Stratification Foundations: Groups and Endowments (DRAFT)

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Abstract

This note introduces the foundational setup of stratification economics: how power structures construct social groups and distribute unequal economic endowments across them. I contrast this structuralist view with the individualist perspective and formalize the resulting group characteristics and individual-level characteristic variation.

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This note is part of an ongoing project to formalize a stratification economics framework to connect theory and empirics. Feedback welcome at davis@upjohn.org. Please do not cite without permission.

These ideas are inspired by, and build on, the robust existing stratification economics literature, to which the author is indebted. A full bibliography will be developed in future drafts.

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1 Stratification Foundations: Groups and Endowments

This section outlines the stratification economics perspective (i.e., structuralist perspective) on how power structures and social group identity shape the economic endowments individuals have to work with, contrasting it with the traditional individualist view.

Setup

- Population of individuals $i = 1, \ldots, N$.
- A **power structure** Υ (laws, institutions, norms) constructs social groups $G \in \mathcal{G}$ (e.g., $G \in \{\text{race}, \text{gender}, \ldots\}$) and social group identity $g \in G$ (e.g., $g \in \{\text{Black}, \text{white}, \ldots\}$).
- Each individual belongs to some identity $g \in G$ for every group $G \in \mathcal{G}$. Intersectionality means outcomes are shaped by the joint distribution of economic endowments across these multiple memberships.
- Υ endows economic set parameters or **economic endowments**, to each g:[1]

$$(K_g,\ I_g,\ \Lambda_g,\ P_g,\ \Pi_g) \ = \ \Phi\left(\Upsilon, g \mid G\right)$$

  where:

  - $K_g = K(\kappa_g) \equiv$ feasible **choice set**, with breadth determined by κ_g (e.g., range of schooling, jobs, or neighborhoods legally or practically accessible),
  - $I_g = I(\iota_g) \equiv$ **information set**, with quality/clarity determined by ι_g (e.g., advising, hiring transparency, wage posting, networks),
  - $\Lambda_g = \Lambda(\lambda_g) \equiv$ **constraint set**, with tightness determined by λ_g (e.g., credit ceilings, budget constraints, exclusion rules),
  - $P_g = P(\rho_g) \equiv$ **risk environment**, with exposure summarized by ρ_g (e.g., income volatility, health/policing risk, deviance penalty risk),
  - $\Pi_g = \Pi(\pi_g) \equiv$ **payoff schedule**, with multiplier π_g (e.g., returns to education, wage offers, penalties).

Intuition: Υ stratifies groups by endowing more favorable $(\kappa, \iota, \lambda, \rho, \pi)$ to dominant groups and less favorable endowments to subaltern, or lower status, groups. In other words: society's rules distribute opportunity differently depending on your group identity(ies).

Individual Variation Within Group-Level Endowments

To capture that stratification operates "on average" while allowing within-group variation and cross-group overlap, let each individual i draw an *individual economic endowment* vector

$$\omega_i \ = \ (\kappa_i,\ \iota_i,\ \lambda_i,\ \rho_i,\ \pi_i)$$

from a group-specific distribution D_g centered on the group endowments $\Omega_g = (\kappa_g, \iota_g, \lambda_g, \rho_g, \pi_g)$:

$$\omega_i \ \sim \ D_g\left(\mu = \Omega_g,\ \Sigma_g\right) \ ,$$

[1] Given a social group G, the power structure applies mapping function Φ to unequally distribute endowments across all group identities $g \in G$.

where Σ_g is the variance-covariance matrix capturing within-group dispersion.

Given ζ_i, an individual-specific noise multiplier vector, a convenient positive-support parameterization of ω_i is elementwise multiplicative noise:[2]

$$\omega_i \;=\; \Omega_g \;\odot\; \zeta_i, \qquad \zeta_i > 0, \quad \mathbb{E}\left[\zeta_i \mid g_i\right] = \mathbf{1}.$$

Thus, group means are preserved, with dispersion Σ_g capturing within-group variation, and allowing overlap across groups. Accordingly, economic endowments are *individual-specific but group-conditioned*:

$$\begin{aligned}
K_i &= K\left(\kappa_i\right) \equiv i\text{'s } \textbf{choice set},\\
I_i &= I\left(\iota_i\right) \equiv i\text{'s } \textbf{information set},\\
\Lambda_i &= \Lambda\left(\lambda_i\right) \equiv i\text{'s } \textbf{constraint set},\\
P_i &= P\left(\rho_i\right) \equiv i\text{'s } \textbf{risk environment},\\
\Pi_i &= \Pi\left(\pi_i\right) \equiv i\text{'s } \textbf{payoff schedule}.
\end{aligned}$$

Intuition: Stratification sets up unequal, group-specific economic endowment lotteries from which individuals (given group membership) draw. While there is variation within the lotteries (captured by Σ_g), and some overlap across lotteries, individuals draw from distributions centered on their group's average, with dominant groups systematically advantaged relative to subaltern groups.

