthy have increased relative to the poor, then, because the wealthy are no longer consuming as much recreation as they would if their time costs had remained the same, we will observe that Engel curves have become less steep over time. I will return to this issue when I discuss explanations for changes in the steepness of Engel curves.

The slope of Engel curves may also be affected by the shift from non-market recreational goods, such as baseball leagues and libraries, to market recreational goods, such as private gyms and paperbook books. If the shift from non-market to market goods has occurred disproportionately among those with lower incomes, then Engel curves estimated using market goods will become less steep over time, but the slope of the "true" Engel curves may remain unchanged. This issue will also be addressed later.

Figure 1 shows that at the beginning of the century, when the slope of Engel curves was very steep, the recreational budget share rose sharply with income whereas today the rise is more gentle. The distribution of budget shares was less egalitarian and recreational goods were luxuries, their consumption limited to the wealthy few with sufficient income to purchase them. Whether a good is a luxury is measured by the expenditure elasticity, with an expenditure elasticity greater than one indicating that the good is a luxury. The greater the expenditure elasticity the more of a luxury the good is. Recreational expenditure elasticities are the quickest

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way to assess changes in the slope of the Engel curve. Also, because the early expenditure surveys were largely limited to working class households, the reader may wish to compare early estimates of recreational expenditure elastities at the median with more recent ones at the 25th percentile. I will therefore estimate recreational expenditure elasticities at the 25th, 50th, and 75th percentiles for 1888–1890, 1917–1919, 1935–1936, 1972–1973, and 1991 using the surveys described in the remainder of this section.

The surveys examined in this paper are the Department of Labor's *Cost of Living of Industrial Workers in the United States and Europe, 1888-1890*; the Bureau of Labor Statistics' *Cost of Living in the United States, 1917-1919*; the Department of Labor's *Family Income and Expenditures, Consumer Purchases Study, 1935-1936*; the *Survey of Consumer Expenditures, 1972-1973*; and the *1991 Consumer Expenditure Survey*. Only the published results are available for 1935-1936. Micro data is available for all other years.[5]

Compared to subsequent surveys, coverage in 1888-1890 was restricted. The sample was limited to workers in nine protected industries (bar iron, pig iron, steel, bituminous coal, coke, iron ore, cotton textiles, woolens, and glass) and appears to have been stratified by the proportions employed in each industry. Twenty-three states were covered, none of them in the west. Sample families were selected from employer records and were limited to families of two or more persons. For greater comparability with the 1917-1919 and 1935-1936 surveys the sample was restricted to husband and wife families.[6] Total sample size is 6,716. Only two questions were asked about recreational expenditures. One was about expenditures on books and newspapers and the other was about expenditures on amusements and vacations.

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[5]The micro data for the 1888-1890, 1917-1919, and 1972-1973 surveys were obtained from ICPSR (ICPSR Study Numbers 7711, 8299, and 9034).

[6]Since relatively few sample households were not husband and wife families the results remain unchanged when the entire sample is used.

Families from the 1917-1919 study were also selected from employer records and were restricted to those where both spouses and one or more children were present, where salaried workers did not earn more than $2,000 a year, where families had resided in the same community for a year prior to the survey, where families did not take in more than three boarders, where families were not classified as either slum or charity, and where non-English speaking families had been in the United States five or more years. Ninety-nine cites in 42 states were covered. The sample contains 12,817 families, 849 of whom were black. Families were asked about the total cost of purchased musical instruments, records, and rolls and of toys, sleds, and carts, and the individual cost of movies, plays, dances, pool, excursions, vacations, books, and newspapers.

The 1935-1936 Consumer Purchases Study was limited to native-born husband and wife families in which families in metropolises and white families in large cities had a minimum income of at least $500 and families in other cities one of at least $250. The communities covered by the study included 51 cities, 140 villages and 60 farm counties, representing 30 states. More than a million families were interviewed. Questions were asked about family expenditures on books, newspapers, games or sports equipment, radio purchase, radio maintenance, musical instruments, movies, the combined category of plays, concerts, and lectures, spectator sports, the combined category of dances, circuses, and fairs, sheet music and records, photographic equipment, toys, pets, entertainment, and social and recreational club dues. The published tabulations give average total expenditures and average expenditures on specific recreational items by expenditure class for the seven major cities and for eight aggregated smaller city categories. Information on black families is available for two of the major cities and two of the aggregated smaller city categories. These average values are used in the analysis.[7]

