

# Market Design for Social Justice: A Case Study on a Constitutional Crisis in India

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University of Tokyo Market Design Center Lecture Series  
July 10-14, 2023

## Three Main Tasks under Minimalist Market Design

1. Identify the **mission** of the institution: What are the primary objectives of policymakers, system operators and other stakeholders?
  - The history of the institution may be instructive.
2. Determine whether the institution in place satisfies these primary objectives or not.
  - If it doesn't, then there is potential for policy impact with a compelling alternative design.
  - To materialize this potential into a successful redesign, the **root causes** of the failures should be identified.
3. Address the failures of the deficient institution by interfering **only** with its flawed components and interfaces.
  - Akin to a surgeon performing a "**minimally invasive**" procedure.

## Three Main Tasks under Minimalist Market Design

- In some market design applications, a potential discord between the mission of the institution and its practical implementation can be eliminated by a unique minimalist intervention.
  - Straightforward resolution via the three main steps of minimalist market design.
  - E.g. US Army's Branching Process (Lecture 2)
  - E.g. Joint Implementation of Vertical and Horizontal Reservations in India (Lecture 3)
- In some applications, primary objectives of the stakeholders may be collectively unattainable.
  - E.g. The incompatibility between Pareto efficiency and no justified envy in school choice.
  - In these cases, a design economist may need to formulate compelling compromises between these objectives.

## A Supplemental Task under Minimalist Market Design

- Finally, in some applications, there may be multiple minimalist interventions which eliminate the discord between the mission of the institution and its practical implementation.

In these settings, ideally, there is one additional task.

4. If there are multiple “minimally invasive” designs through tasks 1-3, present a comprehensive analysis of these competing institutions.
  - May be especially valuable in applications “in which issues of social, racial and distributive justice are particularly salient” (Hitzig, 2020).
  - Depending on policy objectives, **axiomatic characterizations** may be one way to pursue such analyses.
- The role of the fourth step is to maintain **informed neutrality** between reasonable normative principles in design proposals (Li, 2017).
- In our application today, closely related to Lecture 3, it is the fourth task of minimalist market design that takes center place.

## Article 16(4) of the 1950 Constitution of India

- **Vertical reservations** (VR protections), is the strongest affirmative action (AA) policy in India.
  - Reserves a percentage of government positions and seats at public universities for each of a number of protected groups.
  - Originally, designed as a **reparatory and compensatory** instrument that corresponds to the protective provisions described in the Article 16(4) of the 1950 Constitution of India.
- Prior to 2019, VR protections were exclusively awarded to members of Socially and Educationally Backward Classes (SEBCs) who historically suffered from caste-based oppression and discrimination.
  - Up to 15% to Scheduled Castes (SC)
  - Up to 7.5% to Scheduled Tribes (ST)
  - Up to 27% to Other Backward Classes (OBC)

## 103rd Constitutional Amendment

- In a highly controversial Constitutional Amendment enacted in January 2019, VR protections are awarded in India for members of a new category called **Economically Weaker Sections (EWS)**.
  - Reserves up to 10% of government positions and seats at universities.
  - With the Amendment, for the first-time it is awarded to a group based on an **individual-based transient** characteristics, i.e., economic status.
  - Beneficiaries of earlier VR protections, i.e., members of SEBCs, are excluded from the scope of EWS reservations.
  - More than 95% of the general-category individuals (those who do not have any caste-based VR-protected status) qualify for EWS reservation, de facto making it a forward caste reservation.

# Supreme Court Challenge: Timeline

- **January 2019:** As soon as it was enacted, the 103rd Amendment was challenged by several groups.
- **August 2020:** Case elevated to a five-judge Constitution Bench of the Supreme Court.
- **September 2022:** The Constitution Bench announced the following three main issues for examining whether the Amendment violates the basic structure of the Constitution:
  1. Can reservations be granted solely on the basis of economic criteria?
  2. Can states provide reservations in private educational institutions which do not receive government aid?
  3. **Are EWS reservations constitutionally invalid for excluding SEBCs from its scope?**

# Supreme Court Hearings

- Advocates for the petitioners repeatedly argued that the amendment *violates the Equality Code* by excluding SEBCs from its scope.
- **A Minimalist Compromise:** In order to address the third issue, Professor Dr. Mohan Gopal, a renowned Constitutional Scholar, suggested a compromise that does not involve striking down the amendment.

*Under this proposal, SEBCs are not excluded from the scope of the EWS reservations.*



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- Our formal analysis is about the implications and implementation of this compromise policy (i.e., the removal of the exclusionary clause).

## A Controversial Verdict

- **November 2022:** In a landmark judgment *Janhit Abhiyan (2022)*, the Constitution Bench upheld the 103rd Constitutional Amendment.
  - Decision reached in a 3-2 split verdict.
  - In a rare occurrence, the two dissents included the Chief Justice of India.
  - Viewed by many as a judgment that fundamentally changed the role of affirmative action in India.
- All five justices agreed that reservations can be granted on the basis of economic criteria.
- However, the two dissents strongly disagreed with the majority justices on the constitutionality of the exclusion of SEBCs.



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## Why 10% quota for 'economically weak' in India has caused uproar

*Controversial 10 percent quota in jobs and education for so-called 'Economically Weaker Sections' category of people angers politicians and caste activists.*

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### DMK Files Review Petition Against EWS Quota Verdict, Says it 'Legitimises Discrimination'

The Tamil Nadu ruling party sought an open court hearing on its review plea, stating that there is an "error" in the judgment as it overrules earlier larger nine-judge bench verdict delivered in the 1992 'Indira Swahney' case.

### Supreme Court's EWS verdict may have opened a can of worms

The Supreme Court's split 3:2 verdict on the validity of the 10 percent reservation for EWS raises several questions, leaves the door open for states to make their own interpretations, and potentially attempt to raise quotas to well beyond the 50 percent ceiling

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## A Controversial Verdict

- The extent of the disagreement can be vividly seen in the opening paragraph of the **Dissenting Opinion** by Justice S. Ravindra Bhat:

*"I regret my inability to concur with the views expressed by the majority opinion on the validity of the 103rd Amendment on Question No. 3, since I feel - for reasons set out elaborately in the following opinion - that this court has for the first time, in the seven decades of the republic, sanctioned an avowedly exclusionary and discriminatory principle. Our Constitution does not speak the language of exclusion. In my considered opinion, the Amendment, by the language of exclusion, undermines the fabric of social justice, and thereby, the basic structure."*

## Reactions to Verdict

- While the verdict was declared as a major victory for the central government led by Prime Minister Narendra Modi, according to many media outlets, it also created an uproar in the country.