Benchmark foundation (individualist view). Taking the individualist view, assume every individual draws from a single population economic endowment pool. So, random draws from the endowment pool imply that persistent inequality between groups in outcomes is interpreted as arising from cultural deficiency:

Population economic endowments:

$$\left(K^{\text{pop}},\; I^{\text{pop}},\; \Lambda^{\text{pop}},\; P^{\text{pop}},\; \Pi^{\text{pop}}\right) \;=\; \Phi^{\text{pop}}$$

Individual variation:
Let individual i draw an individual economic endowment vector

$$\omega_i^{\text{pop}} \;=\; \left(\kappa_i^{\text{pop}},\; \iota_i^{\text{pop}},\; \lambda_i^{\text{pop}},\; \rho_i^{\text{pop}},\; \pi_i^{\text{pop}}\right)$$

from distribution D^{pop} centered on population endowments $\Omega^{\text{pop}} = (\kappa^{\text{pop}}, \iota^{\text{pop}}, \lambda^{\text{pop}}, \rho^{\text{pop}}, \pi^{\text{pop}})$:

$$\omega_i^{\text{pop}} \;\sim\; D^{\text{pop}}\left(\mu = \Omega^{\text{pop}},\, \Sigma^{\text{pop}}\right),$$

by applying individual-specific noise multiplier vector:

$$\omega_i^{\text{pop}} \;=\; \Omega^{\text{pop}} \;\odot\; \zeta_i^{\text{pop}}, \qquad \zeta_i^{\text{pop}} > 0, \quad \mathbb{E}\left[\zeta_i^{\text{pop}}\right] = \mathbf{1}.$$

[2] Alternatively, one may apply an additive noise vector: $\omega_i = \Omega_g + \varepsilon_i$ with truncated support for nonnegativity. Multiplicative noise implies a log-normal formulation, which is often simpler for estimation and preserves positivity by construction.

Compact Intuition: Groups and Endowments

Setup/Inputs: Power structures construct social groups and hierarchies, define identities, and assign unequal endowment pools (choices, information, constraints, risks, payoffs) across groups. Individuals then draw from these group-conditioned pools to determine their own endowments.

Choices/Interactions: These endowments set the opportunity frontier for each group, shaping how individuals will be able to act and how institutions or others will interact with them.

Outcomes/Solution: Because dominant groups receive systematically better endowments, their members achieve better average outcomes, while subaltern groups face worse outcomes. Inequality is embedded from the start, before preferences or behavior enter the picture.

Table 1: Comparing Perspectives on Foundations: Individualist vs. Structuralist

Individualist Perspective	**Structuralist Perspective**
Individuals are indexed $i = 1, \ldots, N$, with group identity exogenous or irrelevant.	Individuals are indexed $i = 1, \ldots, N$, with social group identities $g \in G$ *constructed by the power structure* Υ (laws, norms, institutions). Multiple group memberships ($G \in \mathcal{G}$) create intersectional stratification.
Institutions are neutral background conditions.	Institutions (Υ) actively construct groups, determine which signals matter, and distribute opportunities unequally.
Groups face identical feasible sets, information, constraints, risks, and payoffs.	Groups receive systematically different **economic endowments** (K, I, Λ, P, Π), parameterized by $(\kappa, \iota, \lambda, \rho, \pi)$, with dominant groups advantaged and subaltern groups disadvantaged.
Endowments are assigned at the individual level only.	Endowments are group-conditioned: Ω_g sets the group-level average, while $\omega_i \sim D_g(\mu = \Omega_g, \Sigma_g)$ captures within-group variation and overlap across groups (the "endowment lottery").
Inequality reflects random variation or ability differences.	Inequality is embedded from the start: dominant groups draw from more favorable distributions, so disparities persist even without ability differences.

Bringing It Together

This section establishes the "rules of the game." Power structures (Υ) construct and stratify social groups, then assign unequal **economic endowments**—choice sets, information, constraints, risks, and payoffs—to each group. These endowments define group-level averages while allowing within-group variation and cross-group overlap through the individual "endowment lottery." As a result, dominant groups systematically draw from more favorable distributions than subaltern groups. This foundation sets the stage for how identity and preferences (Section 2) and subsequent behavior are conditioned by stratification.