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WORKING PAPER NO. 753

**THE IMPACTS ON WINE DEMAND OF BALANCED MESSAGES  
ABOUT WINE AND HEALTH**

by

**Kirby Moulton**

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# The Impacts on Wine Demand of Balanced Messages About Wine and Health

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## I. Introduction

The benefits of a balanced education and communications program about moderate wine consumption can be substantial. If such a program succeeded in shifting consumer behavior toward healthy diets including the moderate consumption of wine, an economic gain of \$36 billion might be achieved world-wide. The principal source of gain is the increased productivity realized by the world's economy as life spans become longer; this benefit is estimated at \$20.8 billion. Health care costs might be reduced by \$0.9 billion in response to a healthier population. Higher sales levels would add \$7 billion to global retail sales and this would cause an added \$7 billion in economic benefits to industries serving the grape and wine sector. Total income would be increased by \$4.6 billion and 108,000 more jobs could be created.

The costs for mounting such a campaign, based on experience in other commodity fields, would be about \$200 million, or about 3% of retail sales value. This cost could mount substantially if behavior shifts more slowly than projected.

The number of potential consumers that could change their behavior toward a more healthy diet, including wine, is estimated to be 402 million, located in the United States, Canada, western Europe, and a few other selected countries. Not all of these people will change, hence it is assumed that the education and communications program will cause 10% of the total to shift their diets and consume an average of 39 liters per year (one bottle per week). This change would increase global wine consumption by 15.7 million hectoliters (174 million cases), or 7% of recent levels. These assumed changes are used with economic relationships identified in various studies to estimate total economic impact.

The benefits and costs are based on a series of constraints and assumptions that call for careful interpretation. However, they are sufficiently credible to support the general magnitudes of the values and their relationship to one another. Besides presenting estimated values, the foregoing analysis defines the various components that should be considered in any thoughtful analysis of benefits and costs. The following sections examine projected and speculative impacts of moderate wine consumption on health care costs, productivity, regulatory costs, industry revenues, and regional economic health. The final section examines the potential costs of a balanced communications program and compares these costs with potential benefits.

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<sup>1</sup>Presented at the OIV Symposium "Wine, Health and Society," Vinexpo, Bordeaux, France, 21 June 1995.

## II. The foregone costs of health care for cardio-vascular diseases

Moderate wine consumption in the United States is associated with almost \$1 billion in reduced health care expenditures and can lead to a further reduction of \$2.2 billion if one-half of the non-wine drinkers adopted such a pattern (Lewin-VHI, 1994). These reductions are calculated after accounting for the other factors affecting the use of health care services such as health status, age, gender, education, and tobacco use. The key element in projecting health care costs is that the consumption of 1 glass of wine per day relative to no consumption will shift 1.81% of the population into a better health classification (that is, from fair or poor to good or better). Health care costs are significantly lower for those reporting good or better health than those reporting fair or poor health. They are also lower for wine drinkers (Table 1).

The magnitude of health cost changes estimated by Lewin-VHI is supported by a less comprehensive analysis based on survey results reported by Doll et al. (1994). Their report, published by the *British Medical Journal* and based on a survey in the United Kingdom, estimated that mortality was one-sixth lower for moderate drinkers than for abstainers or heavy drinkers and that moderate drinkers were about 40% less likely to suffer heart attack. The annual rate of heart attacks in the United States is about 8.7 per 1,000 of the adult population. Based on the UK findings, and the proportion of heavy drinkers and abstainers in the U.S. adult population, the heart attack rate of heavy users and abstainers would be 12.8 per 1,000 and the rate for moderate drinkers would be 7.4 per 1,000. If 24 million out of the 47 million abstainers and heavy drinkers could be persuaded to adopt dietary and drinking behavior similar to that of moderate drinkers, heart attacks might be reduced by almost 120,000 and the attendant health care expenditures by \$2.8 billion in the United States. This projection does not make the adjustment for age and other differences in the drinking populations, and consequently, savings are probably lower than \$2.8 billion, and closer to the Lewin-VHI estimate.