To ensure an age and income distribution more comparable to that in the 1917-1919

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[7]For more details about the coverage and methodology of the 1888-1890, 1917-1919, and 1935-1936 surveys, see Lamale (1959).

survey, families found in the 1972-1973 and 1991 Consumer Expenditure Surveys were restricted to husband and wife families above the poverty line in which at least one spouse was employed and in which the husband was less than 65.[8] Results from the full sample are presented for comparison. These restrictions narrow the range of total expenditures (see Figure 1). The range is still greater than that in the early surveys and, if the early surveys excluded individuals with high total expenditures and the slope of Engel curves is less steep at higher levels of total expenditures, then estimated expenditure elasticities for the early surveys will be too high and early expenditure elasticities estimated at the median might best be compared with expenditure elasticities estimated at the 25th percentile. Nonetheless, imposing further restrictions on the later surveys, such as excluding wealthy households does not affect the direction of the secular trend in expenditure elasticities.

Recreational goods are classified in a slightly different way in 1972-1973 and in 1991. In 1972-1973 vacation expenditures on food, lodging, and gasoline are explicitly identified, but not in 1991. These vacation expenditures are therefore not included in total recreational expenditures. Although yearly data is given for 1972-1973, five quarters of data are given for 1991, covering the end of 1990, 1991, and the beginning of 1992. Only the second quarter of data was used in regression estimates.[9]

3 Less of a Luxury

Economic theory gives no general guidance in the specification of Engel curves and many functional forms have been explored in the literature. One extremely common form is that due to

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[8]I will later show that in recent data expenditure elasticities do not vary according to whether the husband was less or more than 65 years of age.

[9]The results remain unchanged when another quarter of data is used.

Working (1943) and Leser (1963) in which budget shares are related linearly to the logarithm of expenditures,

$$w = \alpha + \beta \log(z)$$

where w is the budget share and α and β are parameters to be estimated. Recent work suggests that this simple specification should be generalized to higher order terms (Hausman et *al.* 1995). Therefore, the specification that was estimated was

$$w = \alpha + \beta_1 \log(z) + \beta_2 \log^2(z) + \beta_3 \log^3(z)$$

where w is the budget share of recreation and z is total expenditures.[10] A test of this specification is provided by economic theory and is given in the appendix.

Engel curves that include demographic variables were also estimated. Age and age squared of the husband were included to account for life cycle effects, the number of children and the number of children squared to account for differences in household size, and the extent of urbanization to account for differences in recreational opportunities. Engel curves were also estimated for the more recent data that included the total hours worked by both husband and wife. Although the recreational share was negatively related to total hours worked, the relationship was not statistically significant and the inclusion of this variable did not affect the estimated expenditure

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[10]The use of the alternative specifications,

$$w = \alpha + \beta_1 \log(z) + \beta_2 \log^2(z)$$

and

$$w = \alpha + \beta_1 \log(z) + \beta_2 z \log^2(z)$$

does not alter the basic conclusions, but the fit was much worse.

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elasticities. Using the more recent data separate Engel curves were also estimated for families with and without children and for families where the household head was above and below age 65. The resulting elasticities were very similar suggesting that changes in demographic characterstics cannot explain the secular pattern in expenditure elasticities. Because total expenditure is likely to be measured with error, I tested whether the OLS estimates were close to the IV estimates by restricting the sample to households still in the labor force and using household income as an instrumental variable. The resulting IV estimates were reasonably close to the OLS estimates and both accurately estimated the elasticities. Because household income was a poor instrument for total expenditures when non-working households were included in the sample, only the OLS estimates are reported.[11]

Table 2 shows that there has been a sharp decline in expenditure elasticities since the beginning of the century. (Elasticity estimates are reported at three quartiles so that the shape of the Engel curves can be compared.[12]) Expenditure elasticities ranged from about two or greater at the beginning of the century but fell to about 1.5 by the mid-1930s and to about 1.3 by 1991. Expenditure elasticities in 1991 were even lower when no restrictions were imposed on the data. Demographic variables exerted a significant influence on expenditure shares in all years, but the expenditure elasticities are affected only in the early years (upwards). Although elasticities fall somewhat at higher percentiles, secular increases in income alone cannot explain the secular decline in expenditure elasticities. When expenditures elasticities are evaluated at 1917-1919 inflation adjusted means and percentiles, expenditure elasticities still declined between 1917 and 1991, although not continuously.

