A Study of Consumption Decisions and Wealth, Individual Data, Political Economy and Theory

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James Curtis Jr presents decision-making considerations of “individuals” in an economy with grouped individuals, owners of firms, and social planner(s), conditional on wealth constraints with applied social economic considerations.

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I. Case One: Agent-Specific Constraints

$$\mathbf{MAX}_{\{x_{nij} \geq 0\}} \quad \mathbf{U} = \gamma_{\mathbf{U}} \Pi_{SP=1} \boldsymbol{U}_{SP}{}^{\theta(SP)}$$

subject to $\mathbf{X}_{ijSP} \leq \mathbf{E}_{ijSP}$

Let: $\boldsymbol{U}_{SP} = \gamma_{\boldsymbol{U}(SP)} \Pi_{j=1}(\Pi_{i=1} \boldsymbol{u}_{ij(SP)}{}^{\theta ij(SP)})$

such that $\mathbf{U} \; = \boldsymbol{\gamma^*} \Pi_{SP=1}[\Pi_{j=1}(\Pi_{i=1} \boldsymbol{u}_{ij(SP)}{}^{\boldsymbol{\theta^*}})]$

where $\boldsymbol{\gamma^*} = \gamma_{\mathbf{U}} \; \Pi_{SP=1} \; \gamma_{\boldsymbol{U}(SP)}$

$\boldsymbol{\theta^*} = \theta_{\,ij(SP)} \theta_{(SP)}$

Further, let: $\boldsymbol{u}_{ijSP} = \gamma_{\boldsymbol{u}ijSP} \Pi_{n=1}(\boldsymbol{x}_{(n)ij} - s_{\boldsymbol{x}(n)ijSP})^{\alpha(n)}$

such that $\mathbf{U} \; = \boldsymbol{\gamma'} \Pi_{SP=1}[\Pi_{j=1}(\Pi_{i=1}(\Pi_{n=1}(\boldsymbol{x}_{(n)ij} - s_{\boldsymbol{x}(n)ijSP})^{\boldsymbol{\alpha(n)'}}))]$

where $\boldsymbol{\gamma'} = \gamma_{\mathbf{U}} \; [\Pi_{SP=1} \gamma_{\boldsymbol{U}(SP)} \; (\Pi_{j=1}(\Pi_{i=1} \; \gamma_{\boldsymbol{u}ijSP}))]$

$\boldsymbol{\alpha(n)'} = \alpha(n) \theta_{\,ij(SP)} \theta_{(SP)}$

Further, let: $\mathbf{E}_{ijSP} \; = \Sigma_{n=1} \; \boldsymbol{p}_{\boldsymbol{x}(n)} \mathrm{e}_{\boldsymbol{x}(n)ijSP} + \boldsymbol{p}_{\boldsymbol{x}(l)} \mathrm{e}_{\boldsymbol{x}(l)ij} + \mathrm{e}_{ijSP}$ *for all* $n = 1,2,..,E \; \neq \; l$

Further, let: $\mathbf{X}_{\,ij} = \Sigma_{n=1} \; \boldsymbol{P}_{\boldsymbol{x}(n)j} \boldsymbol{x}_{(n)ij} + \boldsymbol{p}_{\boldsymbol{x}(l)j} \boldsymbol{x}_{(l)ij}$

where $\boldsymbol{P}_{\boldsymbol{x}(n)\,j} = \boldsymbol{p}_{\boldsymbol{x}(n)}(1 + \delta_{\boldsymbol{x}jg} + \Sigma_{\,q=1} t'_{\,q\boldsymbol{x}(n)})$

$\boldsymbol{P}_{\boldsymbol{x}(E)} = \eta(\mathrm{B})$

Therefore, the decision becomes:

$$\mathbf{MAX}_{\{x_{nij} \geq 0\}} \quad \mathbf{U} = \gamma' \Pi_{SP=1}[\Pi_{j=1}(\Pi_{i=1}(\Pi_{n=1}(\boldsymbol{x}_{nij} - s_{\boldsymbol{x}(n)ijSP})^{\boldsymbol{\alpha(n)'}}))]$$

subject to $\Sigma_{n=1} \; \boldsymbol{P}_{\boldsymbol{x}(n)\,j} \; \boldsymbol{x}_{(n)ij} + \boldsymbol{p}_{\boldsymbol{x}(l)j} \boldsymbol{x}_{(l)ij} \leq \Sigma_{n=1} \; \boldsymbol{p}_{\boldsymbol{x}(n)} \mathrm{e}_{\boldsymbol{x}(n)ijSP} + \boldsymbol{p}_{\boldsymbol{x}(l)} \mathrm{e}_{\boldsymbol{x}(l)ij} + \mathrm{e}_{ijSP}$