*“It is constitutionally perverse that the compelling need for measures to address social backwardness has become a justification for the exclusion of backward classes from measures to address economic deprivation.*

*[...] India’s most marginalised sections that comprise a significant proportion of India’s poor stand excluded from reservation meant for the poor, and second, it is now far easier to provide reservation for this narrowly constructed EWS than it is to do the same for India’s most marginalised sections.”*

*Anup Surendranath, Professor of Law*

## Justification of Exclusion in the Majority Opinion

- The majority justices are not unsympathetic to this above-given perspective, but they are of the opinion that exclusion is inevitable.

*"[...] Rather, according to the petitioners, the classes covered by Articles 15(4), 15(5) and 16(4) are comprising of the poorest of the poor and hence, keeping them out of the benefit of EWS reservation is an exercise conceptionally at conflict with the constitutional norms and principles.*

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*At the first blush, the arguments made in this regard appear to be having some substance because it cannot be denied that the classes covered by Articles 15(4), 15(5) and 16(4) would also be comprising of poor persons within. However, a little pause and a closer look makes it clear that the grievance of the petitioners because of this exclusion remains entirely untenable and the challenge to the Amendment in question remains wholly unsustainable. As noticed infra, there is a definite logic in this exclusion; rather, this exclusion is inevitable for the true operation and effect of the scheme of EWS reservation."*

## Justification of Exclusion in the Majority Opinion

- The majority justices offer the following technical justification for their alleged necessity of the exclusion:

*“The moment there is a vertical reservation, exclusion is the vital requisite to provide benefit to the target group. In fact, the affirmative action of reservation for a particular target group, to achieve its desired results, has to be carved out by exclusion of others.*”



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*[...] But for this exclusion, the purported affirmative action for a particular class or group would be congenitally deformative and shall fail at its inception. Therefore, the claim of any particular class or section against its exclusion from the affirmative action of reservation in favour of EWS has to be rejected.*

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*[...] But for this exclusion, the purported affirmative action for a particular class or group would be congenitally deformative and shall fail at its inception. Therefore, the claim of any particular class or section against its exclusion from the affirmative action of reservation in favour of EWS has to be rejected.*

*[...] It could easily be seen that but for this exclusion, the entire balance of the general principles of equality and compensatory discrimination would be disturbed, with extra or excessive advantage being given to the classes already availing the benefit under Articles 15(4), 15(5) and 16(4).”*

## Justification of Exclusion in the Majority Opinion

- To summarize, the entire justification of the majority justices for their support of the exclusion is based on two related technical arguments made in paragraphs 79-82 of the Majority Opinion.
- They argue that, exclusion of the beneficiaries of earlier provisions from a new provision is absolutely necessary to be able to deliver any benefit to groups who are outside the scope of earlier provisions.
- Majority justices also argue that, inclusion of SEBCs to the scope of EWS reservation would necessarily result in excessive advantage to members of these classes.

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### **SC/ST/OBC Exclusion From EWS Quota Logical, Necessary To Avoid Double Benefits: Supreme Court**

**Padmakshi Sharma**

8 Nov 2022 1:45 AM

## Fallacy of the Technical Claims in the Majority Opinion

- As we present in our formal analysis next, both points made by the majority justices are false.
- More precisely, while the technical justification offered by the majority justices is accurate under non-overlapping vertical reservations, it is false under overlapping vertical reservations, i.e. the relevant version of the problem with scope-extended EWS category.
- As such, the technical justification offered by the majority justices for their controversial decision is entirely due to their oversight of the implications of the overlapping vertical reservations, a technical and subtle phenomenon the justices are not familiar with.

# Basics

- $q^\Sigma$  # of identical positions
- $\mathcal{I}$  set of individuals
  - each individual is in need of one position
  - each individual  $i \in \mathcal{I}$  is endowed with a distinct merit score  $\sigma_i \in \mathbb{R}_+$
- In the absence of affirmative action (AA), individuals with higher merit scores have higher claims for a position.
- Disadvantaged groups are protected via two types of AA policies:
  - Higher-level policy: **Vertical Reservations (VR)**
  - Lower-level policy: **Horizontal Reservations (HR)**
- EWS reservation is a VR policy. Following the policy discussions in India, in this presentation we focus on the higher-level VR policy.

# Vertical Reservations

- VR policy is managed through a system of category membership.
- $\mathcal{R}$  set of **reserve-eligible categories** (e.g., {SC,ST,OBC,EWS})
- $g$  a **general category** for those ineligible for VR protections
- Each individual  $i \in \mathcal{I}$  belongs to a (possibly empty) set of reserve-eligible categories  $\rho_i \subseteq \mathcal{R}$ .
- $\rho = (\rho_i)_{i \in \mathcal{I}}$  profile of **category memberships**
  - $c \in \rho_i$   $i$  is a **beneficiary** of the VR-protected category  $c \in \mathcal{R}$
  - $\rho_i = \emptyset$   $i$  belongs to the general category  $g$
- **Non-Overlapping VR protections:**  $|\rho_i| \leq 1$  for each  $i \in \mathcal{I}$
- **Overlapping VR protections:**  $|\rho_i| > 1$  for some  $i \in \mathcal{I}$