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[11]Hausman *et al.* (1995) find that when previous quarter's expenditures are used for current quarter's expenditures both the IV and OLS estimates accurately estimate the elasticities.

[12]The expenditure elasticity is equal to $1 + \frac{\partial \hat{w}}{\partial \log(z)} \hat{w}^{-1}$, where $\hat{w}$ is predicted at one of the percentiles. Polynomial coefficient estimates are not reported because they are relatively uninformative.

Table 2: Recreation Expenditure Elasticity Estimates

year	without demographic variables percentile			with demographic variables percentile			evaluated at means 1917 demographic variables and at 1917 percentile		
	25	50	75	25	50	75	25	50	75
1888-1890	1.59	1.63	1.80	2.40	2.25	2.15	2.07	2.05	2.02
	(0.02)	(0.05)	(0.02)	(0.03)	(0.04)	(0.02)	(0.01)	(0.01)	(0.04)
1917-1919	2.04	1.92	1.71	2.25	2.10	1.87	2.25	2.10	1.87
	(0.03)	(0.07)	(0.06)	(0.01)	(0.05)	(0.04)	(0.01)	(0.05)	(0.04)
1917-1919	1.91	1.81	1.62	2.06	1.95	1.76	2.06	1.95	1.76
	(0.03)	(0.07)	(0.06)	(0.00)	(0.05)	(0.04)	(0.00)	(0.05)	(0.04)
1935-1936	1.47	1.47	1.46	1.46	1.46	1.46	1.46	1.46	1.46
	(0.01)	(0.02)	(0.02)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)
1972-1973	1.47	1.39	1.32	1.55	1.47	1.40	1.81	1.74	1.67
restricted	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.20)	(0.11)	(0.04)
1991	1.35	1.31	1.23	1.38	1.33	1.25	1.34	1.37	1.39
restricted	(0.01)	(0.04)	(0.04)	(0.01)	(0.02)	(0.03)	(0.16)	(0.07)	(0.00)
1972-1973	1.50	1.42	1.36	1.60	1.50	1.42	1.62	1.60	1.57
unrestricted	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.02)	(0.00)	(0.01)
1991	1.19	1.20	1.22	1.16	1.17	1.20	1.30	1.29	1.27
unrestricted	(0.02)	(0.03)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)

Note. Expenditure elasticities were calculated for 1917-1919 under two different definitions of recreational expenses. The first definition includes expenditures for vacations and excursions. The second does not. The first definition is more comparable to that for 1888-1890. The second definition is more comparable to that for 1935-1936. Demographic variables included in the specifications for 1888-1890, 1917-1919, 1972-1973 and 1991 were age and age squared of the husband, the number of children and the number of children squared, and extent of urbanization. City fixed effects were included in the 1935-1936 demographic specification. Adjustments for inflation were made in calculating elasticities at 1917 percentiles. Standard errors are in parentheses.

The observed decline in expenditure elasticities may be an artifact of the way recreation is defined. No distinction can be made between reading for educational purposes and reading for pleasure. Recreation was also narrowly defined. Alcohol and tobacco can be thought of as adult forms of entertainment. In the 1880s and 1890s, the saloon was one of the primary recreational diversion of working class men, and only began to be displaced by commercial amusement in the 1900s (Rosenzweig 1983). Another form of adult recreation is eating out. Although today it is likely to be a form of recreation for working couples, in the past it was more likely to be the recreation of the male household head.[13]

The impact of differing definitions of recreation can be assessed from Table 3. The basic results remain unchanged. When reading is excluded from the definition of recreation there are sharp falls in recreational expenditure elasticities between 1888-1890 and 1917-1919 and 1935-1936 and 1972-1973. There is a smaller decline from 1972-1973 to 1991. When alcohol and tobacco or food eaten away from home are included as recreational expenditures, the decline in expenditure elasticities is fairly continuous.

A potentially even more important omission is transportation expenditures. The share of budget expenditures devoted to transportation rose from 3 percent in 1917 to 9 percent in the mid-1930s and to 14 percent in 1950 (see Table 1). The number of registered automobiles rose from 8 thousand in 1900 to 8 million in 1920 and to 23 million in 1930. The percentage of families owning a car rose from 54 percent in 1948 to 82 percent in 1970 (U.S. Bureau of the Census 1975). Steiner (1933) estimated that in 1930 total travel represented 64 percent of the annual cost of recreation and automobile touring within the United States. At the same time progress in highway construction decreased travel costs. The automobile has made possible visits to national parks as well as short recreational trips within the community to beaches, outlying parks, and golf

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[13]For example, in one of the families surveyed by the New York State Factory Commission in 1914, the husband would go out for a meal on Sundays.

