Farzin, Y. Hossein; Akao, Ken-Ichi

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Non-pecuniary Value of Employment and Individual Labor Supply

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Non-pecuniary Value of Employment and Individual Labor Supply

Y. Hossein Farzin and Ken-Ichi Akao

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Y. Hossein Farzin, Department of Agricultural and Resource Economics, University of California

Ken-Ichi Akao, School of Social Sciences, Waseda University

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Non-pecuniary Value of Employment and Individual Labor Supply

Summary
Recognizing that people value employment not only to earn income to satisfy their consumption needs but also as a means of community involvement that provides socio-psychological (non-pecuniary) benefits, we show that once the non-pecuniary benefits of employment are incorporated in the standard individual's utility function, then at very low income levels employment can be a source of utility, inducing individuals to supply labor to the extent possible. We also show the conditions under which a greater non-pecuniary effect of employment generates a larger individual labor supply.

Keywords: Non-pecuniary effects, Employment value, Labor supply

JEL Classification: D62, J22, I31

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Address for correspondence:
Y. Hossein Farzin
Department of Agricultural and Resource Economics
University of California
Davis, CA 95616
USA
E-mail: farzin@primal.ucdavis.edu
1 Introduction

If being employed is not only a source of earning income to satisfy materialistic needs, but also the principal means of community involvement, then employment provides socio-psychological (or non-pecuniary) benefits as well. However, the standard theory of individual labor supply focuses on an individualistic notion of work and abstracts from the non-pecuniary benefits. It considers work as a source of disutility, and any time off work (leisure) as source of utility, assuming that utility always decreases with hours worked.\(^1\) Standard labor-leisure choice theory asks how an individual makes the trade between the consumption made possible by work and leisure, or time not allocated to work, but ignores the socio-psychological effects of employment. This shortcoming of the standard theory, which treats labor time merely as a means of earning income, is lucidly expressed by Krugman (1998, P.15): “Economics textbooks may treat the exchange of labor for money as a transaction much like the sale of a bushel of apples, but we all know that in human terms there is a huge difference. A merchant may sell many things, but a worker usually has only one job, which supplies not only his livelihood but often much of his sense of identity. An unsold commodity is a nuisance, an unemployed worker a tragedy”. This raises a basic question: How is the individual labor supply decision affected by the non-pecuniary effects of work?

In this short paper, we go beyond the standard neoclassical income-leisure choice, where the value of leisure is the cost of income foregone, and follow sociologists and psychologists (see, for example, Whelan (1994) and Agerbo et al (1997)), who recognize that, in addition to being a source of income and material satisfaction, employment can provide non-materialistic individual satisfactions. We extend the standard economic analysis by incorporating the positive non-pecuniary effects of employment on individual well-being. As an important extension of labor-leisure choice, we show that labor supply can be a source of utility at very low income levels, thus inducing individuals to supply labor as much as feasible.

\(^1\) See, for example, Deaton and Muellbauer (1980, Ch. 4 and 11) and Varian (1984, Ch. 6) for a standard treatment of labor supply in household utility function.
The next section briefly discusses the non-pecuniary value of employment to individuals. Section 3 incorporates this additional value of employment in the standard utilitarian model of individual income-leisure choice. Section 4 presents concluding remarks.

2 Non-pecuniary Value of Employment

Employment is a means for people to connect and become involved with communal activities. In turn, community involvement directly or indirectly brings the individual a sense of belonging, self-worth and respect, identity, recognition, reputation, and status, all of which are ingredients of one’s quality of life and satisfaction.\(^2\) Being employed is an essential determinant of happiness; the unemployed have significantly lower well-being scores in the social psychological literature (see, for example, Fryer and Payne (1986), Winkelmann and Winkelmann (1998), Feather (1990), and Argyle (2001)). Further, Lucas, \textit{et al} (2004), find strong statistical evidence that the adverse effect of unemployment on individuals’ subjective well-being persists even after they become reemployed. More interestingly, empirical work in labor economics literature has established that unemployment is strongly negatively correlated with individual well-being, \textit{even after controlling for income and other individual characteristics}. In other words, the unemployed are generally worse off than the employed, and by more than their lower income would predict (see, for example, Clark and Oswald (1994) and Clark (2003) and the references cited therein). Additionally, the fact that even in advanced industrial countries, where social safety nets cushion joblessness, some individuals prefer to be employed with earnings less than the unemployment benefit reveals the existence of non-pecuniary value of employment.\(^3\)

