

A Skeptic's Comment on the Study of Economics

Ariel Rubinstein

School of Economics, Tel Aviv University

and

Department of Economics, New York University

<http://arielrubinstein.tau.ac.il>

Abstract

A survey questionnaire was presented to two groups of undergraduate economics students and to four groups of students in mathematics, law, philosophy and business administration studies. Significant differences were found in their approach to the dilemma of maximizing profits and laying off workers. The results were reinforced by a survey conducted among thousands of an Israeli business newspaper's readers and Ph.D. students in Harvard. It is argued here that the formal method of teaching economics encourages students to adopt profit-maximizing positions.

I would like to thank two individuals who helped me enormously in conducting this research: Eli Zvuluny (<http://www.possibleworlds.co.il/>), who constructed and managed the site which served as the platform for conducting the survey, and Michael Ornstein, who assisted me in analyzing the data.

Thanks are also due to the many economists who responded to the early discussion paper and confirmed that the results hit a nerve.

1. Introduction

This research was motivated by my skeptic view of the way economics is currently taught. I believe that we actually do harm to our students who have come to study economics but end up experts in trivial calculus and that the study of economics distorts their opinions. I am not the first skeptic on the value of the studies of economics. This paper continues a line of research by economists into the subtle and indecisive question of whether the study of economics changes students' views and, in particular, whether the study of economics makes people more selfish (see for example Frank, Gilovich and Regan (1993, 1996), Frey, Pommerehne and Gygi (1993) and the references in Frey and Meier (2003)).

At the core of the paper a discussion of students' responses to a survey question in which the subject was asked to imagine that he is a vice president of a company and must decide whether to maximize the company's profits by laying off half its workforce, or to make do with firing less than the number required to maximize profits. The subject is essentially presented with a dilemma of how to balance between his responsibility to the company's goals and any commitment he might feel to the workers. The survey was conducted among several groups of Israeli students, mostly from Tel Aviv University. The results show sharp differences between the economics trained students and the others. Some supporting evidence is brought from two follow-up studies I conducted among thousands of readers of an Israeli business daily and among several dozen Harvard graduate students in Economics.

Whatever the reasons for the differences between the way that economists and non-economists confront the dilemma, the results are brought forth in order to make readers especially the economists among them, a bit uncomfortable and to ask themselves whether we should change our way of teaching economics.

2. The Main Experiment

Six groups of Israeli students were approached by e-mail. The students were asked to visit a special web site designated for their group (<http://gametheory.tau.ac.il/expEconEng/> is a demo of the web site). The groups were comprised of undergraduate students in the departments of Economics, Law, Mathematics and Philosophy at Tel Aviv University, MBA students at Tel Aviv University and economics undergraduates at the Hebrew University of Jerusalem. I will refer to the six groups using the abbreviations Econ-TAU, Law, Math, Phil, MBA, Econ-HU. The students were asked to respond successively to four

questions. They were promised that prizes of NIS 150 each (about \$33) in purchase coupons for the local bookstore would be randomly awarded to six students who completed the questionnaire irrespective of their answers. They were explicitly told that the questionnaire was not an exam and that there were no “right” answers. The students were asked to indicate their e-mail addresses so that we would be able to contact the winners.

The heart of the questionnaire was the following question:

Q1-Table (translated from the Hebrew)

Assume that you are vice president of ILJK company. The company provides extermination services and employs permanent administrative workers and 196 non-permanent workers who are sent out on extermination jobs. The company was founded 5 years ago and is owned by three families. The work requires a low level of skills: each worker requires only one week of training. All the company’s employees have been with the company for between three to five years. The company pays its workers more than minimum wage. A worker’s wages includes payment for overtime which amounts to NIS 4,000 to NIS 5,000 per month (comment: the minimum wage in Israel was about NIS 3,335 at the time of the experiment). The company makes sure to provide its employees with all the benefits required by law.