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Table 3: Recreation Expenditure Elasticity Estimates under Alternate Definitions of Recreation, Estimated Using Demographic Variables

year	without reading percentile			including tobacco and alcohol percentile			including transportation percentile			including restaurants percentile		
	25	50	75	25	50	75	25	50	75	25	50	75
1888-1890	4.09	3.33	2.81	1.52	1.72	1.82	.	.	.	.	.	.
	(0.03)	(0.04)	(0.02)	(0.03)	(0.04)	(0.02)	.	.	.	.	.	.
1917-1919	2.66	2.38	2.06	1.59	1.58	1.51	2.26	2.11	1.88	2.09	2.00	1.85
	(0.02)	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.00)	(0.03)
1917-1919	2.50	2.27	1.98	1.42	1.43	1.38	2.08	1.98	1.79	1.94	1.88	1.77
	(0.02)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
1935-1936	2.66	2.25	2.00	.	.	.	.	.	.	.	.	.
	(0.63)	(0.55)	(0.46)	.	.	.	.	.	.	.	.	.
1972-1973	1.61	1.51	1.43	1.15	1.15	1.15	1.52	1.44	1.34	1.46	1.38	1.30
restricted	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
1991	1.41	1.37	1.29	1.01	1.02	1.00	1.30	1.56	1.68	1.26	1.30	1.24
restricted	(0.02)	(0.02)	(0.03)	(0.01)	(0.04)	(0.04)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
1972-1973	1.69	1.56	1.46	1.14	1.15	1.15	1.54	1.47	1.35	1.63	1.47	1.35
unrestricted	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
1991	1.17	1.19	1.24	0.94	0.95	0.99	1.21	1.34	1.49	1.16	1.16	1.13
unrestricted	(0.01)	(0.01)	(0.00)	(0.01)	(0.02)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)

Expenditure elasticities were calculated for 1917-1919 under two different definitions of recreational expenses. The first definition includes expenditures for vacations and excursions. The second does not. The first definition is more comparable to that for 1888-1890. The second definition is more comparable to that for 1935-1936. Demographic variables included in the specifications for 1888-1890, 1917-1919, 1972-1973 and 1991 were age and age squared of the husband, the number of children and the number of children squared, and extent of urbanization. City fixed effects were included in the 1935-1936 demographic specification. Standard errors are in parentheses.

courses. In 1930, 92 percent of visitors to national forests and 85 percent of visitors to national parks entered using automobiles (Steiner 1933). More widespread car ownership contributed to a thirty-fold increase in visits to national parks form 1904 to 1930 and to an eighty-fold increase since 1930 (U.S. Bureau of the Census 1975 and 1993).

Some idea of the impact of vacation travel on expenditure elasticities can be obtained from the 1972-1973 survey which specifically identifies vacation travel. When vacation travel is included as a recreational expense and demographic variables are included in the specification, the expenditures elasticities at the 25th, 50th, and 75th percentiles are 1.30, 1.23, 1.16 in the restricted data and 1.39, 1.27, and 1.16 in the unrestricted data. Recall that when vacation travel was excluded as a recreational expense, the expenditure elasticities at the 25th, 50th, and 75th percentiles were 1.55, 1.47, 1.40 in the restricted data and 1.60, 1.50, and 1.42 in the unrestricted data. The inclusion of vacation travel thus lowers expenditure elasticities in 1972-1973. Since recreational expenditure elasticities were 2.25, 2.10, and 1.87 in 1917-1919 when excursions are included in the definition of recreation, the decline in expenditure elasticities is substantial. When recreational expenditures and transportation expenditures are combined, expenditure elasticities fall from 1917-1919 to 1972-1973, rising slightly between 1972-1973 and 1991 (see Table 3).

