

George Mason University School of Law
Working Paper Series

Year 2004

Paper 10

The Unsolvability Dilemma of a Paretian
Policymaker

Giuseppe Dari-Mattiacci*

Nuno Garoupa[†]

*Universiteit van Amsterdam & George Mason University, g.darimattiacci@uva.nl

[†]Universidade Nova de Lisboa & George Mason University, ngaroupa@gmu.edu

This working paper is hosted by The Berkeley Electronic Press (bepress) and may not be commercially reproduced without the permission of the copyright holder.

<http://law.bepress.com/gmulwps/art10>

Copyright ©2004 by the authors.

The Unsolvable Dilemma of a Paretian Policymaker

Giuseppe Dari-Mattiacci and Nuno Garoupa

Abstract

In this paper, we argue that social decisionmaking is subject to a fundamental conflict between consistency and completeness. We show that a consistent welfarist method of policy assessment, that is, one that never violates the Pareto principle, may be incomplete in the sense of being incapable of providing a solution to important social welfare problems.

The Unsolvable Dilemma of a Paretian Policymaker*

Giuseppe DARI-MATTIACCI[†]

Universiteit van Amsterdam
George Mason University School of Law

Nuno GAROUPA[‡]

Universidade Nova de Lisboa
CEPR, London

November, 2004

*The authors would like to thank Shomu Banerjee, Guilherme Carmona, Antonio Cabrales, Ward Farnsworth, João Gata, Louis Kaplow, and Jenny Monheim for helpful suggestions and extremely useful comments. Nuno Garoupa acknowledges financial support by FCT, POCTI/ECO/44146/2002. The usual disclaimers apply.

[†]Universiteit van Amsterdam ACLE, Roetersstraat 11, 1018WB Amsterdam, The Netherlands and George Mason University School of Law, 3301 Fairfax Drive, Arlington, Virginia 22201, USA. Email: gdarimat@gmu.edu.

[‡]Faculdade de Economia, Universidade Nova de Lisboa, Campus de Campolide, P-1099-032 Lisboa, Portugal. Phone: 351-21-3801600. Fax: 351-21-3870933. Email: ngaroupa@fe.unl.pt.

Abstract

In this paper, we argue that social decisionmaking is subject to a fundamental conflict between consistency and completeness. We show that a consistent welfarist method of policy assessment, that is, one that never violates the Pareto principle, may be incomplete in the sense of being incapable of providing a solution to important social welfare problems.

JEL: C00, D63, K00

Keywords: Individualistic social welfare, Interdependent preferences.



1 Introduction

In this paper we argue that policymaking is subject to a fundamental dilemma, one between consistency and completeness. By consistency we mean the implementation of a set of criteria for policy assessment that do not contradict each other. By completeness we refer to the ability of such a set of criteria to assess all relevant policy issues. Consistency does not imply completeness. To the contrary, as we will show, these two goals may in fact conflict.

Recent literature has focused on the issue of consistency, mostly leaving the problem of completeness without discussion.¹ In particular, Kaplow and Shavell (2001) show that any non-welfarist method of policy assessment violates the Pareto principle. The implications of this result are straightforward. If policies are chosen according to criteria that are inconsistent with the welfarist method, the outcome will not maximize welfare. Consequently, they call for consistency in social decisionmaking.

In our analysis we take a step further and address the issue of completeness. We analyze a model of non-trivial policy assessment that the welfarist method is potentially incapable of solving. We argue that the welfarist method may be unable to assess policies that concern the aggregation of individual preferences in a social welfare function. The reason is that, when individuals have preferences over a certain social welfare function, the problem becomes recursive and may admit no solution or an infinite number of solutions, which is not helpful for policymaking.

Therefore, a consistent welfarist method may be incomplete in the sense of being incapable of providing a solution to important social welfare problems and effective policy guidance. A consequence of this conflict between consistency and and completeness is that, in many circumstances, social

¹See, however, Dari-Mattiacci (2004) considering the debate on completeness vs. consistency in mathematics and logic and its implications for welfare economics. See also McDonnell (2003) on the issue of recursivity that will be addressed below in the text. Farnsworth (2002) addresses the issue of changes in preferences, which will be analyzed later in the text, and notices that the choice of the criterion concerning how preferences should be shaped involves non-welfarists considerations. We argue instead that, even if that criterion were entirely welfarists, the recursivity of the the logical reasoning needed to assess such policies may ultimately yield no solution to the problem.

decision-making cannot solely rest on the welfarist method.

Thus, if a consistent method is incomplete, a method that guarantees completeness can only be constructed by implementing a set of criteria that allows for some internal inconsistency. The consequence is that, to be complete, social decision-making could have to take into account those fairness values, and more generally non-individualistic determinants, that were rejected at the outset because inconsistent with the Pareto principle.

