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experimental labour economics

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Abstract

Experimental labour economics uses experimental techniques to improve our understanding of labour economics issues. We start by putting experimental data into perspective with the data-sets typically used by empirical labour economists. We then discuss several examples of how experiments can inform labour economics.

Keywords

double auction; efficiency wages; employment relation; experimental labour economics; gift exchange; implicit incentives; incomplete contracts; involuntary unemployment; laboratory experiments; labour economics; labour market institutions; minimum wages; moral hazard; opportunistic behaviour; performance incentives; piece rates; repeated games; reservation wage; tournaments; wage rigidity

Article

Scientific progress relies on testing theories. In labour economics different data sources are available for performing such tests. An important distinction is between circumstantial data and experimental or questionnaire data. Circumstantial data is the by-product of uncontrolled, naturally occurring economic activity. In contrast, experimental data is created explicitly for scientific purposes under controlled conditions. In labour economics, the data most commonly and traditionally used is circumstantial data such as unemployment rates or data on wages, education, or income, complemented by survey data. Labour economists have only recently started to use laboratory experiments.

Laboratory experiments have several important advantages in comparison with data sets typically used in labour economics. A key advantage is the unparalleled opportunity to control crucial aspects of the economic environment. This includes control over information conditions, technology, market structure, and trends in economic fundamentals. Control over the decision environment makes it possible to identify the theoretical equilibrium in an experimental labour market, which is basically impossible with field data. Knowing the equilibrium allows the study of convergence properties, stability and efficiency. Experiments are particularly useful for investigating the economic consequences of important labour market institutions, such as minimum wages or employment protection legislations. The reason is that experiments allow the exogenous changes of institutions, holding everything else constant. In the field, by contrast, institutions are always adopted endogenously. Econometric strategies such as instrumenting for policy changes with political variables can help ameliorate this problem, but do not achieve the unequivocal exogenous variation provided by a laboratory experiment. Laboratory experiments also make it possible to observe behaviour at the level of individual economic agents. This is important given that theoretical predictions typically involve such micro behaviours. For example, it is possible to directly observe individual reservation wages or individual wage bargaining behaviour. Yet another advantage is that with laboratory experiments one can study, at relatively low cost, institutions that do not yet exist. Analogous to experimental tests of new medicines, where the medication is administered to a small subset of the population initially, laboratory experiments can be used as a first step, before experimenting with institutions in the field. Finally, experimental evidence is replicable, which is a prerequisite in establishing solid empirical knowledge.

Data-sets and the comparative advantage of laboratory experiments

Although we believe that laboratory experiments offer important advantages for studying institutions, and should thus be exploited more often, it is important to recognize that there are also drawbacks to this method, which calls for a complementary use of different methods. A potential disadvantage is limited generalizability. Note, however, that this critique holds with respect to any data-set, given that any empirical observation is time and space contingent. Another concern is that experiments may be overly simple, missing potentially relevant aspects of the labour market. This is in fact both a problem and an advantage of experiments. Just as economic models are simpler than reality, so experiments are designed to simplify as much as possible, without losing the essentials. Thus, simplicity need not be a defect of an experiment. The key challenge, just as in the case of building economic models, is to include those features that are essential to the question at hand.

Examples

In this section we discuss a selected set of examples of experiments that were designed to shed light on important issues in labour economics. The examples concern the nature of the employment relationship and its contractual regulation, wage rigidity, performance incentives and their potentially detrimental effects, and labour market institutions.

The employment relation

The employment relation is an incomplete contract, which typically leaves many important aspects unspecified. This holds in particular for the content of work effort, which is unregulated and thereby non-enforceable by third parties. Contractual incompleteness gives opportunistic agents an incentive to shirk and therefore leads to an inefficiently low surplus. Thus, voluntary cooperation is necessary to ensure efficiency. Akerlof (1982)

argued that many employment relationships are therefore governed by a gift exchange: the firm pays a higher wage than necessary to keep the employee, and the employee returns the gift by providing above minimum effort. Akerlof supported his arguments by a case study and casual observations.

The gift-exchange game by Fehr, Kirchsteiger and Riedl (1993) provided the first experimental test of the existence of gift exchanges in the framework of a formal game-theoretic model designed to mimic an incomplete employment contract. In their experiment, participants assumed the roles of 'workers' and 'firms'. A firm made a wage offer that a worker could accept. If the worker accepted, he or she had then to choose a costly effort level. Parameters were such that a self-interested worker would always choose the lowest possible effort, since effort was costly. In turn, the firm had no incentive to pay an above-minimal wage, because a self-interested worker would shirk anyway. The results of numerous experiments in this framework showed, however, that wages and effort levels are positively correlated. Higher wages were reciprocated by higher effort levels, a finding which is consistent with the gift-exchange argument by Akerlof. This observation is also consistent with field evidence regarding the link between personnel policy and work morale (Bewley, 1999).