Although I have compared expenditure elasticities only across households in which the husband was less than 65 years of age because early consumption expenditure studies did not survey the elderly, it is likely that recreational expenditure elasticities for the elderly have declined as well. Many of the innovations in recreational activities such as movies, radio, and television or low impact sports such as golf do not require a high degree of physical exertion and are thus easily accessible to the elderly. Financially, they are also accessible to the elderly. In recent consumption expenditure surveys, there is no difference between recreational elasticities calculated from a sample restricted to the elderly population and those calculated from a younger sample (see Table 4). This suggests that the elderly as well now need less income to enjoy

Table 4: Recreational Expenditure Elasticities by Age

	husband or reference person < 65			husband or reference person ≥ 65		
	percentile			percentile		
year	25	50	75	25	50	75
1972-1972	1.66	1.51	1.42	1.63	1.58	1.50
	(0.02)	(0.00)	(0.00)	(0.04)	(0.02)	(0.04)
1991	1.19	1.23	1.27	1.44	1.31	1.15
	(0.01)	(0.01)	(0.01)	(0.27)	(0.10)	(0.08)

Note. No restriction on income were imposed on the sample. Demographic variables were included in the specification. Standard errors are in parentheses.

recreational activities during their retirement years.

4 Explaining the Decline

Potential explanations for the decline in recreational expenditure elasticities include rising incomes, an increase in the time costs of the wealthy relative to the poor that has led the wealthy to substitute away from recreational goods, a shift from non-market to market goods accompanied by a disproportionate increase in the consumption of market recreation by poorer individuals, the public provision of the complements of recreational goods, and declining prices of recreational goods. Table 2 showed that secular increases in income alone cannot explain the secular decline in expenditure elastiticities. Recall that when the 1991 expenditure elasticities were evaluated at the 1917-1919 inflation adjusted means and percentiles, expenditure elasticities remained unchanged. However, the 1972-1973 expenditure elasticities did rise, producing a decline of only 17 percent between 1917-1919 and 1972-1973 rather than one of 30 percent. Thus at most half of the decline in recreational expenditure elasticities from the beginning of the century to recent times could be accounted for by rising incomes.

Rising time costs of the wealthy relative to the poor are an unlikely explanation. Deleting wealthy individuals from recent data has very little impact on the estimated elasticities. When those households earning more than $36,000 per annum in 1972-1973 were deleted from the restricted sample, recreational expenditure elasticities at the 25th, 50th, and 75th percentiles rose slightly from 1.55, 1.47, and 1.40 to 1.63, 1.58, and 1.50. Recreational expenditure elasticities remained virtually unchanged at 1.44, 1.31, and 1.15 when households earning more than $100,000 were omitted from the 1991 restricted sample.[14] Furthermore, trends in wage inequality do not coincide with trends in expenditure elasticities. Inequality in wage ratios between the skilled and the unskilled has returned to its pre-World II levels. The premium to education fell from the 1890s to the late 1920s and levelled off during the 1930s (Goldin and Katz 1995). Thus, the large differences in expenditure elasticities at the beginning of the century and at its end cannot be explained by the rising time costs of the wealthy inducing them to substitute away from recreational goods.

Differences in expenditure elasticities by city size in 1917 provide some clues on the impact of a shift from market to non-market recreational goods. In the past, differences in recreational opportunties between rural and urban areas were much greater than they are today. Rural areas and small cities simply did not have a large enough population to support many market forms of activities such as permanent theaters or dance halls. But, Table 5 shows that elasticities were fairly similar between cities with a population of more than one million and those with a population of less than 25 thousand, suggesting that the shift from non-market to market goods has not had a large impact on the slope of Engel curves. However, there is a tendency for elasticities at the 75th percentile to be smaller in smaller cities. Perhaps there were so few recreational opportunities in small cities that after a given level of income had been reached,

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[14]The specifications used included demographic variables.

Table 5: Recreational Expenditure Elasticities in 1917-1919 by City Size

	City Population is					
	$\geq 1,000,000$			$\leq 25,000$		
	Percentile			Percentile		
Sample	25	50	75	25	50	75
Excludes Vacations and Excursions	2.12	2.04	1.88	2.15	1.90	1.61
	(0.10)	(0.00)	(0.04)	(0.01)	(0.05)	(0.04)
Includes Vacations and Excursions	2.29	2.17	1.99	2.19	1.94	1.68
	(0.12)	(0.01)	(0.04)	(0.02)	(0.04)	(0.04)

Note. Estimated using the mean demographic variables and percentiles of the entire sample. Standard errors are in parentheses.

money could buy very little additional recreation.