# Vertical Reservations

- $q^c$       # of **category- $c$**  positions set aside for members of  $c \in \mathcal{R}$ 
  - For any reserve-eligible category  $c \in \mathcal{R}$ , an individual  $i \in \mathcal{I}$  is **eligible for category- $c$  positions** if  $c \in \rho_i$ .
- $q^o = q^\Sigma - \sum_{c \in \mathcal{R}} q^c$       # of **open category (category- $o$ )** positions
  - All individuals are **eligible for open category positions**.
- $\mathcal{V} = \mathcal{R} \cup \{o\}$       set of **vertical categories for positions**
- $\mathcal{E}^v(\rho) \subseteq \mathcal{I}$       Individuals who are eligible for category- $v$  positions
  - $\mathcal{E}^o = \mathcal{E}^o(\rho) = \mathcal{I}$
  - $\mathcal{E}^c(\rho) = \{i \in \mathcal{I} : c \in \rho_i\}$  for any  $c \in \mathcal{R}$

## Solution Concept: Choice Rule

- Given a category  $v \in \mathcal{V}$ , a **single-category choice rule** is a function  $C^v(\rho; \cdot) : 2^{\mathcal{I}} \rightarrow 2^{\mathcal{I}}$  such that, for any  $I \subseteq \mathcal{I}$ ,

$$C^v(\rho; I) \subseteq I \cap \mathcal{E}^v(\rho) \quad \text{and} \quad |C^v(\rho; I)| \leq q^v.$$

- A **choice rule** is a function  $C(\rho; \cdot) = (C^v(\rho; \cdot))_{v \in \mathcal{V}} : 2^{\mathcal{I}} \rightarrow (2^{\mathcal{I}})^{|\mathcal{V}|}$  such that, for any  $I \subseteq \mathcal{I}$ ,

- for any category  $v \in \mathcal{V}$ ,

$$C^v(\rho; I) \subseteq I \cap \mathcal{E}^v(\rho) \quad \text{and} \quad |C^v(\rho; I)| \leq q^v,$$

- for any two distinct categories  $v, v' \in \mathcal{V}$ ,

$$C^v(\rho; I) \cap C^{v'}(\rho; I) = \emptyset.$$

- For any choice rule  $C(\rho; \cdot)$ , the resulting **aggregate choice rule**  $\widehat{C}(\rho; \cdot) : 2^{\mathcal{I}} \rightarrow 2^{\mathcal{I}}$  is given as

$$\widehat{C}(\rho; I) = \bigcup_{v \in \mathcal{V}} C^v(\rho; I) \quad \text{for any } I \subseteq \mathcal{I}.$$



## Mandates under *Indra Sawhney (1992)*

- 1950 Constitution of India provides AA provisions to various protected groups in allocation of public positions and seats at public schools.
- The Supreme Court judgment *Indra Sawhney (1992)* formulated these AA provisions as two distinct policies (VR & HR).
- Sönmez & Yenmez (2022) formulated the mandates of *Indra Sawhney (1992)* on VR & HR policies as rigorous axioms.
  - In the absence of HR policy, there are three clear mandates.

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  - In the absence of HR policy, there are three clear mandates.
- **Remark:** For joint implementation of VR & HR policies, there are four mandates in *Indra Sawhney (1992)*. Some of these mandates, however, have multiple interpretations in this more general case.
  - Decades later, this loophole is removed by the Supreme Court judgment *Saurav Yadav (2020)*, and thus clarity is brought to all four mandates for this more general case too (Sönmez & Yenmez, 2022).

## Mandates under *Indra Sawhney (1992)*

- A choice rule  $C(\rho; \cdot) = (C^v(\rho; \cdot))_{v \in \mathcal{V}}$  is **non-wasteful** if, for every  $I \subseteq \mathcal{I}$ ,  $v \in \mathcal{V}$ , and  $j \in I$ ,

$$j \notin \widehat{C}(\rho; I) \text{ and } |C^v(\rho; I)| < q^v \implies j \notin \mathcal{E}^v(\rho).$$

- A position can remain idle at any category  $v \in \mathcal{V}$  **only if** none of the individuals who remain unassigned is eligible for a category- $v$  position.

## Mandates under *Indra Sawhney (1992)*

- A choice rule  $C(\rho; \cdot) = (C^\nu(\rho; \cdot))_{\nu \in \mathcal{V}}$  satisfies **no justified envy** if, for every  $I \subseteq \mathcal{I}$ ,  $\nu \in \mathcal{V}$ ,  $i \in C^\nu(\rho; I)$ , and  $j \in (I \cap \mathcal{E}^\nu(\rho)) \setminus \widehat{C}(\rho; I)$ ,

$$\sigma_i > \sigma_j.$$

- **Specifies who “deserves” a position:** Subject to category eligibility, the higher the merit score of an individual is, the higher claim she has for a position.
- In India, widely referred to as the **principle of merit** for  $\nu = o$ , and as the **principle of inter se merit** for  $\nu \in \mathcal{R}$ .

## Mandates under *Indra Sawhney (1992)*

- A choice rule  $C(\rho; \cdot) = (C^\nu(\rho; \cdot))_{\nu \in \mathcal{V}}$  **complies with VR protections** if, for each  $I \subseteq \mathcal{I}$ ,  $i \in I$  and  $c \in \mathcal{R}$ ,

$$i \in C^c(\rho; I) \implies \begin{cases} |C^o(\rho; I)| = q^o, \text{ and} \\ \sigma_j > \sigma_i \text{ for any } j \in C^o(\rho; I). \end{cases}$$

- No VR-protected position should be awarded to an individual who “deserves” an open position on the basis of merit alone.
- **Higher-Level AA:** Assures that reserved positions are awarded to individuals who are “truly in need of” AA.

# Implementation of Non-Overlapping VR Protections

- VR protections have always been non-overlapping in India.
  - **Until 2019:** Due to caste system.
  - **Since 2019:** Due to caste system and the controversial exclusion.
- The following choice rule is formulated in Dur, Kominers, Pathak & Sönmez (2018).

*Over-and-Above (O&A) Choice Rule*  $C_{OA}(\rho; \cdot) = (C_{OA}^v(\rho; \cdot))_{v \in \mathcal{V}}$

*Step 1.* Allocate open positions to highest merit-ranking individuals.

*Step 2.* For each VR-protected group, allocate the reserved positions to highest merit-ranking members of the group who remain unassigned.

## Implementation of Non-Overlapping VR Protections

- Assuming non-overlapping VR protections and there are no HR protections, Supreme Court mandates on VR policy are uniquely implemented with the O&A choice rule.

