

A Reformulation of Normative Economics for Models with Endogenous Preferences

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What This Paper Does

This paper

- argues that in models with endogenous preferences, a balanced normative economic analysis of social states should weigh both **welfarism** and **virtue ethics**.
- proposes a framework based on three functions:
 - 1 Social Welfare Function (*SWF*) for welfarism
 - 2 Moral Evaluation Function (*MEF*) for moral virtue ethics
 - 3 Social Objective Function ($SOF = F(MEF, SWF)$) for a balanced evaluation based on both MEF and SWF
- illustrates our approach by an example of a model of intergenerational altruism with endogenous time preferences.

1. Introduction

- In **normative economics**, we seek to evaluate social states.
- For this purpose, the widely accepted evaluation methods are
 - ① the Pareto principle (and therefore Pareto efficiency)
 - ② Bergson-Samuelson social welfare function
- The basis for these methods is **welfarism** (e.g. the weak Pareto principle)
- Many important **models with endogenous preferences**
 - ① Intergenerational cultural preference transmission and formation
 - ② Habit formation models (addiction, finance, macro)
 - ③ Endogenous reference points

Two Difficulties of Normative Economics of Models with Endogenous Preferences

- 1 Preference ordering conditional on endogenous economic variables cannot be used as a yardstick for evaluation of social states.
 - In order to overcome this difficulty, Pollak (1978) defines unconditional preference ordering.
- 2 Given that we have many preferences, some preferences may be considered “better” in terms of moral virtue.
 - Even though the unconditional preference ordering is desirable in terms of exogeneity, it does not have to be the preference ordering that is most preferred in terms of moral virtue.

Moral Virtue Ethics

- We seek to solve the second difficulty by deviating from pure welfarism and adding a consideration for **virtue ethics**.
- Our approach is to add MEF and SOF to SWF.
- The idea of adding a consideration for virtue ethics is inspired by Sandel (2009), who promotes Aristotle's moral virtue ethics after considering other major alternatives.
- Moral virtue ethics: social justice is to promote cultivation and active uses of moral virtues.

According to Aristotle

- “moral virtue comes about as a result of habit.”
- “the virtues we get by first exercising them, as also happen in the case of the arts as well.”
- The purpose of politics for Aristotle is not to set up a framework of rights that is neutral among ends. It is to form good citizens and to cultivate good character.

The Plan of the Rest of This Talk

2. Related Literature
3. Limitations of Welfarism in Models with Endogenous Preferences
4. Moral Evaluation and Social Objective Functions
5. Conclusion

- Two papers in the *Journal of Economic Perspectives* in its Fall 2013 issue
 - ① Sandel (2013) argues that economists should bring more value judgment into economics.
 - ② Bruni and Sugden (2013) argue that classic and neo-classical economics already incorporate many elements of virtue ethics when "market virtues" are considered.
- In this paper, we work with a market virtue of patience as an example

- Various approaches to bring moral considerations into economics (see, e.g., Hausman and McPherson (1993) and Goldfarb and Griffith (1991) for surveys)
- Our approach is most closely related to the framework of meta-preferences (see, e.g., Sen (1974, 1977) and George (1984)).
- In this framework, moral judgments are expressed by rankings of preference rankings.
- The MEF applies this framework to rank conditional preference orderings in models with endogenous preferences for the purpose of introducing moral virtue ethics into this class of models.
- Our application of this framework is more related to the sense of duty emphasized by Sen than to the free choice emphasized by George.

- In the companion paper of Bhatt, Ogaki, and Yaguchi (2013), we apply the MEF and SOF to an endogenous altruism model à la Mulligan(1997)
- In that model, we consider a virtue of altruism toward a stranger.
- So our approach can also be applied to non-market virtues.
- Our paper is also related to the literature of behavioral normative economics especially because many models of behavioral economics explicitly or implicitly have endogenous preferences (e.e., prospect theory, when reference points are viewed as endogenous)
- The works in the literature are based on welfarism.