It is virtually impossible to obtain direct evidence that declining prices or investments in public recreational facilities have lowered expenditure elasticities by affecting the intercepts and the slopes of the Engel curves. Prices would need to be explicitly incorporated into the Engel curves and additional years of consumer expenditure surveys would be required, particularly in the early years when neither prices nor consumer expenditure surveys are readily available.[15] Furthermore, prices should ideally incorporate the impact of new goods and changes in the quality of existing goods. Although Hausman (1994) demonstrates how a price index that incorporates the demand for new goods could be estimated by calculating virtual prices such that demand for the new good prior to its introduction would be zero, the data requirements for this calculation are extensive. I will therefore provide only indirect evidence. I will divide recreational goods into broad categories (reading, movies and live entertainment, home entertainment, and sporting equipment) and see whether changes in expenditure elasticities coincide with the introduction of

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[15]Although Owen (1969) estimated an index of recreational prices he had to limit himself to relatively few goods prior to 1940.

Table 6: Changes in the Recreational Budget, 1888-1991

| | | Percent Recreational Expenditures Spent on: | | |
| | | movies and live | home | sporting |
year	reading	entertainment	entertainment	equipment
1888-1890	25.5			
1817-1919	28.8	8.7	8.7	
1935-1936	27.2	23.8	12.6	8.5
1972-1973	15.3	12.1	28.9	8.7
1991	15.8	5.7	35.3	5.6

Note. Home entertainment includes expenditures on musical instruments, sheet music, movie rentals, cable television and the purchase, repair, or rental of radios, television, stereos, and videocassette recorders.

new products, price declines in existing products, and the provision of public recreational goods.

Trends in the percentage of recreational expenditures devoted to these four broad recreational categories are described in Table 6. The share of reading has fallen by one half from a high of 30 percent in 1917. The share of movies and live entertainment rose from 9 percent in 1917 to 24 percent in 1935, but fell to 6 percent by 1991. The share of recreational expenditures used in the home increased from 9 percent in 1917 to 35 percent in 1991. In contrast, recreational expenditures on sporting equipment have fallen from 9 to 6 percent.

Table 7 suggests that expenditure elasticities have fallen after periods of innovation during which prices fell, quality rose, and the public provision of goods complementary to recreation increased. Expenditure elasticities for reading fell between 1888-1890 and 1917-1919, precisely when the price of newsprint fell, pulp magazines, rotary presses, and speedy typesetting were introduced, advertising increasingly began to subsidize the cost of a newspaper, and publishers built circulation through deep discounting and promotional gifts and prizes. Circulation rose rapidly from 0.5 newspapers per household to more than 1.3 by 1915 and immediately after World War I more than 9 in 10 low and medium income urban families took a paper (Leonard 1955: 60, 163-164, 178-179). A particularly important innovation after World War I that brought reading

Table 7: Expenditure Elasticity Estimates for Specific Recreational Goods, Estimated Using Demographic Variables

equipment year	reading percentile			movies and live entertainment percentile			home entertainment percentile			sporting equipment percentile		
	25	50	75	25	50	75	25	50	75	25	50	75
1888-1890	1.54	1.34	1.23	.	.	.	.	.	.	.	.	.
	(0.01)	(0.03)	(0.02)	.	.	.	.	.	.	.	.	.
1917-1919	1.18	1.15	1.07	2.20	2.02	1.85	4.10	3.28	2.57	.	.	.
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.38)	(0.13)	(0.04)	.	.	.
1935-1936	1.00	0.87	0.79	1.43	1.45	1.29	1.13	0.96	0.96	2.66	2.55	2.00
	(0.00)	(0.01)	(0.02)	(0.66)	(0.69)	(0.63)	(0.24)	(0.07)	(0.06)	(11.54)	(8.08)	(5.55)
1972-1973 restricted	1.15	1.06	1.00	1.49	1.39	1.26	0.97	0.90	0.86	1.37	1.23	1.16
	(0.03)	(0.01)	(0.01)	(0.04)	(0.04)	(0.05)	(0.04)	(0.07)	(0.10)	(0.05)	(0.06)	(0.06)
1991 restricted	1.15	1.06	1.00	1.63	1.35	1.15	0.96	0.83	0.70	1.98	1.50	1.29
	(0.00)	(0.04)	(0.04)	(0.04)	(0.06)	(0.07)	(0.01)	(0.04)	(0.05)	(0.27)	(0.05)	(0.12)
1972-1973 unrestricted	1.18	1.10	1.04	1.51	1.43	1.30	1.01	0.94	0.90	1.69	1.45	1.30
	(0.08)	(5.32)	(2.19)	(0.00)	(0.00)	(0.00)	(0.13)	(0.28)	(0.52)	(0.77)	(1.55)	(3.46)
1991 unrestricted	1.06	1.03	0.91	1.10	1.34	1.33	1.01	0.88	0.74	2.40	1.86	1.53
	(0.02)	(0.03)	(0.02)	(0.04)	(0.04)	(0.02)	(0.02)	(0.03)	(0.01)	(0.18)	(0.04)	(0.01)