### Proposition (Sönmez & Yenmez, 2022)

*Suppose that no individual belongs to multiple VR protected categories. Then, a choice rule  $C(\rho; \cdot)$  satisfies non-wastefulness, no justified envy, and compliance with VR-protections if, and only if it is the O&A choice rule.*

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- Remark:** Sönmez & Yenmez (2022) shows that the uniqueness result persists under the four mandates of *Saurav Yadav (2020)* when VR & HR policies are implemented concurrently.



## Overlapping VR Protections: Open Positions

- **Overlapping VR protections:** An individual can be a member of multiple VR-protected categories.
  - If the controversial exclusionary clause is removed from the EWS reservation, an individual can be a member of both EWS and a caste-based category.

## Overlapping VR Protections: Open Positions

- **Overlapping VR protections:** An individual can be a member of multiple VR-protected categories.
  - If the controversial exclusionary clause is removed from the EWS reservation, an individual can be a member of both EWS and a caste-based category.
- Under the Supreme Court mandates, whether VR protections are overlapping or not is immaterial for allocation of open positions.
  - Allocation of open positions can still be carried out through Step 1 of the O&A choice rule.

### Lemma

*Fix a profile of category memberships  $\rho$  and another profile  $\rho'$  of category memberships that is non-overlapping. Let  $C(\rho; \cdot)$  be any choice rule that satisfies non-wastefulness, no justified envy, and compliance with VR protections. Then, for any  $I \subseteq \mathcal{I}$ ,*

$$C^o(\rho; I) = C_{OA}^o(\rho'; I).$$

## Overlapping VR Protections: Reserved Positions

- **Question:** Why not simply allocate VR-protected positions also as in O&A choice rule through its Step 2?

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- **Question:** Why not simply allocate VR-protected positions also as in O&A choice rule through its Step 2?
- **Preliminary Answer:** For starters, Step 2 of O&A choice rule, is no longer uniquely defined!

### *O&A Choice Rule*

*Step 1. Allocate open positions to highest merit-ranking individuals.*

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### *O&A Choice Rule*

*Step 1. Allocate open positions to highest merit-ranking individuals.*

*Step 2. For each VR-protected group, allocate the reserved positions to highest merit-ranking members of the group who remain unassigned.*

- **A Practical Resolution:** What about processing reserve-eligible categories sequentially?

# Sequential Choice Rules

- Fix a processing sequence  $\triangleright$  (i.e., an **order of precedence**) for vertical categories in  $\mathcal{V}$ , including the open category.
  - $\Delta$  All orders of precedence
  - $\Delta^o$  Open-First orders of precedence
  - $\Delta_e^o$  Open-First and EWS-Last orders of precedence
  - $\Delta^{o,e}$  Open-First and EWS-Second orders of precedence

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*Sequential Choice Rule*  $C_S(\triangleright, \rho; \cdot) = (C_S^v(\triangleright, \rho; \cdot))_{v \in \mathcal{V}}$

*Step  $k$  ( $k \in \{1, \dots, |\mathcal{V}|\}$ ):* Let  $v_k$  be the category in  $\mathcal{V}$  which has the  $k^{\text{th}}$  highest order of precedence under  $\triangleright \in \Delta$ . For positions in category  $v_k$ , choose the highest merit-score eligible individuals who remain unassigned from earlier steps.

# Sequential Choice Rules

- **Remark:** For any  $\triangleright \in \Delta^o$ , the resulting sequential choice rule  $C_S(\triangleright, \rho; \cdot)$  generalizes the O&A choice rule.
  - **EWS-Last O&A**  $C_S(\underline{\triangleright}, \rho; \cdot)$  with  $\underline{\triangleright} \in \Delta_e^o$ .
  - **EWS-First O&A**  $C_S(\overline{\triangleright}, \rho; \cdot)$  with  $\overline{\triangleright} \in \Delta^{o,e}$ .

## Lemma

*The outcome of any two EWS-Last O&A choice rules are identical. Similarly, the outcome of any two EWS-First O&A choice rules are identical.*



## Sequential Choice Rules

- For any  $\triangleright \in \Delta^\circ$ , the resulting sequential choice rule  $C_S(\triangleright, \rho; \cdot)$  satisfies all mandates of *Indra Sawhney (1992)*.

### Lemma

*For any profile of category memberships  $\rho$  and order of precedence  $\triangleright \in \Delta$ , the resulting sequential choice rule  $C_S(\triangleright, \rho; \cdot)$  satisfies non-wastefulness and no justified envy.*

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- **Question:** Is this a big deal?

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*Moreover, if  $\triangleright \in \Delta^\circ$ , then the resulting sequential choice rule  $C_S(\triangleright, \rho; \cdot)$  also complies with VR protections.*

- **Bottomline:** The main challenge under Overlapping VR protections is not the difficulty of satisfying the mandates of the Supreme Court, but rather the multiplicity of the choice rules which do.
- **Question:** Is this a big deal?      **Yes it is!**

# Preliminary Observations on Sequential Choice Rules

- **Back-of-the-Envelope Calculation:**

**Assumption 1:** Any individual who is not a member of a caste-based category is eligible for EWS reservation.

- With current EWS eligibility restrictions on income in India, the estimated fraction is 98% (Deshpande and Ramachandran, 2019).

**Assumption 2:** There is excess demand from all groups.

**Assumption 3:** Merit score distribution is identical for all groups.

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**Assumption 3:** Merit score distribution is identical for all groups.

## Proposition

*Under Assumptions 1-3,*

1. *The outcome of an EWS-Last O&A choice rule is same as the outcome of the O&A choice rule with EWS reservation and the exclusion, i.e., **the outcome of the current policy.***
2. *The outcome of an EWS-First O&A choice rule is same as the outcome of the O&A choice rule without EWS reservation, i.e., **the outcome of the policy prior to the controversial Amendment.***

# Preliminary Observations on Sequential Choice Rules

- The technical claims by the Majority justices in *Janhit Abhiyan (2022)* on the necessity of exclusion are false under the EWS-Last O&A choice rule.
  - Individuals from the Economically Weak Segment who are ineligible for earlier caste-based VR protections are still the primary beneficiaries of the EWS reservation.
  - The policy does not generate excessive benefits to individuals eligible for caste-based VR protections.
- Removal of the exclusionary clause w/o additional details is not a good option either, because it creates a major loophole in the system.
  - The week before the verdict, this possibility was brought to the attention of general population in India with an *The Hindu Op-Ed* Deshpande & Sönmez (2022).