Until recently, the company was making large profits. As a result of the ongoing recession, there has been a significant drop in its profits although the company is still in the black. You are to attend a meeting of the management in which a decision will be made regarding the layoff of some of workers. ILJK’s Finance Department has prepared the following forecast of annual profits:

| Number of workers who will continue to be employed | Expected annual profit in NIS millions |
|--|--|
| 0 (all the workers will be laid off) | Loss of 8 |
| 50 (146 workers will be laid off) | Profit of 1 |
| 65 (131 workers will be laid off) | Profit of 1.5 |
| 100 (96 workers will be laid off) | Profit of 2 |
| 144 (52 workers will be laid off) | Profit of 1.6 |
| 170 (26 workers will be laid off) | Profit of 1 |
| 196 (no layoffs) | Profit of 0.4 |

I recommend continuing to employ _____ of the 196 workers in the company.

The question was intended to present the respondent with a dilemma, forcing him to weigh his adherence to the principle of profit maximization against his identification with the plight of the dismissed workers in an economic environment of recession and unemployment. According to the data presented in the table, it is not necessary to lay off workers. The company has been making profits and will continue to operate in the black. But the company has the potential to increase its profits by a multiple of five if it fires nearly half of its workers. There are also two middle options: continue to employ 170 workers (laying off only 26) and increase profits by a multiple of 2.5, or continue to employ 144 workers and come close to maximizing profits, while saving the jobs of 44 workers

Another version of the question was used as well. Version Q1-Formula is identical to version Q1-Table with the only difference that the table was replaced with the sentence:

“The Finance Department has prepared a forecast of profits according to which the employment of x workers will result in annual profits of (in NIS millions): $2\sqrt{x} - 0.1x - 8$ ”

All the subjects in Law and Phil received version Q1-Table. The students in the other four groups, who were better trained mathematically, received randomly one of the two versions, Q1-Table and Q1-Formula. About 80% of the subjects who filled in their personal details finished the questionnaire. A somewhat larger percentage of dropouts was recorded among students who were assigned question Q1-Formula.

Following question 1, all subjects were asked to respond to question 2.

Q2:

Regarding question 1, what do you think would be the choice of a real vice president of the company?

I think that he would recommend continuing to employ ____ of the 196 workers in the company.

(The subjects had the text of Q1-Table or Q1-Formula in front of them as a reminder.)

3. Observations

Observation 1: There were sharp differences between groups in confronting the dilemma of profit maximization vs. worker layoffs.

The following table presents the 764 responses to question 1-Table that recommended retaining 100 or more workers.

| Q1-Table | EconHu | EconTA | MBA | Law | Math | Phil | Total | MRT |
|-------------------------|------------|------------|------------|------------|------------|------------|-------|------|
| n= | 94 | 130 | 172 | 216 | 64 | 88 | 764 | 110s |
| 100 (profit maximizers) | 49% | 45% | 33% | 27% | 16% | 13% | 31% | 107s |
| 144 | 33% | 31% | 29% | 36% | 36% | 19% | 31% | 114s |
| 170 | 7% | 9% | 23% | 18% | 25% | 25% | 18% | 113s |
| 196 (no layoff) | 6% | 13% | 12% | 13% | 11% | 36% | 15% | 104s |
| other | 4% | 2% | 3% | 6% | 13% | 7% | 5% | |
| Average layoffs | 69 | 63 | 54 | 52 | 45 | 31 | 53 | |

The differences between the groups are striking. The economics students both at the Hebrew University and Tel Aviv University are much more pronounced profit-maximizers than the students in the other groups. Among the Econ students 45%-49% chose the profit-maximizing alternative as compared to only 13%-16% of the Phil and Math students. The MBA and Law students were somewhere in between.

The response of “no layoffs” was given by only a small number of respondents (ranging from 6%-13%) in five of the six groups; the only exception was the philosophers - 36% of them chose to ignore the profit-maximizing objective.

Following the methodology used in Rubinstein (2004) I analyzed the response times of the various answers. The median response time was 110 seconds. The time differences between the various answers were small. The answer 196 had the lowest median response time of 104 seconds; the graph of this response time distribution was clearly, though only slightly, to the left of all other graphs which fit the other responses.