\(^2\) For a general and insightful treatment of the effects of identity on economic behavior and outcomes, see Akerlof (2000).
\(^3\) Moffitt (1983) finds strong empirical support for the existence of welfare stigma among eligible but non-participants in AFDC-U, the welfare program for which families with an unemployed male were eligible.
3 Extended Model of Labor Supply

Let \( U = U(c, z, m) \) be the individual utility function, where \( c \geq 0 \) is consumption, \( z \geq 0 \) is leisure time, and \( m \geq 0 \) captures the non-pecuniary effects (NPE) of employment. We assume that one’s involvement with the community, and hence the NPE, increases with the labor time \( \ell \geq 0 \) (i.e. \( m'(\ell) > 0 \)).\(^4\) We make the usual assumptions that the utility function is increasing in each of its arguments (i.e., \( U_c > 0, U_z > 0, U_m > 0, U_c \to \infty \) as \( c \to 0 \)) at decreasing rates (i.e., \( U_{cc} < 0, U_{zz} < 0, U_{mm} < 0 \)) and that both leisure and NPE are complements with consumption (i.e., \( U_{cz} > 0, U_{cm} > 0 \)).\(^5\) Additionally, although not essential to our analysis, we assume that \( U_{zm} \geq 0 \), implying that leisure and NPE are complements in the individual’s preferences: the greater the non-pecuniary effects of one’s employment the better one would appreciate additional leisure time. Of course, one can think of some extreme preferences, such as those of either ‘isolationist” or “community devout” persons, for which leisure and NPE can be substitutes.

Let \( T \geq 0 \) be the individual’s maximum available time, so that \( z = T - \ell \). Then, we can rewrite \( U \) in the reduced form of

\[
u(c, \ell) = U(c, T - \ell, m(\ell)) \tag{3.1}\]

The overall, or net, marginal utility of labor time is

\[
\frac{\partial u}{\partial \ell} = dU / d\ell = -U_z + U_m m'(\ell) \tag{3.2}
\]

where the first term on the right-hand side is the marginal disutility of labor and the second term is the marginal utility of labor that arises from the non-pecuniary value

\(^4\) Beyond the assumption that \( m'(\ell) > 0 \), it is difficult to be sure about the curvature of this function, although it seems plausible to assume that beyond certain level, the marginal value of NPE declines as labor time increases, i.e., that \( m(\ell) \) becomes an increasing concave function.

\(^5\) Wherever no confusion arises, a subscript under a variable denotes partial derivatives. Also, unless stated otherwise, throughout the paper we assume that all functions are at least twice continuously differentiable.
of employment. It seems plausible to think that, at any given consumption level $c$, for sufficiently large values of $\ell$ the first term dominates the second one (implying that at the margin labor becomes a net source of disutility, $u_r(c, \ell) \equiv \partial u / \partial \ell < 0$) and vice versa for sufficiently small values of $\ell$. So, we assume:

(A1): For each $c > 0$, there exists a unique $\hat{\ell}(c) > 0$ such that

$$\frac{\partial u(c, \ell)}{\partial \ell} = -U + U_m m'(\ell) = 0 \quad \text{and} \quad u_r(c, \ell) > 0 \quad \text{if} \quad \ell > \hat{\ell}(c) \quad (3.3)$$