We should distinguish how our approach relates to Kaplow and Shavell's article from others. We do not argue, as some have done, that their analysis is incorrect.² In fact, what they maintain cannot be wrong as it ultimately rests on a tautology.³ Our claim, instead, is that consistency comes at the price of incompleteness, as there are situations in which a consistent Paretian method cannot provide a satisfactory answer to the problem of ranking policies.⁴ Nor do we make any statement about whether a consistent Paretian method should or should not be regarded as the preferable way to assess social policies. We believe that Kaplow and Shavell's analysis does not give an answer to this question⁵ and nor do we.

²See Chang (2000a and 2000b) and, for a response, Kaplow and Shavell (2000). See also Fleurbaey, Tungodden, and Chang (2003) and, for a reply, Kaplow and Shavell (2004a). In addition, see Craswell (2003), Kornhauser (2003), and Waldron (2003) and, for a response, Kaplow and Shavell (2003). For a more recent critique, see Ripstein (2004) and, for a reply, Kaplow and Shavell (2004b). Finally, see Dorff (2002), Fried (2002).

³Here we exclusively refer to the argument, and not to the article. The authors themselves qualify the core of this argument as tautological; see Kaplow and Shavell (2002, p. 7). The authors further argue that notions of fairness may be used as proxies for the Pareto principle and that notions of fairness may have evolved as rules of thumb for the implementation of the Pareto principle. These arguments are not contested here.

⁴Kornhauser (2003) argues that the aggregation of preferences may be problematic when people have preferences over different 'regimes of rights'. This argument is similar to ours, but tries to disprove consistency rather than completeness as we do. For the same reason, our analysis is different from Sen (1970).

⁵Kaplow and Shavell (2002) argue that basing policy making on criteria that conflict with the Pareto principle does ultimately reduce social welfare. However, they do not systematically prove that the maximization of social welfare should be the object of policy making. See Dorff (2002) and Ferzan (2004) on this point.

2 Analysis

Let x be a complete description of the world and n the number of individuals, where $x = (x_1, \dots, x_n)$ is a comprehensive account of each individual's situation. Define X to be the set of all conceivable states of the world.

From Kaplow and Shavell (2001), we can make the following statements:

- (1) A social welfare function F is a function from X to the real line \Re .
- (2) An individual utility function for each $i = 1, \dots, n$ is also a function from X to \Re .
- (3) An individualistic social welfare function is a social welfare function of the form $F(U_1(x), \dots, U_n(x))$.
- (4) A social welfare function is not individualistic if and only if there exist $x, x' \in X$ such that $U_i(x) = U_i(x')$ for all i and $F(x) \neq F(x')$.
- (5) The weak Pareto principle is that if, for any states $x, x' \in X$, we have $U_i(x) > U_i(x')$ for all $i = 1, \dots, n$, then $F(x) > F(x')$.
- (6) If a social welfare function ascribes weight to the same factor independently of its effect on individuals' utilities in a non-individualistic way, then that social welfare function violates the Pareto principle (proof in Kaplow and Shavell, 2001).

Suppose now that F is of the form $F(U_1(x), \dots, U_n(x))$ but $U_i(x, F(\cdot))$ for all $i = 1, \dots, n$. According to Bergstrom (1999), U_i is an interdependent utility function such that individual i 's preferences depend on his own situation but also on society welfare.⁶ Then for any state of the world x it must be true that $F = F(U_i(x, F(\cdot)))$. We are interested in whether a system of interdependent preferences determined by private subutility of x and interdependent social welfare determines a corresponding system of independent utility functions $V_i : X \rightarrow \Re$ and an independent social welfare function $G(x)$. Unfortunately a general answer to recursive social welfare functions is not easy to find (Bergstrom, 1999; Bramoullé, 2001 and references cited therein). Multiple

⁶The original terminology derives from Pollak (1976).

and infinite utilities as well as no utilities arise from the recognition that the others' utility may depend on one's own utility through social welfare, and the feedback loop created by this dependency. In fact, we can say that, in general, social recursive preferences generate multiple utilities and therefore multiple social welfare functions, and only under strong assumptions, a unique system of independent utilities and therefore a unique social welfare function will exist.