Note. Home entertainment includes expenditures on musical instruments, sheet music, movie rentals, cable television and the purchase, repair, or rental of radios, televisions, stereos, and videocassette recorders. Demographic variables used in estimation were age and age squared of the husband or the reference person, the number of children and the number of children squared, and the extent of urbanization. Standard errors are in parentheses.

to even more people was the mass manufacture of paperback books that began in the 1930s.

Expenditure elasticities for movies and live entertainment fell between 1917 and 1935. Early social investigators noted that among lower income households the "usual attitude toward any expenditure for pleasure is that it is a luxury which cannot be afforded" (More 1907). In fact, in the 1900s vaudeville prices ranged from 10 cents to one dollar, with most seats costing 25 to 50 cents. But, by 1905 moving picture tickets cost 5 to 10 cents (Peiss 1986: 144). Expenditures for pleasure thus became an affordable luxury and by 1910 almost three-quarters of all movie-goers were working class and weekly attendance was 10 million (Owen 1969; Peiss 1986: 146). The increasing diversity in types of pictures produced attracted the patrons of popular melodrama, variety, and burlesque, and forced the closing of the "people's" theaters in the 1920s. Although movie prices rose within this time period, the quality adjusted price probably fell. For example, sound was introduced in 1927 and by 1936 over 90 percent of movie theaters could reproduce sound. The increasing popularity of movies is evident in the attendance figures, which registered a nine-fold increase between 1910 and 1930 (Owen 1969: 89-90).

Elasticities for home entertainment fell sharply between 1917-1919 and 1935-1936 precisely when the radio replaced musical instruments as the main form of home entertainment. Falling radio prices and increasing program transmission led to the eightfold rise in radio sales from 1923 to 1929, even though sales were insignificant in 1919. The number of radio families continued to rise even during the Depression (Owen 1969), suggesting that if radios were a luxury, they were an affordable one. Elasticities have continued to trend downward, perhaps because compact disks, televisions, and VCRs continued to lower the price of entertainment. These are all inexpensive forms of entertainment. Their marginal cost is close to zero and the fixed cost is small when amortized. The fall in elasticities has not been sharper because these forms of entertainment merely replaced the radio and the radio already was widely diffused.

Elasticities for sporting equipment fell sharply between 1935-1936 and 1972-1973, in

part because technical advances made by the armed forces in outdoor equipment during World War II became available to consumers in the form of waterproof clothing, portable boats, tents, and cooking equipment, and nylon and plastics (Dewhurst and Associates 1955: 346-347) and in part because recreational facilities were expanded. Boating, which in the nineteenth century was almost wholly limited to the wealthy, grew somewhat slowly in the 1920s and 1930s, but then expanded explosively in the postwar years, stimulated by the development of artificial lakes and reservoirs. Whereas at the beginning of the century there were only a few thousand pleasure craft registered throughout the country, in the 1960s they numbered in the millions. Golf, tennis, and particularly skiing also experienced large postwar increases in participation, the expansion of the first two sports aided by increases in land availability resulting from suburbanization. Bowling, whose participants were probably about 8 million in the 1930s gained 30 million participants by the 1960s (Dulles 1965: 357-362). Table 7 thus suggests that prices declines and product improvements arising from technological change and the creation of a mass market and the public provision of recreational facilities have turned recreation into less of a luxury.

5   Who Has Benefited?

Much work has emphasized the recent widening of the income distribution.[16] What this paper has emphasized is that income is no longer as important a determinant of recreational expenditures and therefore of recreational activities. By lowering the price of entertainment, technological change has improved the standard of living of those in the lower deciles of the income distribution. The increase in public recreational facilities has had the same effect. Estimated expenditure elasticities for recreation have fallen from slightly more than two in the 1880s to slightly more than one in

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[16]See the survey by Levy and Murnane (1992).

this decade. Expenditure elasticities have continued to fall even during the last two decades when income inequality increased. Leisure is now less of a luxury. Investments in public goods, technological change, and the decrease in the work hours of the poor relative to the rich have made entertainment inexpensive and readily available to rich and poor alike.