That is, $\hat{\ell}(c)$ is the threshold labor time, at consumption level $c$, so that the marginal disutility of labor exactly offsets its marginal utility? In Figure 1, $\hat{\ell}(c)$ is shown by the dashed curved. Furthermore, we assume that:

(A2): $\hat{\ell}(c)$ is decreasing. \(^6\)

This assumption implies that the richer is a household the lower is the threshold labor time where labor becomes a net source of disutility. This seems quite plausible; the higher the living standard of a household the more distasteful become the additional working hours (the larger the marginal disutility of work) and therefore the smaller will be the critical working time $\hat{\ell}$. It can be shown that if $u$ is strictly quasi-concave, then (A.2) is equivalent to\(^7\)

$$u_{c \ell}[c, \hat{\ell}(c)] = \frac{\partial}{\partial c} \left[ U_m m'(\ell) - U_z \right] < 0 \quad \text{for all} \quad c > 0, \quad (3.4)$$

so that (A2) boils down to assuming that as consumption rises the marginal value of leisure (or the marginal disutility of work) increases by a greater amount than does the

\(^6\) An example of a utility function satisfying (A1) and (A2) is

$$u(c, \ell) = \eta \pi - \eta c^{\eta} \pi^{1-\eta}, \quad 0 < \eta < \eta c < 1, \quad \pi > 0.$$  

Also, it is easy to show that this function is strictly quasi-concave.

\(^7\) To see this, totally differentiate $u_{c \ell}(c, \hat{\ell}(c)) = 0$ to have $\partial \hat{\ell}(c)/\partial c = -u_{c \ell}(c, \hat{\ell}(c))/u_{c \ell \ell}(c, \hat{\ell}(c))$. On the other hand, $u$ is strictly quasi-concave and thus, $2u_{c \ell} u_{c \ell \ell} - [u_{c c}(u_{c \ell})^2 + u_{c \ell}(u_{c \ell})^2] > 0$, which upon substituting $u_{c \ell}(c, \hat{\ell}(c)) = 0$ yields $u_{c \ell \ell}(c, \hat{\ell}(c)) < 0$. That is, $u_{c \ell \ell}(c, \hat{\ell}(c)) < 0$. Thus,

$$\frac{\partial \hat{\ell}(c)}{\partial c} = -u_{c \ell}(c, \hat{\ell}(c))/u_{c \ell \ell}(c, \hat{\ell}(c)) < 0 \quad \Leftrightarrow \quad u_{c \ell \ell}(c, \hat{\ell}(c)) < 0.$$  

4
marginal non-pecuniary value of work. Noting from (3.3) that at along the \( \hat{\ell}(c) \) locus, one has \( m'(l) = U_z / U_m \), condition (3.4) can be rewritten as

\[
u_c[c, \hat{\ell}(c)] = \frac{U_z}{c} \left[ c U_m - c U_z \right] < 0 \quad \text{all } (c, \hat{\ell}(c)) > 0 \quad (3.4')\]

That is, for \( \hat{\ell}(c) \) to be decreasing in \( c \), at the critical level of labor, the elasticity of marginal value of leisure with respect to consumption (the second-term in the bracket) should exceed that of the non-pecuniary effects (the first term in the bracket). Figure 1 depicts the indifference curves associated with the utility function \( u(c, \ell) \) under assumptions (A1) and (A2). Above the curve of \( \hat{\ell}(c) \), the indifference curves slope upward everywhere since \( u_c(c, \ell) < 0 \), indicating that the marginal utility of leisure is greater than that of the non-pecuniary effects. The exact opposite is true everywhere below the curve of \( \hat{\ell}(c) \).  