Comment: A problem in the analysis of the responses to Q1-Table was how to treat the 5% (42 out of 806) answers which were below 100. In many of those cases it was clear that the subjects had been confused between the number of workers to be employed and the number of workers to be laid off (for example, they chose 52 but had intended 144). Some

were probably typos and a very small number were probably the result of random choice. Given the small number of answers below 100 and the fact that there is a reasonable interpretation of these results, I have decided to classify them as errors.

Observation 2: The formula distortion

Q1-Formula was identical to Q1-Table with the only difference that the table was replaced with the formula $2\sqrt{x} - 0.1x - 8$. This profit function yields similar values to those presented in the table. Its maximum is at $x = 100$. Note that both versions of Q1 explicitly emphasized that with no layoffs, profits will be still positive.

The following table summarizes the 320 answers of 100 or more. (Of the 357 subjects who responded to Q1-Formula, only 10% answered with a number below 100. Once again I avoided trying to interpret these results. The number 25, for example, is clearly a mistake in solving the first-order condition.)

| Q1-Formula | EconHu | EconTA | MBA | Math | Total | MRT |
|----------------|------------|------------|------------|------------|-------|------|
| n= | 62 | 79 | 131 | 48 | 320 | 217s |
| 100 | 74% | 77% | 73% | 75% | 75% | 222s |
| 101-195 | 10% | 9% | 11% | 15% | 11% | 245s |
| 196 | 16% | 14% | 15% | 10% | 14% | 174s |
| Average layoff | 76 | 78 | 76 | 79 | 77 | |

Strikingly, there are no major differences between the groups. A similar proportion of subjects (73%-77%) thought chose 100, the profit-maximizing solution.

We turn now to question 2, where subjects were asked to provide a prediction about what a real vice president would:

Observation 3: There were no significant differences between groups as to what the subjects thought a real vice president would do.

The responses to Q2-Table are summarized in the next table:

| Q2-Table | EconHu | EconTA | MBA | Law | Math | Phil | Total |
|----------------|------------|------------|------------|------------|------------|------------|-------|
| n= | 92 | 125 | 165 | 206 | 62 | 84 | 734 |
| 100 | 57% | 54% | 47% | 58% | 48% | 45% | 52% |
| 144 | 23% | 28% | 27% | 29% | 21% | 29% | 27% |
| 170 | 12% | 10% | 20% | 6% | 16% | 15% | 13% |
| 196 | 4% | 7% | 3% | 3% | 2% | 5% | 4% |
| other | 4% | 1% | 3% | 4% | 13% | 6% | 4% |
| Average layoff | 72 | 69 | 65 | 74 | 68 | 66 | 70 |

Overall, many more subjects evaluated that a real manager would maximize profits while only 4% believe that he would not fire anyone. The table shows this similarity between the groups regarding their expectation of what a real vice president would do

Observation 4: There were large differences in how closely the subject's choice coincided with the choice attributed to a real vice president.

The following table compares the subjects' own choices in Q1-Table and the choices they attribute to a real vice president in Q2-Table:

| Table | Econ-Hu | Econ-Tau | MBA | Law | Math | Phil | Total |
|---------------------|------------|------------|------------|------------|------------|------------|-------|
| a real manager \ n= | 92 | 125 | 165 | 206 | 62 | 84 | 734 |
| would do like me | 55% | 42% | 45% | 34% | 21% | 29% | 39% |
| would fire more | 28% | 36% | 40% | 54% | 66% | 69% | 47% |
| would fire less | 16% | 22% | 15% | 12% | 13% | 2% | 14% |

The results for the groups of Econ students showed the least dissonance between a subject's own position and the position he attributed to a real vice president. A majority of subjects in Law and more than 66% in Math and Phil maintain the image that a real vice president will be tougher than themselves in laying off workers. The formula version of the question seems to have strengthened the subject's confidence that a real manager will do what he would do: 48% of the subjects (64% and 55% of the economists in the two groups) gave the same answer to questions 1 and 2.