Beverage Preference	Persons (millions)	Health Care Expenditures	
		Total (\$ billions)	\$ Per Capita
Wine	32.4	100	3,080
Beer	56.0	165	2,960
Liquor	40.0	152	3,800
No Preferences	10.6	41	3,850
Abstainers	34.3	152	4,430
Total	173.3	610	3,520

Note: The differences in health care costs reflect differences in beverage preference and differences in tobacco use, age, gender, and health status. When adjusted for the latter, wine drinkers have lower costs than all others surveyed.

Source: Lewin-VHI, 1994, p. 8.

In the absence of survey data comparable to that reported by Lewin-VHI, I have estimated potential health care savings in countries outside of the United States to be \$2.5 billion. This is an heuristic estimate based on a series of assumptions (Table 2).

Country Type	Popu- lation (mill.)	Adjustment Factors			HC Savings (\$ mill.)
		Popu- lation	Medical Cost	Health Risk	
Mediterranean	163	.652	0.6	0.4	340
Mortality ≥ 9	257	1.03	0.6	1.0	1,360
Mortality < 9	242	.968	0.6	0.6	770
United States	250	1.00	1.0	1.0	2,200
Total	912	na	na	na	4,670

Health care expenditure reductions in the aggregate of other countries is proportional to that in the United States, adjusted for population differences, Mediterranean location, mortality per 1000 persons and lower medical costs outside of the United States. Medical costs are assumed to be 60% of the level in the United States. The population in Mediterranean countries is assumed to have only 40% of the health risk as in the United States since most people are already on an acceptable diet; those in other countries with death rates equal to or greater than the United States are assumed to have the same health risk as in the United States. People in countries with lower mortality rates are assumed to have 60% of the health risk as in the United States. Greece, Italy, France and Spain are classed with the Mediterranean countries. Argentina, Belgium, Germany, Portugal, United Kingdom and other western non-EU countries are considered comparable to the United States and several countries with low mortality rates, notably Netherlands, Canada, Chile, Australia and Japan, are considered lower risk countries. African, mid-East, Asian and Latin American countries have been excluded with the exception of Japan, South Africa, Israel, Chile and Argentina. The excluded countries are not important wine consumers and changes in behavior are likely to have very small impacts on health care expenses.

The estimated savings in health care expenditures resulting from moderate wine consumption are quite small relative to total health care costs in the United States and other countries. They become even smaller when assumed shifts toward moderate wine consumption are in line with what might be reasonably attained through communications and advertising programs. If 10% of the non-wine drinkers shifted to moderate wine consumption, rather than one-half as assumed by Lewin-VHI, then U.S. health care costs might be reduced by \$440 million. If the estimates based on Doll et al. are used, the change would be \$560 million. On a global basis the comparable savings would be \$934 million or \$1.2 billion (Table 3). These levels appear to be a more attainable target, but are unlikely to stimulate much interest from those who are seeking far larger cuts in the health care system.

Area	Number (millions)	Savings	
		(\$ million)	(\$ per head)
United States	14.0	440	31.43
Non - U.S.	26.2	494	18.86
Total	40.2	934	23.23

Source: Derived from Lewin-VHI and Table 2, above.

### III. Loss of economic productivity caused by illness

Healthy people are more productive than those who are not and when they live longer, society gains from the extra productivity. The global gains from this are far more impressive than projected savings in health care costs and are likely to be about \$17 billion. This is a target worth striving for.

The U.S. National Health and Nutrition Examination Survey found that moderate drinkers had an average of 3% longer life spans than heavy drinkers or abstainers. Curtis Ellison, M.D. of Boston University commented that 3% means a couple of years added to the average American male life span of 73, but for some individuals it could mean an additional 10 years if a fatal heart attack is avoided (Holmgren, 1995). Heien estimated that 9% of U.S. alcohol consumers were abusers; this corresponds to 12.5 million persons based on the population figures in Table 1. Thus there is a potential pool in the United States of 12.5 million alcohol abusers and 34.3 million abstainers for whom life expectancy might increase if they shifted toward the dietary and drinking patterns of moderate drinkers.