Innovations in recreational goods have made leisure more attractive and more affordable. For example, because first radio and then television replaced vaudeville, the price of listening to a comic skit has fallen. Variety has increased. Technological change has permitted producers to provide a greater variety of goods and to satisfy increasingly narrow segments of the market. Dulles (1965: 307-309) recounted how movies led to the rapid demise of traveling theater companies, thereby leading to the concentration of the theater in a few cities, while at the same time limiting the legitimate theater to the more sophisticated audiences of metropolitan centers, thus indirectly encouraging theatrical producers to present more serious plays rather than those that appealed to the largest possible nationwide audience. Cable television permits the survival of stations devoted to history, a topic without a mass audience. Leisure may have become more uniform in that now television watching is the most common form of entertainment, but the heterogeneity of the new mediums should not be forgotten.

The declining price of recreation and increases in the variety of recreational goods may explain why hours of work have been falling throughout the twentieth century. Provided that leisure is a normal good and that leisure and recreational goods are complements, demand for leisure will increase as the price of leisure falls. Using a relative price index of recreational goods since 1901, Owen (1969) argued that a falling price of recreational goods relative to other goods explains much of the decline in work hours in the first forty years of this century. Although his index shows very little change in the relative price of recreational goods after 1940, it neither incorporates the consumer surplus gained from new goods nor changes in the quality of existing goods. For example, the true price of television watching surely has fallen both because televisions

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are of better sound and quality and because the number and hours of broadcasting stations has increased. The introduction of television has lowered the price of listening to a comic skit or of watching a sports event. Viewers no longer need to travel to see the event, they pay a marginal cost of close to zero, and they have a better view of the event than they would at the actual event.

Another way that innovations in recreational goods affect the demand for leisure is by increasing the variety of leisure time activities. In deciding how to allocate time and money across a recreational and a non-recreational activity, a consumer will equate the marginal utilities to the ratio of prices of the activities. Increases in the variety of leisure time activities may cause the marginal utility of leisure to fall less rapidly, leading to the consumption of more leisure. Many new leisure time activities, such as listening to the radio or watching television, are relatively inexpensive and have broad appeal. Of course, if more variety increases the marginal utility of leisure then less leisure and more goods may be consumed. But, trends in the length of the work week, in the number and length of paid vacations, holidays, sick days, and personal leave and in male labor force participation rates, particularly at older ages, suggest that increases in variety have increased, not decreased, the amount of leisure that is consumed.

Appendix

Economic theory provides a test of the Engel curve specification of polynomial degree three used in the estimation. Gorman (1981) showed that, provided that the polynomial functions which contain expenditures do not depend upon price in the demand curve specification, then when several budget share items are considered the rank of the matrix of coefficients for the polynomial terms in income is at most three. For the specification of polynomial degree three, the restriction takes the form that the ratio of the coefficient of the quadratic term to the coefficient of the cubic term will be constant across budget share equations (Hausman *et al.* 1995). This rank restriction

Table 8: Ratio of β_2 to β_3 for Specification Without Demographic Variables

	1888-1890	1917-1919	1973-1973	1991
recreation	-31.89	-21.52	-27.45	-22.57
	(0.31)	(0.12)	(0.86)	(1.54)
food	-31.25	-20.98	-25.99	-24.86
	(0.30)	(0.43)	(0.72)	(0.54)
shelter	.	-21.60	-26.02	-22.13
	.	(0.08)	(0.12)	(3.05)
clothing	-32.55	-20.26	-25.91	-23.46
	(0.68)	(0.85)	(0.13)	(0.82)

Note. Standard errors are in parentheses. Engel curves for housing were not estimated for 1888-1890 because information is available only for renters. The estimates for 1972-1973 and 1991 are based upon the unrestricted data.

is tested in Table 8, which reports the ratio of β_2 to β_3 for recreation, food, shelter, and clothing when demographic variables are excluded from the specification. The estimated ratios are similar, suggesting that the Gorman rank condition is satisfied. These results remain unchanged when demographic variables are added to the specification.

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