## Sequence of implementation, EWS quota outcomes

The original intent of the reservation policy in newly independent India was to level the playing field for the most marginalised sections, those stigmatised and discriminated against on account of their birth into specific caste and tribal groups. While these groups were also economically deprived, that was not the main rationale for instituting compensatory discrimination in favour of these groups.

Over the decades, the instrument of reservation has expanded to include more groups under its ambit, leading to furious debates both about the general principle of affirmative action and about which groups deserve to be beneficiaries. These disputes have resulted in complex legal cases, with the rulings providing the nuts-and-bolts mechanics that guide the implementation of the reservation policy on the ground.

This article draws attention to a crucial impending implementation decision about the economically weaker sections (EWS) quota, and shows how the sequence of implementation would result to diverging outcomes.

The reservation system in India takes two forms: vertical reservation (VR), which until 2019 was defined for stigmatised and marginalised social groups (SCs, STs and OBCs); and horizontal reservation (HR), applicable to cross-cutting categories such as women, people with disability (PWD), domicile, etc. As long as the VR system was social group-based, no individual was eligible for multiple VR categories, since no individual can belong to multiple caste or tribal groups.

The 103rd Constitution Amendment Act in 2019, popularly known as the 10% quota for the so-called EWS, fundamentally altered the original raison d'être of reservations by opening VR to groups that are not defined in terms of hereditary social group identity (caste or tribe). EWS status is transient (that individuals can fall into or escape out of), but social groups are permanent markers of identity.

While this meant that in principle, an individual could belong to two VR categories (say, SC and EWS), the amendment explicitly removed individuals who are already eligible for one VR (SC, ST, or OBC) from the scope of EWS reservations. As a result of this exclusion, an individual could still be only eligible for at most one vertical category.

Exclusion of SCs, STs, OBCs from the scope of EWS reservation was immediately challenged in court on the grounds that it violated individual right to equality (that roughly corresponds to



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The judiciary needs to note a subtle aspect of economically weaker sections' (EWS) reservation, i.e., first or last, in ensuring that there is an optimal implementation strategy

Articles 14-18 of the Indian Constitution).

On the last day of hearings at the Constitutional Bench of the Supreme Court, the following "compromise" proposal was made by G. Mohan Gopal: do not revoke the amendment but interpret the language of the amendment in a way that does not exclude SCs, STs, OBCs from the scope of EWS reservation.

### Overlapping VR categories and ambiguity

Allowing for overlapping VR categories (such as SC and EWS, etc.) generates an important ambiguity under the current legal framework, most notably stemming from the ruling of the Indra Sawhney case (1992). Under this, any member of a reserved category who is entitled to an open-category position based on "merit" (examination) score should be awarded an open-category position, and not be slotted under a VR position. Technically, this implies that open-category positions must be allocated based on merit in the first step, and VR positions should be allocated to eligible individuals in the second step. This procedure is called "over-and-above" choice rule in the literature. This is to be distinguished from the "guaranteed minimum" rule which would guarantee a minimum number of positions to members of beneficiary groups, regardless of whether they enter through reserved or open ("merit") positions.

When VR categories are mutually exclusive, i.e., no individual can be a member of multiple vertical categories, it is completely immaterial in what sequence vertical categories are processed in relation to each other. However, if individuals can belong to two vertical categories, the relative processing sequence of vertical categories becomes very important, as Sönmez and his fellow economist Utku Ünver show in their 2022 paper.

How will sequencing matter? EWS-first: Consider the scenario where EWS positions before other VR categories, immediately after the open category seats. In her 2019 paper with economist Rajesh Ramachandran, Deshpande shows that under the current income limit for EWS reservation, more than 98% of the population qualifies, i.e., almost everyone is eligible for EWS reservation. If EWS reservations are filled first, the outcome would be the same as treating EWS positions as open positions.

This would effectively end up making the EWS reservation redundant. Since the richest applicants are not eligible for EWS, the actual outcome would be slightly different, but not a whole lot as the richest 2% may not even apply to

public institutions where quotas are applicable.

EWS-last: If EWS positions are allocated after all other VR positions are filled, this issue will not arise. Now, while all individuals with incomes lower than the EWS limit are equally eligible for EWS positions (which is still effectively all individuals), the system awards the EWS positions to eligible individuals who have highest merit scores. But since some of the higher score individuals from SCs, STs and OBCs would be admitted under their respective quotas, this sequencing will make EWS positions more accessible to members of forward castes.

### On which sequence is better

The purpose of this article is to demonstrate that two routes imply very different policy outcomes. We are highlighting the fact that overlapping VR categories lead to a major ambiguity (or loophole) in the system. If the objective is to make EWS equally applicable to the current VR categories, then EWS-first should be adopted with the recognition that this sequencing will effectively convert EWS into what are currently open category positions. If the objective is to minimally interfere with the amendment, then EWS-last should be adopted with the recognition that this sequencing will still tilt the EWS category in favour of forward castes. Since the impact of these two routes will be vastly different, it would be best if this subtle aspect of EWS reservation is carefully evaluated and integrated into the implementation of the policy.

What if the current income limit of the EWS category is changed (lowered)? That would change the calculus somewhat since poorer individuals from all social groups (including non-SC-ST-OBC) would be eligible. In this scenario, the richer (above the presumed new income cut-off) SC-ST-OBC individuals will be eligible only for the social group-based VR positions. However, changing income limits is likely to open a whole new Pandora's box, especially in the absence of reliable income data. Realistically, shifting the income cut-off for EWS seems unlikely.

Therefore, the court would be well-advised to consider the implications of the implementation routes and to make sure there are no ambiguities, i.e., no loopholes. Ambiguities in reservation rules have led to court cases, leading to long delays in filling up positions. Given the enormity of the unemployment situation, as well as the importance of addressing social cleavages, the urgency of working out an optimal implementation strategy cannot be overstated.