For cost purposes I have used conservative assumptions about increased life expectancy, the number of persons converted, and the average economic productivity of those persons. While life expectancy might increase over time by 2 years, I have used an increase of one month to compensate for the different demographic and other factors affecting health. Although wine drinkers tend to have higher incomes than do the rest of the population, I have used an annual income of \$21,000 as a measure of economic productivity. Finally, I have calculated costs based on the conversion of 10% of the abstainers and heavy drinkers to a more healthful diet. Based on these assumptions, the productivity gain from increased life span in the United States would be \$8.2 billion. If we project these values to a world level, using similar population ratios and the same per capita income, then gains would be \$20.8 billion (Table 4).

Area	Persons (million)	Salary (\$/month)	Value (\$ million)
United States	4.7	1,750	8,225
Non - U.S.	7.2	1,750	12,600
Total	11.9	1,750	20,825

Note: Population based on estimated number of alcohol abusers and abstainers; income based on U.S. per capita income.

The social goal should be to convert all high risk persons to an improved diet. Even if one-half are converted and life expectancy increases by 6 months rather than two years, the gain would be, hypothetically, \$250 billion in the United States and over \$500 billion world-wide. Productivity gains are far harder to visualize than budget cuts, and therefore are difficult political goals. However, in the case of changed drinking behavior toward moderate wine consumption, such gains are far larger than potential cost cutting.

### IV. Reduced regulatory costs

I have no empirical basis for estimating the impact of balanced communications on regulatory costs. However, to the extent that governments recognize that improved drinking and eating behavior will create large social gains, they should also be willing to liberalize current restrictions on communications, such as bans on certain advertising or controls on wine label information. The easing of such restrictions should reduce

regulatory costs and focus attention on critical areas where regulation is essential. Of course, the savings might be absorbed elsewhere. Government already has a role in developing dietary guidelines and in protecting social health. This may involve increased expenditures if the need for balanced communications about wine and health is seen as an essential part of the overall effort to improve health. In any event, the social gains from improved dietary and drinking patterns appear far larger than the costs of achieving them.

#### V. Producer gains as the result of expanded sales and better prices

Balanced messages about the relationship between wine consumption and health are likely to increase the demand for wine. This will provide higher revenues and prices will be higher than they would otherwise be. The stake that world wine producers have in this outcome is significant. Current trends suggest that a global surplus of quality wines is emerging because demand is not expanding rapidly enough. Efforts to expand demand while at the same time improving health related activities will satisfy the needs both of industry and the public.

If 10% of non-wine drinkers in the United States adopted moderate wine drinking patterns, and a proportional number of non-U.S. consumers did the same, wine sales would increase by perhaps \$7 billion (Table 5).

Area	Persons (million)	Per Cap (liters)	Cases (million)	Retail (\$/case)	Revenue	
					Retail	Winery
					(... \$ Million ...)	
United States	14.0	39	60.7	40	2,428	1,214
Non - U.S.	26.2	39	113.5	40	4,540	2,270
Total	40.2	39	174.2	40	6,968	3,484

Source: Calculated from Table 1 and assumptions from text.