4. The Globes Survey

Globes is Israel's main business daily. Its readership consists mainly of people from the

Israeli business community. In the summer of 2004, I was granted permission to conduct a survey of Globes' readership. An e-mail was sent to their electronic subscribers asking them to respond on line to the same questionnaire (with Table version only) that was posted for the students. Within a few hours, thousands of replies were received: 4,612 Globes readers responded to at least one of the questions, with 92% of these respondents completing the entire questionnaire. The amount of time the readers devoted to responding to the questionnaire indicates the fair degree of seriousness they attributed to it. About 80% of the respondents spent over 90 seconds on the main question before entering their reply, and about half of the readers took over two and a half minutes to register their reply.

An analysis was made of the 4,158 readers who chose to continue to employ 100 or more workers. (Once again, I assume that those who chose to employ less than 100 workers probably confused "number of workers employed" with "number of workers laid off." Including these respondents in the analysis while attributing the most reasonable interpretation of their answer, would not have made a significant impact on the results.)

As a group, Globes' readers are similar to the population of Law and MBA students at Tel Aviv. Only 28 % of the subjects chose to maximize the company's profits without taking into consideration the number of layoffs this would entail. To the extent that the readers' responses correspond to what they would have decided in real life, this is bad news for anyone who regards the classic model of economic theory taught in economics courses as a reasonable approximation of reality.

The Globes respondents were asked to report on their economics-related educational background. Apparently 18% of had only a BA in economics and 21% graduated from an MBA program. The large numbers allow us to verify whether the economic educational background affects the type of replies given years after graduation. It turns out that the responses of economics graduates were clearly different from those of readers who lacked a formal background in economics. On average, those with a degree in economics decide to lay off 20% more workers than those who lacked any academic background in economics. Some 36% of these economics graduates chose to maximize profits, compared to only 25% of the subjects with no background in economics who who chose to maximize profits.

| | Econ | MBA | no Economics |
|----------------|------------|------------|--------------|
| n= | 763 | 891 | 2504 |
| 100 | 36% | 27% | 25% |
| 144 | 30% | 32% | 28% |
| 170 | 19% | 21% | 24% |
| 196 | 13% | 16% | 19% |
| Average layoff | 56 | 50 | 47 |

Observation 5: Gender effects: women fire less.

Readers were also asked to cite their gender: only 21% were females. However, the huge sample (876 females) allowed us to make a gender comparison. In all three categories of economics education, we observed a more lenient behavior among women.

| Gender Effects | Econ | MBA | no Economics |
|-------------------|----------------|----------------|----------------|
| number of females | 151 | 202 | 523 |
| | f/m | f/m | f/m |
| Average layoff | 52/57 | 47/51 | 43/48 |
| Profit Maximizers | 30/ 37% | 24/ 28% | 22/ 26% |

5. The Harvard Survey

In September 2004 I had the opportunity to ask graduate students in economics, mostly in Harvard and some in MIT, to respond on line to a similar questionnaire. The subjects randomly received either the Table or the Formula versions. This group of subjects was small but significant as we are talking about the “elite” among the young economists.

The differences between the responses to the two versions were striking yet similar to what we observed earlier:

| | Q1 | Q1 | Q2 | Q2 |
|----------------|-------|---------|-------|---------|
| | Table | Formula | Table | Formula |
| n= | 44 | 28 | 45 | 30 |
| Average layoff | 55 | 78 | 66 | 48 |
| 100 | 41% | 71% | 51% | 27% |
| 101-195 | 41% | 18% | 42% | 60% |
| 196 | 18% | 11% | 7% | 13% |

Once again the formula version triggered students to choose the profit-maximization level of employment. However, the main finding about this distinguished group is:

Observation 6: Even Harvard Phd students disagree in their predictions of a real manager’s behavior and their predictions are frame dependant

First, let us note that the Phd students’ predictions of the real manager’s choice strongly depend on the framing of the question in terms of a Table or a Formula. (Among the Tel Aviv students, similar differences were observed only among the Mathematicians.). But, what I find more striking is that the future stars of the economics profession sharply disagree in their predictions about what a real manager would do in such a situation. When the data was viewed in a table 49% of the subjects predicted that a real manager will not maximize profits. When the data was viewed as a formula, 73% dismissed the standard answer, which requires finding the optimum point of the formula.