As an illustration, assume that $U_i(\cdot)$ is an interdependent utility with an additively separable form (a Bergstrom-interdependent utility function):

$$U_i(x, F(\cdot)) = u_i(x) + \alpha_i F(\cdot)$$

where $u_i(x)$ is the private subutility of x satisfying the usual assumptions and α_i is a constant.⁷

Also let us also assume that social welfare is a weighted utilitarian function, such that:

$$F = \sum_{j=1}^n \beta_j U_j(\cdot) = \sum_{j=1}^n \beta_j u_j(x) + F(\cdot) \sum_{j=1}^n \beta_j \alpha_j$$

The independent social welfare can be derived as:

$$G(u_1(x), \dots, u_n(x)) = \frac{\sum_{j=1}^n \beta_j u_j(x)}{1 - \sum_{j=1}^n \beta_j \alpha_j}$$

The independent utility function of individual i is given by:

$$\begin{aligned} V_i(x) &= u_i(x) + \alpha_i \frac{\sum_{j=1}^n \beta_j u_j(x)}{1 - \sum_{j=1}^n \beta_j \alpha_j} \\ &= \frac{1 - \sum_{j \neq i}^n \beta_j \alpha_j}{1 - \sum_{j=1}^n \beta_j \alpha_j} u_i(x) + \alpha_i \frac{\sum_{j \neq i}^n \beta_j u_j(x)}{1 - \sum_{j=1}^n \beta_j \alpha_j} \end{aligned}$$

There are three possible solutions to be considered:

⁷Preferences can be positively interdependent or negatively interdependent, see Ok and Kockesen (2000). We do not impose any restriction on the sign of α .

(1) $\sum_{j=1}^n \beta_j \alpha_j < 1$: there is a unique solution to the problem of finding an independent weighted utilitarian social welfare function. This corresponds to the usual assumption taken in the altruism literature (Becker, 1974; Bernheim and Stark, 1988; Bergstrom, 1999; Bowles and Garoupa, 2002).

(2) $\sum_{j=1}^n \beta_j \alpha_j > 1$: the solution we have derived is unstable. According to Bramoullé (2001), the reasonable economic interpretation of instability should be that there is an infinite solution set to the problem of finding an independent weighted utilitarian social welfare function; a related interpretation is discussed by Postlewaite (1998). Nevertheless it is not the case that all solutions yield the same level of social welfare. Clearly other social criteria are required to help a welfarist analysis in this situation since policymaking requires the implementation of a given chosen policy.⁸

(3) $\sum_{j=1}^n \beta_j \alpha_j = 1$: there is no solution to the problem of finding an independent weighted utilitarian social welfare function. A welfarist analysis in this situation is useless, and yet policymaking requires that some policy is chosen and implemented.

3 Conclusions

We have provided a framework where a consistent welfarist method of policy assessment (that is, a method based on an individualistic social welfare function) is incomplete. The reason for incompleteness is the existence of recursive interdependent preferences. Aggregated individual preferences determine social preferences which, in turn and in many important contexts, determine individual preferences. We have argued that, although under certain conditions we can use welfare economics to evaluate policies even if preferences are interdependent, in general the set of welfarist solutions is not a singleton, because a solution does not exist or because there might be more than one solution, thus requiring other decision-making criteria to make a

⁸Notice also that the usual literature (Becker, 1974; Bernheim and Stark, 1988) discards this possibility because the independent utility function is decreasing in consumption.

policy recommendation.⁹ Incompleteness is a relevant problem because the alternative policies to be assessed generally yield different levels of individual and social welfare.

On the policy level, this situation may arise while trying to address two fundamental problems for social coexistence. One issue is the aggregation of individual preferences,¹⁰ that is, what weight should be given to each individual in society. This problem may arise in relation to the evaluation of policies concerning issues of equality, liberty, distribution of resources and similar problems, which are likely to be of central importance for policy-making. In this case, the weight to give to individual preferences is decided according to the individual preferences themselves. The attempt to do so may thus result in a circular reasoning yielding no ultimate conclusion. While it is evident that different social welfare functions yield to the endorsement of different policies and hence to different levels of individual and social welfare, such levels may not be comparable for the criterion of assessment (the social welfare function) is also the object of such an assessment.

A second order of issues concerns the way in which policies do or should influence individual preferences.¹¹ Education of youth is a complex endeavor in modern multicultural societies and its most discussed aspects relate precisely to the type of preferences youth should develop. Re-education of criminals or otherwise outcast individuals poses similar problems. Also in this case, the desirable set of preferences that a society should exhibit is to be decided according to individuals' actual and future preferences, thus yielding the same type of circularity that we discussed above.

It is evident that the assessment of such policies is an inevitable necessity, as society cannot generally afford to let such fundamental questions unanswered. Consequently, such problems, in many circumstances, will have to be resolved by resorting to precisely those criteria that give independent weight to some value other than individual welfare, because, as we have suggested, individual preferences, even if broadly defined, are recursive. As a

⁹Kaplow and Shavell (2002, p. 413-418) suggest instead that, also when preferences depend on policies, a welfarist solution can be found. We argue that, to the contrary, this might not always be possible.