In these experiments the employment relationship was modelled as a one-shot game, because this allows an unambiguous prediction under the joint assumptions of rationality and self-interest. Yet in reality, employment relationships are long-term relationships. To test the impact of repeated interaction, Gächter and Falk (2002) conducted the gift-exchange experiment in the form of repeated games in which the same firm-worker pair interacted for ten periods. These repeated games were compared with one-shot games in which each firm was matched with ten different workers. The results showed a significantly higher effort in the repeated game than in the one-shot games. Gächter and Falk showed that the reason for this result is that in the repeated games the selfish types imitate the reciprocal types. This result provides support for theoretical arguments (for example, MacLeod and Malcomson, 1998) that incomplete employment relations allow for implicit incentives for non-opportunistic behaviour.

In the experiments by Gächter and Falk (2002)

the experimenter determined the duration of the employment relationship exogenously. In reality, however, the duration of employment relationships arises endogenously. Contract theory suggests that the duration might be linked to contractual incompleteness. Specifically, when contracts are incomplete, a long-term relationship provides implicit incentives that constrain opportunistic behaviour – an argument supported by the cited

experimental evidence. If contracts are complete then implicit incentives are not necessary to constrain opportunism. Thus, employment relationships will tend to be short term under contractual completeness. Brown, Falk and Fehr (2004) tested these arguments experimentally and found strong support for them.

Efficiency wages, wage rigidity, and involuntary unemployment

Efficiency wage theories explain why even in the absence of market interventions wages might be downwardly rigid, causing involuntary unemployment. Akerlof's (1982) gift-exchange theory is one efficiency wage theory that can explain involuntary unemployment. The main idea is simple. If gift exchanges exist, then firms have no incentive to lower wages because this would lead to low performance. Thus, paying high wages is profitable to the firm – wages are downwardly rigid and can cause involuntary unemployment. Fehr et al. (1998) demonstrated the behavioural validity of this argument experimentally.

Fehr and Falk (1999)

provide the most stringent confirmation that gift exchanges can lead to downward wage rigidity. In their experiment an employment relationship was embedded in a 'double auction' market institution in which there were more workers than firms. This institution is known for its competitive properties; under complete contracts experimental double auction markets tend to clear very quickly. In the Fehr–Falk experiments both workers and firms could make wage offers. This enables us to observe whether workers underbid each other and firms therefore have the possibility of employing a worker at a low wage. There was indeed fierce competition among workers who underbid each other down to the theoretically predicted wage. Underbidding occurred in both treatments, the 'complete contract treatment' and the 'incomplete contract treatment'. In the latter, the striking finding was that firms did not take advantage of the possibility of paying low wages; instead they deliberately paid very high wages. The workers' reciprocal effort choice explains why firms had an incentive to pay high wages. In the control experiments with complete contracts gift exchanges were precluded by design and actual wages were very close to market clearing wages. Thus, incomplete contracts and gift exchange can explain wage rigidity and involuntary unemployment.

Performance incentives (and their detrimental effects)

Compensation and performance incentives have always been central topics in labour economics.

Compensation may take different forms. The simplest form is a piece rate where a worker receives a certain wage for each unit she produces. Compensation may also depend on relative performance and be coupled with the possibility of moving up the career ladder. Tournament theory (Lazear and Rosen, 1981) is an important theoretical framework for understanding career incentives and relative performance incentives.

Bull, Schotter and Weigelt (1987)

provide the first experimental analysis of piece rate and tournament incentives. They designed their experiments so that the incentive schemes were directly comparable, that is, the predicted effort level was the same both under piece rates and under tournament incentives. The results confirmed the theoretical predictions in both treatments. As it turned out, however, the support for tournament theory is weaker than for piece rate theory. In various treatment conditions these authors find that average effort choices converged close to the equilibrium prediction, but the variance was up to 30 times higher under tournament incentives than under the piece rate system.

The results by Bull, Schotter and Weigelt (1987)

provide clear evidence that incentives influence behaviour very strongly. However, numerous experiments as well as field evidence (Bewley, 1999) suggest that employment relationships are also governed by 'good will' and voluntary cooperation. This raises the question how explicit performance incentives affect voluntary cooperation – a fertile area of current research in experimental labour economics. A nice illustration of the potentially dysfunctional effects of introducing explicit incentives is the field experiment by Gneezy and Rustichini (2000). These authors studied the parents' response to the introduction of a fixed fine for picking up their children too late from kindergarten. The experiment lasted for 20 weeks and there were two conditions. In the baseline condition no fine existed. In the treatment condition the experimenters implemented a fixed fine after week four for picking up a child too late. The fine was removed after week 16. From week seven onwards, there was a steep *increase*

in the number of latecomers until their number was roughly twice as high as in the baseline condition.

Moreover, when the fine was removed at the end of week 16 the number of tardy parents remained roughly twice as high as in the baseline condition. This result clearly contradicts standard incentive theory, which

predicts that the introduction of the fine should lower the incidence of late coming. A likely explanation of this finding is that the implicit contract that governed the employment relationship was changed from a good-will-based one to a market-like transaction, in which 'a fine is a price' and parents bought the commodity of being late.