3. Limitations of Welfarism in Models with Endogenous Preferences

- We illustrate the second difficulty in applying the conventional welfare analysis to models with endogenous preferences discussed in the last section with an example.
- For this example, we introduce a bequest motive for the parent into Bhatt and Ogaki's (2012) tough altruism model.

3.1. A Tough Love Model with Bequest

The environments in the model

- 3 agents; the parent, the child, and the government
- 3 periods (childhood, work, and retirement for the child)
- The life of the parent and the child overlaps in the first two periods of the child's life.
- The parent not only cares about his own consumption, but is also altruistic toward the child: He assigns a weight of θ to the child's lifetime utility, where $0 < \theta < 1$.
- the parent receives an exogenous income, denoted by y^P , in period 1
- The parent receives no income in the last period of his life but simply divide savings from the previous period into his own consumption and bequest, which is taxed by the government.
- The parent maximizes utility over the last two periods of his life by choosing consumption in period 1 C^P , inter-vivos transfers (T), and bequest B , respectively.

- y_2^K : child's second period exogenous income, and we assume that she receives no income in the first and last period of her life.
- The child is assumed to be a non-altruist and derives utility only from her own consumption stream $\{C_t^K\}_{t=1}^3$
- The child's childhood consumption is assumed to be equal to the parent's inter-vivos transfers by social convention (alternatively, the child is assumed to be borrowing constrained in period 1 with a binding constraint).]
- There is no uncertainty in the economy.
- The government collects the bequest tax from the parent (τ is the bequest tax rate), and gives s as a lump sum subsidy. We assume that $\tau = s$.
- $x = (C_2^P, C_3^P, C_1^K, C_2^K, C_3^K)'$: an allocation in this economy.

Two important features of the tough love model

- 1 The child's time discount factor is endogenous:

$$\beta_K(C_1^K) \quad ; \quad \frac{d\beta_K}{dC_1^K} < 0.$$

If the child is spoiled by consumption of too many toys and sweets in her childhood, then she will grow to be impatient.

- 2 The parent does not use the child's endogenous discount factor. but uses a constant discount factor, $\beta_{t,P}$ to evaluate the child's lifetime utility,:

$$U_P(x) = u(C_2^P) + \tilde{\beta}u(C_3^P) + \theta \left(u(C_1^K) + \beta_P u(C_2^K) + \beta_P^2 u(C_3^K) \right) \quad (1)$$

- $\tilde{\beta}$ is the parent's own discount factor
- β_P is the discount factor used to evaluate the child's future utility, and represents the parent's value judgment as to how patient the child should grow to be.
- **Tough Love Motive** and **Temptation**: If β_P is sufficiently high, then the parent thinks that the child should grow to be patient, but is tempted to spoil the child.

Unconditional and Conditional Preference Orderings

The child's unconditional utility function that represents *unconditional preference ordering* is assumed to be

$$U_K(x) = u(C_1^K) + \beta_K(C_1^K)u(C_2^K) + \beta_K(C_1^K)^2u(C_3^K). \quad (2)$$

Given the state variable of the parent's transfer, T , the child's conditional utility function that represents *conditional preference ordering* is

$$U_K(x|T) = u(C_1^K) + \beta_K(T)u(C_2^K) + \beta_K(T)^2u(C_3^K). \quad (3)$$

The parent's optimization problem

The parent solves:

$$\begin{aligned} & \max_{C^P, T, B} \left[u(C^P) + \tilde{\beta} u(R(y^P - C^P - T) - B) \right] \\ & + \theta \left[u(T) + \beta_P u(C_2^{K*}) + \beta_P^2 u(R(y_2^K + (1 - \tau)B + s - C_2^{K*})) \right], \quad (4) \end{aligned}$$

subject to:

$$\{C_2^{K*}\} \equiv \arg \max_{C_2^K} \left[u(C_2^K) + \beta_K(T) u(R(y_2^K + (1 - \tau)B + s - C_2^K)) \right]. \quad (5)$$

where R is the gross interest rate.