# Violation of Right to Equality under the Amendment

- The Amendment allows for an financially deprived member of a forward class to receive a position with a low merit score, while it denies the same position for an even more financially deprived member of a disadvantaged class who has a higher merit score!

- Cannot be justified by either meritocracy or AA.

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## EWS verdict shows merit matters only when it's 'their' children, not 'our' kids

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### EWS verdict shows merit matters only when it's 'their' children, not 'our' kids

The historical hurt that the Hindu upper-caste elite has entertained about the quota system is now a legal doctrine. It can have far-reaching consequences.

*"[...] the 'othering' of socially and educationally disadvantaged classes – including SCs/ STs/OBCs by excluding them from this new reservation on the ground that they enjoy pre-existing benefits, is to heap fresh injustice based on past disability. [...] The net effect of the entire exclusionary principle is Orwellian, (so to say) which is that all the poorest are entitled to be considered, regardless of their caste or class, yet only those who belong to forward classes or castes, would be considered, and those from socially disadvantaged classes for SC/STs would be ineligible."*

*Justice S. Ravindra Bhat, Dissenting Opinion in Janhit Abhiyan (2022)*

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**25% less cut-off marks for EWS candidates sparks controversy in Tamil Nadu**  
 Hindustan Times, Chennai | By MC Rajan

Home / India / Nothing wrong with cut-offs for EWS candidates being lower than SC, ST...

India

## Nothing wrong with cut-offs for EWS candidates being lower than SC, ST & OBC, says UPSC

UPSC says cut-offs for civil services exam for EWS candidates doesn't impact the chances under other categories. Also notes that it depends on the number of people availing the quota.

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## UPSC cut-off for EWS lower than for OBCs again

### UPSC STORIES

#### To Be in EWS Or Not To Be

Bhaskar Kothari Published on 26 Aug 2020, 4:07 pm IST 5 minutes read

#### Highlights

With EWS category students getting into the coveted Civil Services scoring lesser marks than the OBC one, quota debate is raging in the country.

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NEWS / Why Don't the Guardians of Merit Protest Lower EWS Cutoff?

THIS STORY IS FROM AUGUST 3, 2021

## Why don't the guardians of merit protest lower EWS cutoffs?

## Low EWS Cut-Off (Less Than Half Of SC, General) In SBI Clerk Exam Raises Eyebrows

SBI Clerk Cut Off 2019: SBI has set 28.5 per cent marks as the cut-off for the EWS candidates while cut-off for Scheduled Caste (SC), General and Other Backward Communities (OBC) is 61.25 per cent.

ANALYSIS CASTE

## SBI Exam Leaves OBCs, SCs, STs Struggling To Figure Out EWS Quota Trick

In Tamil Nadu, the cut-off marks was the lowest for the economically weaker sections of the upper caste. This led to significant outpouring of anger from SCs, STs and OBCs.

# Three Potential Resolutions

- **Question:** So how should the Violation of Right to Equality be avoided without creating a major loophole?
  - Answering this question requires making a normative judgment.
- We will consider the following three normative positions:
  1. **Majority Perspective** (once the technical flaws are removed)
    - Assures that the outcome differs minimally from the current outcome subject to eliminating violation of the Right to Equality.
  2. **Dissenting Perspective**
    - Assures that the higher-level provision aspect of reparatory and compensatory VR protections to SEBCs is maintained.
  3. **Technocratic Perspective**
    - Treats all VR protected categories neutrally.

# The High Bar to Revoke a Constitutional Amendment

- In India, the Supreme Court can revoke a Constitutional Amendment only if it breaches the basic structure of the Constitution.

*"It is hardly a matter of debate that the challenge herein is not to any executive order or even to an ordinary legislation. The challenge is to a constitutional amendment. [...] The challenge is founded on, and in fact could only be founded on, the premise that the amendment in question violates the basic structure of the Constitution in the manner that it destroys its identity."*

*Majority Opinion, Janhit Abhiyan (2022)*

- Dissenting justices argue that the exclusion breaches the basic structure by violating the Right to Equality that corresponds to articles 14-18 in the Constitution.
  - The technical points made against this position by the Majority justices are flawed.

# Minimal Interference due to Separation of Powers

- The bar to revoke a Constitutional Amendment is very high.

*“The reason for **minimal interference** by this Court in the constitutional amendments is not far to seek. [...] The interplay of amending powers of the Parliament and judicial review by the Constitutional Court over such exercise of amending powers may appear a little bit complex but ultimately leads towards strengthening the constitutional value of **separation of powers**.”*

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*Majority Opinion, Janhit Abhiyan (2022)*

- We next formulate a policy that **removes the violation of Right to Equality** from the Amendment through **minimal interference**.

## Who are Affected from Violation of Right to Equality?

- Let  $\dot{\rho} = (\dot{\rho}_i)_{i \in \mathcal{I}}$  be the current profile of non-overlapping category memberships.
- Let  $e \in \mathcal{R}$  denote the EWS category.
- Let  $\mathcal{J} \subseteq \bigcup_{c \in \mathcal{R} \setminus \{e\}} \mathcal{E}^c(\dot{\rho})$  denote the set of individuals whose **Right to Equality is violated** due to exclusion from the scope of EWS.
  - E.g. Financially deprived members of SC, ST, and OBC



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  - **Question:** Which individuals in  $\mathcal{J}$  (if any) are materially affected by the violation of their Right to Equality, because they lost a position due to their exclusion from the scope of category  $e$  under  $\hat{\rho}$ ?
  - **Answer:** An individual  $i \in \mathcal{J}$  who remains unmatched under  $\hat{\rho}$ , even though she would be matched if she were to be granted with a membership of category  $e$  instead of her existing category in  $\hat{\rho}_i$ .

## Who are Affected from Violation of Right to Equality?

- Given an individual  $j \in \mathcal{J}$ , let  $\tilde{\rho}_j = \{e\}$ .