Now, consider an individual’s decision problem. Let \( w > 0 \) be the given wage rate in terms of the consumption good whose price is normalized to be \( p = 1 \). Then the problem is

\[
\max_{c, \ell} u(c, \ell) \\
\text{subject to } \quad w\ell - c \geq 0, \quad c \geq 0, \\
\text{and } \quad T - \ell \geq 0, \quad \ell \geq 0 \\
\text{maximize } (c^*, \ell^*) \quad (3.5)
\]

The Lagrangian is \( u(c, \ell) + \mu(w\ell - c) + \nu(T - \ell) \), where \( \mu \) and \( \nu \) are the Lagrange multipliers. Given our assumption that \( u_c \to \infty \) as \( c \to 0 \), implying \( c^* > 0 \), and hence \( \ell^* > 0 \), the necessary conditions for optimal \((c^*, \ell^*)\) are

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8 As depicted in Figure 1, it seems plausible to assume that no matter how high one’s consumption level, some amount of time allocated to work is always desirable (i.e., \( \lim_{c \to \infty} \hat{\ell}(c) = \ell \geq 0 \)) and that at the subsistence level of living (\( c \)) the marginal value of leisure tends to zero, implying that one would supply as much labor as feasible (i.e., \( \lim_{c \to \ell} \hat{\ell}(c) = \ell \), where \( 0 \leq \ell < \infty \)).
\[ u_i(c^*, \ell^*) - \mu = 0; \]
\[ u_i(c^*, \ell^*) + \mu w - \nu = 0; \]
\[ w\ell^* - c^* = 0, \quad \mu > 0; \]
\[ \nu(T - \ell^*) = 0, \quad \nu \geq 0. \]  

(3.6)

For the optimal \((c^*, \ell^*)\), we have the following three cases:

Case (1): \(\nu = 0\) so that \(\ell^* < T\) and \(u_i(c^*, \ell^*) < 0\),

Case (2): \(\nu > 0\) so that \(\ell^* = T\), and \(u_i(c^*, \ell^*) \leq 0\),

Case (3): \(\nu > 0\) so that \(\ell^* = T\), and \(u_i(c^*, \ell^*) > 0\).

Cases (1) and (2) correspond to the assumption of the standard model of labor-leisure choice, where labor is regarded only as a source of disutility. By contrast, labor is a source of utility in Case (3), which is the case of interest to us. Figure 1 depicts the three cases. As shown there, there is a critical wage rate \(\hat{w} \equiv \ell^{-1}(T)/T\) such that Case (3) holds if \(w \leq \hat{w}\). We thus can state the following proposition:

**Proposition 1:** Once the standard theory is extended to include the non-pecuniary effects of employment in the individual’s utility function, then at very low wage rates employment becomes a net source of utility, inducing the individual to supply labor to the extent feasible.

Proposition 1 implies a supply curve that differs significantly from the one derived under the usual assumptions from the standard theory: whereas in the traditional model, the labor supply curve first rises with the wage rate, here it begins with a vertical section at \(\ell = T\) (completely inelastic labor supply) at wage rates below \(\hat{w}\), although, as is well known, for \(w > \hat{w}\) the labor supply curve could take various shapes including backward ending.
Two further questions of interest are: First, how is the individual’s labor supply affected by the extent of the NPE an individual derives from employment? Specifically, does a greater NPE imply a greater individual labor supply? Second, as a special interesting case of the this question, would labor supply always be greater if the individual derives positive NPE from work than if, as assumed in the standard theory, she does not? To answer these questions, let, as before, $m(l)$ capture all the NPE as a function of time worked, where it is assumed that $m'(l) > 0$ and $m''(l) \leq 0$. The extent to which the individual considers these effects is indicated by the parameter $\alpha \in [0,1]$. Thus, $\alpha = 0$ if, as assumed in the standard theory, the individual does not consider the NPE of her working time, and $\alpha = 1$ if she fully takes these effects into account. More generally, let $n = am(l)$ be the extent to which the individual accounts for the NPE, and $U(c,z,n)$ be her utility function, which she maximizes subject to the time and budget constraints given in (3.5). Denoting the value function by $v(l', \alpha) \equiv \max U(wl, T - l, am(l))$, the FOC for an interior optimum is

$$\frac{\partial v(l', \alpha)}{\partial l} = wh - U_z + U_n am(l') = 0$$

(3.7)
where for notational convenience the arguments of the utility function 
\( c = w_l, z = T - l, n = \alpha m(l) \) are suppressed.