This projection is based on a series of assumptions about behavior and prices. Assume that 10% of the non-wine and infrequent wine drinkers convert to a wine and dietary pattern identified with good health and consume the equivalent of one bottle of wine per week (39 liters per year). Based on the population figures in Table 1, 10% of the U.S. non-wine drinkers would total 14 million persons. Added consumption would be about 5.5 million hectoliters (61 million cases), a gain of about one-quarter from current levels. The retail value of this is likely to be about \$2.4 billion (at an average retail price of \$40 per case), with about one half of this amount flowing to wineries including perhaps 20% going to growers. One can construct other scenarios as well, reflecting differing assumption about the number of persons converted. If no abstainers are converted but 10% of the other non-wine drinkers are, then the increase in consumption would be 48 million cases with a retail value of about \$2 billion and a winery value of approximately \$1 billion. Based on assumptions about drinking patterns in other countries, global wine sales should increase by \$7 billion at the retail level, with perhaps \$1.5 billion to \$3 billion reaching wine growers. The projected increase would be about 5% of recent consumption levels, 220 million hectoliters in 1993.

#### VI. Local and regional impact of added economic activity

Increased revenues have an impact on job numbers, personal and community income, and revenues through the web of industries and individuals required to serve the production and marketing of wine. In the United States, for example, an increase in wine sales of \$1 million creates revenues of an added \$2 million to other sectors of the U.S.



economy; total incomes are increased by \$1.3 million; and employment is increased by 31 jobs. The same sort of effects occur in other producing countries although their value will reflect the unique conditions of the production area. To illustrate the implications of these regional economic multipliers, they have been applied to the projected global change in sales at the winery level, \$3.5 billion, as assumed in Table 5. To the extent that these multipliers are credible in a global situation, they would suggest an increase of \$7 billion in the output of other industries, \$4.6 billion in total income, and a growth in employment of 109,000 jobs in all sectors (Table 6). The levels of these impacts needs careful study to tailor them to actual conditions in the global wine industry. But discussions of the magnitude of the effects should not obscure the need to consider these types of impacts in any debates about the structure of future promotional programs.

Area	Value of Output			Total Income (\$ Bill.)	Job Numbers (1,000)
	Wineries	Other	Total		
	---(\$ Billion)---				
United States	1.2	2.4	3.6	1.6	37.2
Non - U.S.	2.3	4.6	6.9	3.0	71.3
Total	3.5	7.0	10.5	4.6	108.5

Source: Derived from Table 5 and assumptions in text

## VII. Promotion programs

To determine the economic impact of balanced communications about wine and health, we need to estimate the number of persons likely to change their behavior as the result of the message. However, this number depends on the nature and frequency of the message which in turn depends on the resources invested in the communications effort. The investment of resources, in part at least, depends on the expected benefits to be derived from the investment. So the argument seems circular and the question is where to enter the logical circle. The approach that I have chosen is to establish a "reasonable" goal for the number of persons to change their behavior and then to calculate the impact caused by their change, and then estimate what it might cost to mount such a communications campaign. The puzzle is difficult because of the interaction between free messages from the news media reporting research results, the slightly more costly public relations investment needed to call attention to research results, and, finally, the paid for efforts of advertising and promotion seeking to change consumer behavior.

I assume that two communications programs are necessary. One is the program that publicizes research results about the positive and negative effects of wine consumption and the other is the advertising and promotion program directed toward changing consumer behavior. There needs to be a background of balanced health information before messages about drinking wine can be made more effective. I have no way of knowing how many people will be converted by the balanced information program. However, I have made some estimates of the number that might be converted through a targeted advertising and promotion program, using experience of other commodity promotion programs. The approach taken is to select a goal to be reached, say 10% of the potential market, and then estimate the cost of such a program based on past wine and other commodity programs. It is then up to the wine industry to determine if the cost is worth the potential return.

The nature of the message is critical. In the United States, the Wine Marketing Council survey found that most non-drinkers of wine already have a favorable impression of the health effects of wine. These people don't drink wine primarily because it is too formal or intimidating. To change this audience, a communications program needs more

emphasis on wine's informality than on its health effect. However, a balanced health message may be critical to the behavior of other consumers or of regulators and other agencies affecting the wine sector. It would tend to counter the one-sided impression given by messages that focus solely on the health dangers of alcohol abuse.