### Definition

Given a profile of category memberships  $\rho$ , choice rule  $C(\rho; \cdot)$  and set of individuals  $I \subseteq \mathcal{I}$ , a set of individuals  $J \subseteq \mathcal{J} \cap I$  **suffer from a violation of the Equality Code** under  $C(\rho; \cdot)$  for  $I$ , if, for each  $j \in J$ ,

$$j \notin \widehat{C}(\rho; I) \quad \text{and} \quad j \in \widehat{C}((\rho_{-J}, \tilde{\rho}_J); I).$$

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### Definition

Given a profile of category memberships  $\rho$  and choice rule  $C(\rho; \cdot)$ , a set of individuals  $I \subseteq \mathcal{I}$  are **materially unaffected by the violation of the Equality Code** under  $C(\rho; \cdot)$ , if there exists no  $J \subseteq (\mathcal{J} \cap I)$  who suffer from a violation of the Equality Code under  $C(\rho, \cdot)$  for  $I$ .

# Who are Affected from Violation of Right to Equality?

## Definition

Given a profile of category memberships  $\rho$ , choice rule  $C(\rho; \cdot)$  and set of individuals  $I \subseteq \mathcal{I}$ , set  $J \subseteq (\mathcal{J} \cap I) \setminus \widehat{C}(\rho; I)$  is a **maximal set of individuals who suffer from a violation of the Equality Code** under  $C(\rho; \cdot)$  for  $I$ , if,

1. the set of individuals  $J$  suffer from a violation of the Equality Code under  $C(\rho; \cdot)$  for  $I$ , and
2. for any  $J' \subseteq (\mathcal{J} \cap I) \setminus \widehat{C}(\rho; I)$  with  $J \subsetneq J'$ ,
  - a.  $J'$  does not suffer from a violation of the Equality Code under  $C(\rho; \cdot)$  for  $I$ , and
  - b.  $J \subseteq \widehat{C}((\rho_{-J'}, \tilde{\rho}_{J'}); I)$ .

## Lemma

*For any  $I \subseteq \mathcal{I}$ , the maximal set of individuals who suffer from a violation of the Equality Code under  $C_{OA}(\hat{\rho}; \cdot)$  for  $I$  is uniquely defined.*

# The Case for the EWS-Last O&A Choice Rule

- Let  $\rho^* = (\rho_i^*)_{i \in \mathcal{I}}$  be such that,
  1.  $\rho_i^* = \dot{\rho}_i \cup \{e\}$  for any  $i \in \mathcal{J}$ , and
  2.  $\rho_i^* = \dot{\rho}_i$  for any  $i \in \mathcal{I} \setminus \mathcal{J}$ .
  - Corresponds to removal of the exclusionary clause.

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  2.  $\rho_i^* = \hat{\rho}_i$  for any  $i \in \mathcal{I} \setminus \mathcal{J}$ .
  - Corresponds to removal of the exclusionary clause.

## Proposition (Sönmez & Ünver, 2022)

*Let  $\succeq \in \Delta_e^o$ . Then, no set of individuals suffer from the violation of Equality Code under the EWS-Last O&A choice rule  $C_S(\succeq, \rho^*; \cdot)$ . Moreover, it satisfies non-wastefulness, no justified envy, and compliance with VR protections.*

## The Case for the EWS-Last O&A Choice Rule

Theorem (Sönmez & Ünver, 2022)

*Consider any set of individuals  $I \subseteq \mathcal{I}$ . Then,*

$$C_S(\underline{\triangleright}, \rho^*; I) \setminus C_{OA}(\hat{\rho}; I)$$

*is equal to the maximal set of individuals who suffer from a violation of the Equality Code under the choice rule  $C_{OA}(\hat{\rho}; \cdot)$  for  $I$ .*



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is equal to the maximal set of individuals who suffer from a violation of the Equality Code under the choice rule  $C_{OA}(\dot{\rho}; \cdot)$  for  $I$ .

Corollary

Consider any set of individuals  $I \subseteq \mathcal{I}$ . Then,

$$C_S(\underline{\triangleright}, \rho^*; I) = C_{OA}(\dot{\rho}; I)$$

if and only if the set of individuals  $I$  is materially unaffected by the violation of the Equality Code under the choice rule  $C_{OA}(\dot{\rho}; \cdot)$ .

# The Legal Concept of Migration (Mobility) in India

- In India, the legal terminology does not differentiate between categories of individuals and categories of positions.
  - Somewhat benign for the case of reserve-eligible categories such as SC, because SC positions are exclusive to members of SC.
- As a result the general category and the open category are used synonymously.
  - Legal documents speak of **open category individuals** or **general category positions**.
  - Not so benign, since open category positions are **not** exclusive to individuals from general category.
- The legal concept of **migration** (aka **mobility**) is a consequence of this misleading synonymity.
  - When a member of a reserve-eligible category (eg. SC) receives an open position, she is said to have **migrated** to general/open category.

# The Role of Migration/Mobility in VR Policy

- What makes the VR policy a higher level AA policy is, it provides members of reserve-eligible categories (eg. SC, ST, OBC) with the **benefit of mobility** from their category to general category.
  - In our formal framework, this benefit is regulated through the axiom of **compliance with VR policy**.

## The Loss of Mobility under the Exclusion

- In his Dissenting Opinion, Justice S. Ravindra Bhat describe his strong objection to the exclusionary clause as follows:

*“The exclusionary clause operates in an utterly arbitrary manner. Firstly, it ‘others’ those subjected to socially questionable, and outlawed practices – though they are amongst the poorest sections of society. Secondly, for the purpose of the new reservations, the exclusion operates against the socially disadvantaged classes and castes, absolutely, by confining them within their allocated reservation quotas (15% for SCs, 7.5% for STs, etc.). Thirdly, it denies the chance of **mobility** from the reserved quota (based on past discrimination) to a reservation benefit based only on economic deprivation.”*

- The quote suggests that, in addition to the removal of the exclusionary clause, the Dissenting Justices are also in favor of establishing **mobility** from caste based category to EWS category.
  - Assures that VR protections granted to SEBCs maintain their status as the highest level AA protection.

## Granting Mobility from Reparatory Categories to EWS

- The role EWS plays in our next axiom is parallel to the role open category plays in the axiom compliance for VR protections.