Equation (3.7) is solved implicitly for the optimum labor supply \( l^*(\alpha) \) as a function of \( \alpha \). So, by differentiating (3.7) implicitly with respect to \( \alpha \) and collecting terms, we obtain

\[
\frac{\partial l^*}{\partial \alpha} = \frac{-N}{D} \tag{3.8}
\]

Where \( N \equiv [wU_{cn} - U_{zn} + \alpha m(l^*)U_{nn}]m(l^*) + U_n m'(l^*) \) and

\[
D \equiv [w^2U_{cc} - 2wU_{cz} + U_{zz} + (wU_{nc} - U_{nz})\alpha m'(l^*) + U_n \alpha m''(l^*) + \alpha m'(l^*)(wU_{cn} - U_{zn} + U_{nn} \alpha m'(l^*))]
\]

Since by assumption \( U_{cn} > 0 \) and \( U_{zn} > 0 \), the sign of \( \frac{\partial l^*}{\partial \alpha} \) is generally ambiguous.

However, when the utility function is additive separable in \( n \), implying \( U_{cn} = U_{zn} = 0 \), we have

\[
N \equiv \alpha m'(l^*)U_{nn} + m'(l^*)U_n = m'(l^*)U_n [1 + \alpha m(l^*)U_{nn}]U_n
\]

\[
D \equiv w^2U_{cc} - 2wU_{cz} + U_{zz} + U_n \alpha m''(l^*) + U_{nn} [\alpha m'(l^*)]^2 < 0 \tag{3.8'}
\]

So that, from (3.8),

\[
\frac{\partial l^*}{\partial \alpha} \begin{cases} > 0 \quad \text{iff} \quad E_{U_n} \equiv -\alpha m(l^*) \frac{U_{nn}}{U_n} \begin{cases} < \text{iff} \quad \alpha \end{cases} \end{cases}
\tag{3.9}
\]

where \( E_{U_n} \) is the elasticity of marginal utility of NPE.

Thus, by (3.9), the answer to the first question posed above can be stated as

**Proposition 2:** If, but not only if, the individual preferences are additive separable in non-pecuniary effects of employment, then the greater the non-pecuniary effects (i.e. the larger \( \alpha \) ) the greater will be the individual’s labor supply provided that the elasticity of the marginal utility of NPE is less than one.\(^9\)

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\(^9\) While we have focused on the positive non-pecuniary effects of employment, it should be clear that the reverse of the result furnished in Proposition 2 holds when the individual associates negative non-pecuniary effects with work, thus inflicting disutility.
The additively separable preferences in Proposition 2 can generally take the form of \( U(c, z, n) = U^S(c, z) + U^N(n) \), where \( U^S(c, z) \) is the standard utility function where utility depends only on consumption and leisure, and \( U^N(n) \) denotes the utility from NPE of employment. This has a number of interesting implications. For example, as can be seen from (3.9), when \( U^N(n) = B \), that is, the utility of the non-pecuniary effects the individual derives from work is simply a flat amount and hence invariant with hours of work, the individual’s labor supply is not affected by the NPE, and is determined according to the standard theory. It is also clear that if the utility of NPE increases linearly with hours of work, i.e. \( U^N(n) = \beta n \), \( \beta > 0 \), then \( E_{t^*} = 0 \) for all \( n > 0 \), so that, by (3.9), the individual will supply more labor than she would in the absence of NPE.