Further, let: $\Sigma_{n=1} \; \boldsymbol{p}_{\boldsymbol{x}(n)} \mathrm{e}_{\boldsymbol{x}(n)ijSP} + \Sigma_{v=1} \boldsymbol{w}_{\boldsymbol{v}} \boldsymbol{h}_{\boldsymbol{v}ij} = \mathbf{W}_{ij}$

where $\boldsymbol{w}_{v} = \boldsymbol{p}_{\boldsymbol{x}(l)}$

$\boldsymbol{h}_{vij} = \mathrm{e}_{\boldsymbol{x}(l)ij} - \boldsymbol{x}_{(l)ij}$

II. Case Two: One Universal Constraint

MAX $\{x_{nij} \geq 0\}$ $\mathbf{U} = \gamma_{\mathbf{U}} \Pi_{SP=1} U_{SP}^{\theta(SP)}$

Subject to $\mathbf{X} \leq \boldsymbol{\varepsilon}$

Further, let: $\boldsymbol{\varepsilon} = \Sigma_{SP=1} E_{SP} + \mathbf{e}$

$E_{SP} = \Sigma_{i=1} \Sigma_{j=1} E_{ijSP} + \mathbf{e}_{SP}$

$E_{ijSP} = E_{x(n)ijSP} + \Sigma_{i=1} \Sigma_{j=1} p_{x(l)} e_{x(l)ij} + e_{ij}$ *for all* $n = 1,2,..,E \neq l$

$E_{x(n)ijSP} = \Sigma_{n=1} p_{x(n)} e_{x(n)ijSP}$

such that $\boldsymbol{\varepsilon} = \Sigma_{i=1} \Sigma_{j=1} \Sigma_{n=1} p_{x(n)} e_{x(n)ijSP} + \Sigma_{i=1} \Sigma_{j=1} p_{x(l)} e_{x(l)ij} + \mathbf{e}^*$

where $\mathbf{e}^* = \mathbf{e} + \Sigma_{SP=1} \mathbf{e}_{SP} + \Sigma_{i=1} \Sigma_{j=1} e_{ij}$

Further, let: $\mathbf{X} = \Sigma_{i=1} \Sigma_{j=1} \Sigma_{n=1} P_{x(n)j} x_{(n)ij} + \Sigma_{i=1} \Sigma_{j=1} p_{x(l)j} x_{(l)ij}$

where $P_{x(n)j} = p_{x(n)}(1 + \delta_{xjg} + \Sigma_{q=1} t'_{qx(n)})$

$P_{x(E)} = \eta(\mathrm{B})$

Therefore, the decision becomes:

MAX $\{x_{nij} \geq 0\}$ $\mathbf{U} = \gamma' \Pi_{SP=1}[\Pi_{j=1}(\Pi_{i=1}(\Pi_{n=1}(x_{nij} - s_{x(n)ijSP})^{\alpha(n)'}))]$

subject to $\Sigma_{i=1} \Sigma_{j=1} \Sigma_{n=1} P_{x(n)j} x_{(n)ij} + \Sigma_{i=1} \Sigma_{j=1} p_{x(l)j} x_{(l)ij} \leq \Sigma_{i=1} \Sigma_{j=1} \Sigma_{n=1} p_{x(n)} e_{x(n)ijSP} + \Sigma_{i=1} \Sigma_{j=1} p_{x(l)} e_{x(l)ij} + \mathbf{e}^*$