The bequest tax rate affects the child's preferences

- In the above framework, the government influences the child's patience by changing the bequest tax rate.
- If the bequest tax rate is reduced, then the parent has more incentives to leave bequests than to make transfers to the child. Lower transfers in turn would imply a higher discount factor for the child.
- It should be noted that the government's objective to set the bequest tax rate may not have anything to do with affecting the child's preferences, but any nonzero tax rate is affecting her preferences.

3.2. Simulation Results

- We use the tough love altruism model to illustrate what we view as important limitations of the concept of Pareto efficiency for the models with endogenous preferences.
- For this purpose we will present simulation results the model with particular parameterizations.
- Using numerical methods we show that under certain parametric specifications a policy that gives a Pareto improvement in terms of the child's unconditional preference ordering may not lead to a Pareto improvement in terms of her conditional preference ordering.
- We then argue that a reasonable value judgment may not agree with that by the Pareto improvement.

$$u(x) = \frac{x^{1-\sigma}}{1-\sigma}. \quad (6)$$

The discount factor is given by:

$$\beta_K(T) = \beta_0 + \frac{1}{1+aT} \quad \text{where } a > 0 \text{ and } \beta_0 \leq 0. \quad (7)$$

- Imagine that $\tau_0 = -0.15$ is the original policy situation. The government has been promoting bequest by this negative bequest tax rate.
- Consider a policy change to eliminate this negative tax by setting the tax rate to be zero: $\tau_1 = 0$.
- Let $x(\tau_i)$ be the allocation under the bequest tax rate of τ_i .
- $U_P(x^P(\tau_i))$: the parent's utility under τ_i
- $U_K(x^K(\tau_i))$: the child's unconditional utility under τ_i
- $U_K(x^K(\tau_1)|T(\tau_0))$: the child's conditional utility given $T(\tau_0)$, the child's retrospective evaluation of her life time consumption stream under τ_i based on the grown-up child's utility function in the original policy situation.

Table 1: Pareto Efficiency and Policy Evaluation

Global Parameters

$$\theta = 0.51; R = 0.4; \sigma = 1.2; \beta_0 = -0.5$$
$$\tilde{\beta} = \beta_p = 0.99; y_2^K = 1; y^P = 10; a = 0.18$$

	<u>$\tau_0 = -0.15$</u>	<u>$\tau_1 = 0.0$</u>
$U_P(x^P(\tau_i))$	-16.8126	-16.8067
$U_K(x^K(\tau_i))$	-6.8551	-6.8241
$\beta_K(T(\tau_i))$	0.3107	0.3066
$U_K(x^K(\tau_1) T(\tau_0))$	-	-6.8604

- The parent gains utility from the policy change because he gets more utility from succumbing to temptation to spoil the child
- If the child is asked about the policy change during the childhood, then she prefers being spoiled under the zero tax rate.
- If the child after growing up to be patient under the negative tax policy is asked in retrospect about the policy change, then she prefers the negative tax rate.
- A reasonable value judgment may prefer the negative tax rate if the virtue of patience is valued.

4. Moral Evaluation and Social Objective Functions

- In this section we seek to introduce an element of moral virtue ethics into our normative analysis.
- We illustrate our approach by applying it to the tough love model.
- For this purpose, we use the same parametric specification used in the previous section.

Our Approach in the General Setting

- Consider an economy with N agents.
- x : a social state
- $U_i(x)$: an unconditional utility function of agent i
- $\psi_i(x)$: a function that express properties of the endogenous utility function of agent i .
- $SWF(U_1(x), \dots, U_N(x))$: a social welfare function.
- The moral evaluation function (MEF): a function $MEF(\psi_1(x), \dots, \psi_i(x))$ that evaluates deviations of $(\psi_1(x), \dots, \psi_i(x))$ from moral virtues.
- The social objective function(SOF): $SOF(MEF(x), SWF(x))$ is a function that evaluates social states by considering both the moral virtue aspect and the welfarism aspect.