Furthermore, to answer the second question posed above, we note that for the special case when the individual does not take any of the NPE of her employment into account \( \alpha = 0 \), and hence \( E_{u_n} = -\alpha m(t^*) \frac{U_{nn}}{U_n} = 0 \), so that, by (3.9), \( \frac{\partial t^*}{\partial \alpha} |_{\alpha=0} > 0 \). Thus,

**Corollary:** When preferences are additively separable in non-pecuniary effects of employment, the individual’s labor supply will be greater when she takes the non-pecuniary effects into account \( (\alpha > 0) \) than when, as assumed in the standard theory, she does not \( (\alpha = 0) \).

4. Concluding Remarks

Once the standard theory of individual labor supply is extended to allow for socio-psychological (non-pecuniary) value of work, very poor individuals may choose to work at a maximum feasible level. This result may help to explain why it is difficult to downsize labor even when attractive unemployment (or retirement) benefits are available. It may also explain why in poor rural communities that depend crucially on a natural resource for their livings there may be too much effort spent on extracting the resource, thus leading to its exhaustion in a finite time. We have also shown the conditions under which a greater non-pecuniary effect of employment leads to a larger individual labor supply.
The simple theoretical model of this paper can be extended in several interesting ways. For example, one can investigate how the individual’s labor supply decision would be affected by allowing, for example, for individual’s non-wage income (wealth) in addition to wage income, or for other sources of non-pecuniary benefits than employment (for example, charitable donations or voluntary work), or for uncertainty about the wage rate. It would also be interesting to conduct empirical studies to test whether the non-pecuniary effects of employment is stronger among rural community workers than among urban industrial ones, and how it may be affected by idiosyncratic factors such as individual’s age, gender, education level, marital status, or household size.
References


<table>
<thead>
<tr>
<th>NOTE DI LAVORO PUBLISHED IN 2003</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
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</tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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<tr>
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</tr>
<tr>
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<tr>
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<tr>
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</tr>
</tbody>
</table>
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Guillaume HAERINGER and Myrna WOODERS

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CTN 43.2004
CTN 44.2004
NRM 45.2004
NRM 46.2004
NRM 47.2004
NRM 48.2004
CCMP 49.2004
GG 50.2004
CTN 51.2004
SIEV 52.2004
SIEV 53.2004
NRM 54.2004
NRM 55.2004
NRM 56.2004
CCMP 57.2004
CCMP 58.2004
NRM 59.2004
NRM 60.2004
CCMP 61.2004
NRM 62.2004
NRM 63.2004
CCMP 64.2004
NRM 65.2004
ET A 66.2004
GG 67.2004
NRM 68.2004
NRM 69.2004
CTN 70.2004
IEM 71.2004
IEM 72.2004
SIEV 73.2004
CCMP 74.2004
ETA 75.2004
CTN 76.2004
CCMP 77.2004
IEM 78.2004
CTN 79.2004
NRM 80.2004
CTN 81.2004

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<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Editor</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Climate Change Modelling and Policy</td>
<td>Marzio Galeotti</td>
</tr>
<tr>
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<td>Global Governance</td>
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</tr>
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<td>Sustainability Indicators and Environmental Valuation</td>
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</tr>
<tr>
<td>NRM</td>
<td>Natural Resources Management</td>
<td>Carlo Giupponi</td>
</tr>
<tr>
<td>KNOW</td>
<td>Knowledge, Technology, Human Capital</td>
<td>Gianmarco Ottaviano</td>
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<tr>
<td>IEM</td>
<td>International Energy Markets</td>
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<td>CSRM</td>
<td>Corporate Social Responsibility and Management</td>
<td>Sabina Ratti</td>
</tr>
<tr>
<td>PRIV</td>
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<td>Bernardo Bortolotti</td>
</tr>
<tr>
<td>ETA</td>
<td>Economic Theory and Applications</td>
<td>Carlo Carraro</td>
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<td>CTN</td>
<td>Coalition Theory Network</td>
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</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
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<th>Title</th>
<th>Editor</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Climate Change Modelling and Policy</td>
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</tr>
<tr>
<td>GG</td>
<td>Global Governance</td>
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</tr>
<tr>
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