The costs for mounting a promotional program needed to change consumer behavior along the lines suggested above may range from \$175 million to \$300 million. These values are approximations based on assumptions about the effectiveness of advertising and promotion, and include generic and private programs in whatever mix gets the job done. The difficulties of evaluating promotion programs are reviewed in Moulton (1992). Subject to a series of constraints, it is possible to estimate the cost of a promotion program to achieve a desired behavioral change. The constraints are that the message must be effective, and the measured values of advertising response rates are credible. There are few studies of wine industry promotion programs, and only one or two that calculate the advertising elasticity of demand. Based on studies of other industries, principally dairy and fruit juice, it appears that an advertising elasticity of 0.03 is credible.

The Dorfmann-Steiner model for calculating optimal advertising expenditures, subject to specified constraints, relates them to sales revenues and the ratio of advertising elasticity to price elasticity (Moulton, p. 372). Using this model and 2 estimates for price elasticity, -0.7 and -1.2, the following results are obtained:

- a. At the relatively inelastic price elasticity value of -0.7

$$\begin{aligned} \text{Advertising expenditure} &= \text{Revenue} \times (\text{Advertising elasticity} / \text{price elasticity}) \\ &= \$7 \text{ billion} \times (.03/.7) = \$300 \text{ million.} \end{aligned}$$

- b. at the more elastic price elasticity value of -1.2

$$\text{Advertising expenditure} = \$7 \text{ billion} \times (.03/1.2) = \$175 \text{ million}$$

Based on a global sales increase of 174.2 million cases, the cost per case of such a program would range between \$1.00 and \$1.70. An estimate based on a price elasticity of demand of -1.0, the approximate mid-point of the two values above results in an expenditure of \$207 million or \$1.20 per case.

Such costs emphasize the point that the desired changes in consumer behavior cannot be stimulated cheaply. However, these costs are low relative to potential gains of \$7 billion in wine sales revenues, \$21 billion in worker productivity, and \$900 million in reduced health care costs. The benefit cost ratio calculated from these hypothetical figures is over 100:1.

Another strategy for increasing sales is through price reductions. There is no assurance that such a program would cause changes among the audience targeted by the promotion program. Consequently, the health care and productivity benefits would be different and probably less.

## VIII. Conclusions

The preceding analysis has described the conditions under which substantial gains might be achieved through properly funded communications programs that convinced consumers to adopt healthy dietary patterns associated with moderate wine drinking. Much of the discussion is speculative because the underlying data for a more rigorous analysis are

not available and a simplistic static model has been used to illustrate the general magnitude of potential changes. The key points that emerge are:

- The potential gains from reduced health care costs are not large compared with total health care costs; therefore public support for a communications program may be more difficult to secure.

- The potential productivity gains from longer life spans are large and merit attention in assessing the benefits of moderate wine consumption.

- Industry gains will be substantial for growers and wineries if more moderate wine consumption patterns are extended; this is important in the face of anticipated global wine production increases.

- The costs of mounting an effective communications program may reach to \$200 million, but are reasonable in relation to anticipated benefits. The program cannot be mounted without a significant commitment of resources.

- Many of the projections presented are speculative, but deserve serious consideration and suggestions for improvement.

### References

Doll, R., R. Peto, E. Hall, K Wheatley, and R. Gray, 1994.

"Mortality in relation to consumption of alcohol: 13 years' observations on male British doctors," *British Medical Journal*, 309, p. 911-918.

Heien, Dale, 1994.

"The Economic Case Against Higher Alcohol Taxes," *Journal of Economic Perspectives (Communications)*, Spring, p. 207-209.

Holmgren, Elisabeth, 1995.

"Moderation and Mortality," *Wines and Vines*, 76, 2 (February), p. 5.

Lewin-VHI, 1994.

*The Benefits for Healthcare Expenditures from Moderate Wine Consumption.*  
Lewin-VHI Inc., Fairfax, Virginia.

Moulton, Kirby, 1992.

"Publicité dans le secteur vin," *Bulletin de l'OIV*, 65, (Mai-Juin), p.362-403.