This raises a question about the status of economics at large. The survey question was a very simple and standard question about firm behavior. Its standing is probably analogous to the standing in physics of the question “A ball is falling from a 10 m. tower, when will it hit the ground?” I cannot imagine that PhD students in physics would differ in their answer to this question. However, the PhD students in economics at Harvard are in a sharp disagreement: If PhD students in economics cannot agree in their prediction of such a basic scenario, I wonder whether the expectation that economics will have any significant predictive power is not more than a mirage.

6. Discussion

Even as economists, our view of the results cannot be separated from our personal

evaluation of the behavior of economic agents in a situation such as this. If you believe that the manager of a company is obligated morally or legally to maximize profits, then you should probably hail economics for its achievement in educating its students. However, you should be disturbed by the fact that even among students of economics, about half of the graduates and even more among the MBA graduates do not show any sign that they were fully persuaded to maximize profits. And not less, you should be worried by the fact that even the Harvard PhD students differ in their prediction of what a real manager will do in such a simple situation.

Alternatively, you might approach the results with the belief that a manager is committed not only to maximizing profits but also to taking into account the welfare of his workers, particularly when the economy is in recession and unemployment is high (as was described in the questionnaire). Under these circumstances, striving to maximize profits regardless of the consequences appears to be "ethically problematic".

I find the differences between the two groups of economics undergraduates and the other groups striking. The economics students tend much more to maximize profits than do the subjects in the other groups. Admittedly, a major drawback of the survey was that I could not clearly distinguish between the possibility that the differences were due to selection bias and the possibility that they were the result of indoctrination. (Originally, I had intended to present the questions to economics students prior to their first week of studies but a technical difficulty prevented me from doing so.) But even if the economics profession attracts different people than other professions do the results raise the possibility that something is wrong in the way we treat the students in our undergraduate study programs. It seems that the MBA program works better to balance the students' views. Actually, I found it a surprise that the results obtained from the MBA students were quite different from those obtained from the Econ students. Perhaps this has to do with the way that the MBA program is taught and that studying by cases triggers more comprehensive thinking about real-life problems whereas studying with formal exercises conceals the need to balance between conflicting considerations.

This conjecture is related to the other major point of this paper. In question 1-Formula, where the data were presented in formal language, a vast majority of subjects of all disciplines (including the Harvard PhD students) maximized profits though many of them were aware of the existence of a trade-off (evident from the fact that many of those who chose 100 said that they believe that a real vice president would fire less than the number required to maximize profits). This seems to support the intuition that presenting a problem formally, as we do in economics, conceals the real-life complexity of the situation from all

or at least most students (including Math students).

Of course, it may be that there is no connection between the responses of subjects to such a questionnaire and the choices they would make in practice. But if there is no connection, are we saying that what a student learns in economics will have no influence on his future behavior? And if there is such a connection, shouldn't we be revising our curriculum?

In any case, I do not see any value in giving our students the formal exercises we give which focus on the task of maximization rather than having them think about real economic problems. In the best case, these formal exercises simply make the study of economics less interesting; in the worst case, they contribute to the shaping of a rather unpleasant "economic man".

References

Frank, R.H., Gilovich, T. and Regan, D.T. 1993. "Does Studying Economics Inhibit Cooperation?" *Journal of Economic Perspectives*, 7, 159-171.

Frank, R.H., Gilovich, T.D. and Regan, D.T. 1996. "Do Economists Make Bad Citizens?" *Journal of Economic Perspectives*, 10, 187-192.

Frey, B. S. and Meier, S. 2003. "Are Political Economists Selfish and Indoctrinated? Evidence From a Natural Experiment" *Economic Inquiry*, 41, 448-462.

Frey, B.S., W.W.Pommerehne and B. Gygi, 1993, "Economics Indoctrination or Selection? Some Empirical Results", *Journal of Economic Education*, 24, 271-281.

Rubinstein, A. 2004, "Instinctive and Cognitive Reasoning: Response Times Study", mimeo.