¹⁰The choice of $G(x)$ in the formal model.

¹¹The choice of $V_i(x)$ in the formal model.

result, the implementation of an inconsistent method of policy assessment may be the necessary price to pay for completeness.

References

- [1] Becker, Gary (1974), 'A Theory of Social Interactions,' 82 *Journal of Political Economy*, 1063–1093.
- [2] Bergstrom, Theodore C. (1999), 'Systems of Benevolent Utility Functions,' 1 *Journal of Public Economic Theory*, 71–100.
- [3] Bernheim, D. and Stark, O. (1988), 'Altruism Within the Family Reconsidered: Do Nice Guys Finished Last?,' 78 *American Economic Review*, 1034–1045.
- [4] Bowles, Roger and Garoupa, Nuno (2002), 'Household Dissolution, Child Care and Divorce Law,' 22 *International Review of Law and Economics*, 495–510.
- [5] Bramoullé, Yann (2001), 'Interdependent Utilities, Preference Indeterminacy, and Social Networks,' University of Maryland unpublished manuscript.
- [6] Chang, Howard F. (2000a), 'A Liberal Theory of Social Welfare: Fairness, Utility, and the Pareto Principle,' 110 *Yale Law Journal*, 173–235.
- [7] Chang, Howard F. (2000b), 'The Possibility of a Fair Paretian,' 110 *Yale Law Journal*, 251–258.
- [8] Dari-Mattiacci, Giuseppe (2004), 'Goedel, Kaplow, Shavell: Consistency and Completeness in Social Decisionmaking,' 79 *Chicago Kent Law Review*, 497–520.
- [9] Dorff, Michael B. (2002), 'Why Welfare Depends on Fairness: A Reply to Kaplow and Shavell,' 75 *Southern California Law Review*, 847–899.
- [10] Farnsworth, Ward (2002), 'A Taste for Fairness,' 102 *Columbia Law Review*, 1992–2026.

- [11] Ferzan, Kimberly Kessler (2004), 'Some Sound and Fury from Kaplow and Shavell,' 23 *Law and Philosophy*, 73–102.
- [12] Fleurbaey, Marc, Tungodden, Bertil, and Chang, Howard F. (2003), 'Any Non-welfarist Method of Policy Assessment Violates the Pareto Principle: A Comment,' 111 *Journal of Political Economy*, 1382–1385.
- [13] Kaplow, Louis and Shavell, Steven (2000), 'Notions of Fairness versus the Pareto Principle: On the Role of Logical Consistency,' 110 *Yale Law Journal*, 237–249.
- [14] Kaplow, Louis and Shavell, Steven (2001), 'Any Non-welfarist Method of Policy Assessment Violates the Pareto Principle,' 109 *Journal of Political Economy*, 281–286.
- [15] Kaplow, Louis and Shavell, Steven (2002), *Fairness versus Welfare*, Harvard University Press, Cambridge, MA.
- [16] Kaplow, Louis and Shavell, Steven (2003), 'Fairness versus Welfare: Notes on the Pareto Principle, Preferences, and Distributive Justice,' 32 *Journal of Legal Studies*, 331–362.
- [17] Kaplow, Louis and Shavell, Steven (2004a), 'Any Non-welfarist Method of Policy Assessment Violates the Pareto Principle: A Reply,' Harvard Law School, The Center for Law, Economics, and Business Discussion Paper No. 455.
- [18] Kaplow, Louis and Shavell, Steven (2004b), 'Notes on Welfarist versus Deontological Principles,' *Economics and Philosophy*, forthcoming.
- [19] Kornhauser, Lewis A. (2003), 'Preferences, Well-Being, and Morality in Social Decisions,' 32 *Journal of Legal Studies*, 303–329.
- [20] McDonnell, Brett (2003), 'Economists' New Argument', Public Law and Legal Theory Research Paper Series 03-3, University of Minnesota Law School.
- [21] Ok, Efe A. and Kockesen, Levent (2000), 'Negatively Interdependent Preferences,' 17 *Social Choice and Welfare*, 533–558.

- [22] Pollak, Robert A. (1976), 'Interdependent Preferences,' 66 *American Economic Review*, 309–320.
- [23] Postlewaite, Andrew (1998), 'The Social Basis of Interdependent Preferences,' 42 *European Economic Review*, 779–800.
- [24] Ripstein, Arthur (2004), 'Too Much Invested to Quit,' *Economics and Philosophy*, forthcoming.
- [25] Sen, Amartya (1970), 'The Impossibility of a Paretian Liberal,' 78 *Journal of Political Economy*, 152–157.
- [26] Waldron, Jeremy (2003), 'Locating Distribution,' 32 *Journal of Legal Studies*, 277–302.