Let: $\Sigma_{i=1} \Sigma_{j=1} \Sigma_{n=1} p_{x(n)} e_{x(n)ijSP} + \Sigma_{v=1} \Sigma_{i=1} \Sigma_{j=1} w_v h_{vij} = \Sigma_{i=1} \Sigma_{j=1} \mathbf{W}_{ij}$

where $w_v = p_{x(l)}$

$h_{vij} = e_{x(l)ij} - x_{(l)ij}$

III. A Model of Wealth

Let:

$$\mathbf{W}_{ij} = (1\text{-}g\text{-}\Sigma_{q=1}t_{q\mathbf{I}})\mathbf{I}_{ij} + \mathbf{A}_{ij} + (1\text{-}g)(\Sigma_{q=1}S_{qij} + C_{ij}) - G_{ij}$$

$$\mathbf{I}_{ij} = \Sigma_{v=1}\, \boldsymbol{w'}_v\, \boldsymbol{h'}_{vij}$$

$$\boldsymbol{w'}_v = \boldsymbol{w}_v - \delta_{w(v)jg} - \Sigma_{q=1}t'_q$$

$$\boldsymbol{h'}_{vij} = \boldsymbol{h}_{vij} - \delta_{h(v)jg}$$

$$\mathbf{A}_{ij} = \left[\, \mathbf{A_0}_{ij}(1\text{-}g\text{-}\Sigma_{q=1}t_{qA(0)}) + \Sigma_{a=1}N_{(1,a)ij}(R_i,M_i)(1\text{-}g\text{-}\Sigma_{q=1}t_{qN(1,a)})\right.$$

$$\left. + \Sigma_{m=1}\gamma_{\pi(m)ij}\, \boldsymbol{\pi}_{Z(m)ij}(1\text{-}g)\,\right] (1+ \gamma_{\rho ij}\rho)(1\text{-}\Sigma_{q=1}t_{q\rho})$$

$$+ \Sigma_{b=1}N_{(2,b)ij}(R_i,M_i)(1\text{-}g\text{-}\Sigma_{q=1}t_{qN(2,b)}) - G_{\rho ij} - \delta_{Ajg}(\rho,\mathbf{A_0}_{ij})$$

$$\mathbf{A_0}_{ij} = A_{0ij}(\boldsymbol{x}_{n0},\gamma_{\mathbf{W}(0)ijF}\mathbf{W}_{0F}(I_0(\boldsymbol{w}_0,\boldsymbol{h}_0,S_0),A_0(A_{(-1)},N_0(R_0,M_0),\gamma_{0\,\pi(m)}\pi_{0Zm}),t_{0q},\delta_{0g},\gamma_{0\rho}),R,M)$$

$$\boldsymbol{\pi}_{\mathbf{Z}(m)ij} = (\mathbf{P}_{Z(m)j}\mathbf{Z}_{mij} + \Sigma_{q=1}S_{qZ(m)ij} - \Sigma_{d=1}\boldsymbol{P}_{Z(m,d)j}\boldsymbol{X}_{Z(m,d)ij})\,(1 - \Sigma_{q=1}t_{q\,\pi(m)})$$

$$\boldsymbol{P}_{\mathbf{Z}(m)\,j} = \boldsymbol{p}_{\mathbf{Z}(m)}(1 - \delta_{\mathbf{Z}(m)jg} + \Sigma_{q=1}t'_{q\mathbf{Z}(m)})$$

$$\mathbf{Z}_{mij} = \gamma_{Zmij}\Pi_{d=1}\boldsymbol{X}_{Z(m,d)ij}^{\ \beta(d)}$$

$$\boldsymbol{P}_{\mathbf{Z}(m,d)\,j} = \boldsymbol{p}_{\mathbf{Z}(m,d)}(1 - \delta_{\mathbf{Z}(m,d)jg} - \Sigma_{q=1}t'_{q\mathbf{Z}(m)})$$

$$\boldsymbol{X}_{Z(m,d)ij} = \boldsymbol{x}_{Z(m,d)ij} - \delta_{Z(m,d)jg}$$

where
S ≡ subsidies,
g ≡ tithe,
G ≡ giving,
q ≡ governments,
C ≡ social capital,
ρ ≡ the rate of return,
γ ≡ the knowledge on scaling the rate of return,
d ≡ inputs,
N_1 ≡ appreciative,
N_2 ≡ non-appreciative

REFERENCES

Curtis Jr, James E, Differences in Wealth, Evidence from Structural Regression Decomposition, 1850-1870, **Journal of Economic and Social Thought**, forthcoming 2018.

Ham, John C, “Estimation of a Labor Supply Model with Censoring Due to Unemployment and Underemployment” **Review of Economics and Statistics**, Vol. 52, July 1982.

Varian, Hal R**. Intermediate Microeconomics: A Modern Approach**, Norton: New York, 1999.

Varian, Hal R. **Microeconomic Analysis**, Norton: New York, 1992.