Labour market institutions

A particularly important advantage of laboratory experiments concerns the possibility to test the economic effects of (labour market) institutions in a controlled way. An example of such an institutional test is the paper on minimum wages by Falk, Fehr and Zehnder (2006). In their experiment firms make wage offers to workers in labour markets either with or without minimum wages. The key insight of their study is that minimum wages may affect the reservation wages of workers in a non-trivial way: first, when minimum wages are introduced, workers stipulate reservation wages above the level of the minimum wage level, because being paid at just the level of the minimum wage is considered unfair. Second, while the introduction of a minimum wage increases reservation wages, the removal of a minimum wage legislation changes reservation wages only marginally. These findings help explain several empirical minimum wage puzzles. First, there exists an anomalously low utilization of sub-minimum wages in situations where employers actually could pay workers less than the minimum; second there exist so-called spillover effects, that is, wages are often increased by an amount in excess of that necessary for compliance with the minimum wage; and third, minimum wages do not always cause a decrease in employment, in particular if the minimum wage increase is modest (see also Card and Krueger, 1995).

The finding that minimum wages affect workers' fairness perceptions of wages is also supported by Brandts and Charness (2004)

who introduced a minimum wage in the context of an experimental labour market with worker moral hazard where workers' fairness concerns drive effort. They show that workers provide less effort for the same wage level in the presence of the minimum wage. This supports the view that the impact of minimum wages on workers' attributions of fairness intentions to firms partially shapes their effort responses.

Concluding remarks

Experimental economics is a method of empirical investigation, not a separate subfield of economics. Experimental methods can therefore in principle be utilized in all areas of economics. In this article we have illustrated some selected applications of experimental methods to important issues in labour economics. Further discussions of the issues raised here can be found in Fehr and Gächter (2000), Gächter and Fehr (2002), Fehr and Falk (2002), Falk and Fehr (2003) and Falk and Huffman (2007).

See Also

- behavioural economics and game theory
- incomplete contracts
- institutional economics
- labour economics
- personnel economics
- reciprocity and collective action

Bibliography

Akerlof, G. 1982. Labor contracts as partial gift exchange. *Quarterly Journal of Economics* 97, 543–69.

Bewley, T. 1999. *Why Wages Don't Fall in a Recession*. Cambridge, MA: Harvard University Press.

Brandts, J. and Charness, G. 2004. Do labour market conditions affect gift exchange? Some experimental evidence. *Economic Journal* 114, 684–708.

Brown, M., Falk, A. and Fehr, E. 2004. Relational contracts and the nature of market interactions. *Econometrica* 72, 747–80.

- Bull, C., Schotter, A. and Weigelt, K. 1987. Tournaments and piece rates: an experimental study. *Journal of Political Economy* 95, 1–33.
- Card, D. and Krueger, A. 1995. *Myth and Measurement: The New Economics of the Minimum Wage*. Princeton, NJ: Princeton University Press.
- Falk, A. and Fehr, E. 2003. Why labor market experiments? *Labor Economics* 10, 399–406.
- Falk, A., Fehr, E. and Zehnder, C. 2006. Fairness perceptions and reservation wages: the behavioral effects of minimum wage laws. *Quarterly Journal of Economics* 121, 1347–81.
- Falk, A. and Huffman, D. 2007. Studying labor market institutions in the lab: minimum wages, employment protection and workfare. *Journal of Institutional and Theoretical Economics* 163, 30–45.
- Fehr, E. and Falk, A. 1999. Wage rigidity in a competitive incomplete contract market. *Journal of Political Economy* 107, 106–34.
- Fehr, E. and Falk, A. 2002. The psychological foundations of incentives. *European Economic Review* 46, 687–724.
- Fehr, E. and Gächter, S. 2000. Fairness and retaliation: the economics of reciprocity. *Journal of Economic Perspectives* 14(3), 159–81.
- Fehr, E., Kirchler, E., Weichbold, A. and Gächter, S. 1998. When social norms overpower competition – gift exchange in experimental labor markets. *Journal of Labor Economics* 16, 324–51.
- Fehr, E., Kirchsteiger, G. and Riedl, A. 1993. Does fairness prevent market clearing? An experimental investigation. *Quarterly Journal of Economics* 108, 437–60.
- Gächter, S. and Falk, A. 2002. Reputation and reciprocity: consequences for the labour relation. *Scandinavian Journal of Economics* 104, 1–27.
- Gächter, S. and Fehr, E. 2002. Fairness in the labour market: a survey of experimental results. In *Surveys in Experimental Economics. Bargaining, Cooperation and Election Stock Markets*, ed. B. Friedel and M. Lehmann-Waffenschmidt. Heidelberg and New York: Physica.
- Gneezy, U. and Rustichini, A. 2000. A fine is a price. *Journal of Legal Studies* 29, 1–17.
- Lazear, P. and Rosen, S. 1981. Rank-order tournaments as optimum labor contracts. *Journal of Political Economy* 89, 841–64.
- MacLeod, B. and Malcomson, J. 1998. Motivation and markets. *American Economic Review* 88, 388–411.

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