Our Approach Applied to the Tough Love Model

A version of SOF:

$$SWF = U_p + U_k \quad (8)$$

A version of MEF is given by:

$$MEF = -(\beta_K(T) - 1)^2 \quad (9)$$

For the purpose of defining the SOF, we choose positive affine transformations of MEF and SWF: $MEF^* = b_1 + b_2 \times MEF$ and $SWF^* = b_3 + b_4 \times SWF$.

$$SOF = (MEF^*)^\alpha \times (SWF^*)^{1-\alpha} \quad (10)$$

where α is the parameter of the *SOF* that decides the weight given to moral virtue and welfare considerations.

Table 2: SOF vs SWF**Global Parameters**

$$\theta = 0.51; R = 0.4; \sigma = 1.2; \beta_0 = -0.5; \tilde{\beta} = \beta_p = 0.99$$
$$y_2^K = 1; y^P = 10; a = 0.18$$

τ	-0.55	-0.45	-0.15	0	0.1	0.2
β_K	0.3207	0.3183	0.3107	0.3066	0.3039	0.3024
$SOF(\alpha = 0)$	6.1865	6.2271	6.3323	6.3692	6.3843	6.3884
$SOF(\alpha = 0.2)$	3.7967	3.8120	3.8482	3.8578	3.8593	3.8554
$SOF(\alpha = 0.3)$	2.9743	2.9825	2.9998	3.0024	3.0007	2.9951
$SOF(\alpha = 0.4)$	2.3301	2.3335	2.3385	2.3367	2.3330	2.3268
$SOF(\alpha = 0.5)$	1.8254	1.8258	1.8230	1.8185	1.8139	1.8075
$SOF(\alpha = 0.6)$	1.4300	1.4285	1.4211	1.4153	1.4103	1.4042
$SOF(\alpha = 1.0)$	0.5386	0.5353	0.5248	0.5192	0.5154	0.5114

5. Conclusion

- In the approach we proposed, moral value ethics is used in combination with welfarism.
- Many economists seem to think that moral value ethics is not desirable for public policy evaluations because they do not want the government to influence people's preferences.
- However, in our model, the government does influence the child's preferences as long as the bequest tax rate is not zero.
- The optimum tax rate is positive when the SWF is maximized.
- On the other hand, the optimum tax rate is zero when the SOF is maximized with $\alpha = 0.3$.
- Thus, introducing moral virtue ethics may result in a policy that does not affect people's preferences.
- Introduction of moral virtue ethics does not necessarily mean that the government starts to influence people's preferences.

Different Concepts of Happiness

- Our approach is related to Economics of Happiness.
- Three concepts of Happiness in the 2013 "OECD Guideline on Measuring Subjective Well-being" (a result of the committee involving Stiglitz and Sen):
 - 1 Emotional happiness (momentary feelings)
 - 2 Life Evaluation (arguably the closest to utility)
 - 3 Eudaimonia (Aristotle's concept of happiness=a good life=cultivating virtues and abilities and derive happiness from feeling fulfillment in serving his community by using his virtues and abilities)
- Welfarism based on the weak Pareto principle focuses on utility based on consumption and leisure. The ideal is to lay down and watch TV for the rest of our lives if we can.
- For Eudaimonia, the ideal is to work hard to acquire virtues and abilities and to serve the society.
- Our approach gives a balance to welfarism based on utility (SOF) and eudaimonia (MEF)
- Here we interpret MEF is a measure of eudaimonia

- Any government policy may be influencing people's preferences even when the government does not intentionally do so.
- In order to examine whether or not any policy is influencing people's preferences, we need empirical work on models with endogenous preferences in which such policy can affect preferences.
- For the tough love model with the bequest tax rate, there already exist some empirical work.
- A starting point of any model with endogenous time discounting is that genetic factors do not completely determine time discounting. Using a unique data set of twins in Japan, Hirata et al. (2009) found empirical evidence in favor of this.
- Kubota et al. (2013, 2014) find empirical evidence that is consistent with the tough love model, using unique survey data for U.S. and Japan.