### Definition

A choice rule  $C(\rho; \cdot) = (C^\nu(\rho; \cdot))_{\nu \in \mathcal{V}}$  respects mobility from reparatory categories to EWS if, for any  $I \subseteq \mathcal{I}$ ,  $c \in \mathcal{R} \setminus \{e\}$ , and  $i \in \mathcal{E}^e(\rho)$ ,

$$i \in C^c(\rho; I) \implies \begin{cases} |C^e(\rho; I)| = q^e, \text{ and} \\ \sigma_j > \sigma_i \text{ for any } j \in C^e(\rho; I). \end{cases}$$

## The Case for the EWS-First O&A Choice Rule

- Together with the mandates of *Indra Sawhney (1992)*, our last axiom has a sharp implication in India.

Theorem (Sönmez & Ünver, 2022)

Let the category membership profile  $\rho$  be such that, for any  $i \in \mathcal{I}$ ,

$$|\rho_i \setminus \{e\}| \leq 1.$$

Let  $\bar{\triangleright} \in \Delta^{o,e}$ . Then, a choice rule  $C(\rho; \cdot)$  respects mobility from reparatory categories to EWS and satisfies non-wastefulness, no justified envy, and compliance with VR protections if, and only if, it is the EWS-First O&A choice rule  $C_S(\bar{\triangleright}, \rho; \cdot)$ .

## VR-Maximality

- Sequential choice rules are not the only extensions of the O&A choice rule with normative appeal. Indeed, if the objective is maintaining neutrality between all VR protected categories, then there is a more compelling alternative.

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- Given a set of individuals  $I \subseteq \mathcal{I}$ , let  $\beta(I)$  denote the maximum number of VR-protected positions that can be awarded to eligible individuals.
  - For the case of non-overlapping VR protections,

$$\beta(I) = \sum_{c \in \mathcal{R}} \min \left\{ |I \cap \mathcal{E}^c(\rho)|, q^c \right\}.$$



## VR-Maximality

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- For any  $I \subseteq \mathcal{I}$  and  $i \in \mathcal{I} \setminus I$ , **individual  $i$  increases the VR-utilization of  $I$  if,**

$$\beta(I \cup \{i\}) = \beta(I) + 1.$$

## Meritorious O&A Choice Rule

*mO&A Choice Rule*  $C_{\text{O&A}}(\rho; \cdot) = (C_{\text{O&A}}^\nu(\rho; \cdot))_{\nu \in \mathcal{V}}$

Given  $I \subseteq \mathcal{I}$

*Step 1 (Open Positions).* Allocate open positions to highest merit-ranking individuals. Let  $J = I \setminus C_{\text{O&A}}^o(\rho; I)$ .

*Step 2 (VR-Protected Positions).*

*Step 2.0 (Initiation):* Let  $J_0 = \emptyset$ .

*Step 2.k* ( $k \in \{1, \dots, \sum_{c \in \mathcal{R}} q^c\}$ ): Assuming such an individual exists, choose the highest merit score individual in  $J \setminus J_{k-1}$  who increases the VR-utilization of  $J_{k-1}$ . Denote this individual by  $j_k$  and let  $J_k = J_{k-1} \cup \{j_k\}$ . If no such individual exists, then end the process.

For any individual who receives a VR-protected position in Step 2, the category of the assigned position is determined at the termination of the procedure subject to eligibility.

## Meritorious Over-and-Above Choice Rule

- mO&A choice rule satisfies the mandates of *Indra Sawhney (1992)*:

Proposition (Sönmez & Ünver, 2022)

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*The mO&A choice rule  $C_{\text{OA}}(\rho; \cdot)$  satisfies non-wastefulness, no justified envy, and compliance with VR protections.*

- Moreover, of all such choice rules, it is the one that is most “meritorious.”

# Meritorious Over-and-Above Choice Rule

## Definition (Gale, 1968)

Let members of two sets of individuals  $I = \{i_1, \dots, i_{|I|}\}$ ,  $J = \{j_1, \dots, j_{|J|}\}$  be each enumerated such that the higher the merit score of an individual is the lower index number she has. Then, set  $I$  **Gale dominates** set  $J$  if,

1.  $|I| \geq |J|$ , and
2. for each  $\ell \in \{1, \dots, |J|\}$ ,

$$\sigma_{i_\ell} \geq \sigma_{j_\ell}.$$

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## Theorem (Sönmez & Ünver, 2022)

*Let  $C(\rho; \cdot)$  be any choice rule that satisfies non-wastefulness, no justified envy, and compliance with VR protections. Then for any  $I \subseteq \mathcal{I}$ , the set of individuals  $\widehat{C}_{\text{O\&A}}(\rho; I)$  admitted by the mO&A choice rule Gale dominates the set of individuals  $\widehat{C}(\rho; I)$  admitted under choice rule  $C(\rho; \cdot)$ .*

# Implementation of EWS Quota

- Key arguments by the majority justices in their defense of the exclusion of SEBCs from EWS reservations in the controversial Supreme Court ruling *Janhit Abhiyan (2022)* are **false**.
  - Akin to a false proof of a theorem!
  - Since these arguments are technical in nature, experiences like these suggest an important **support** role for design economists.
- Subject to earlier mandates of the Supreme Court and avoiding the violation of the Equity Code,
  1. Minimal intervention  $\implies$  EWS-Last O&A Choice Rule
  2. Maintaining elevated status of caste-based VR Protections  
 $\implies$  EWS-First O&A Choice Rule
  3. Meritorious VR implementation  $\implies$  mO&A Choice Rule

## Importance of Informed Neutrality

- As emphasized in Li (2017),

*“In addition to studying cause and effect in markets, economists also have a comparative advantage in stating precisely the normatively-relevant properties of complex systems [...]”*



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- As emphasized in Li (2017),  
*“In addition to studying cause and effect in markets, economists also have a comparative advantage in stating precisely the normatively-relevant properties of complex systems [...]”*
- Taking advantage of this comparative advantage through minimalist market design, in this lecture, we have seen how an intuitive compromise policy brought in September 2022 to the hearings of *Janhit Abhiyan (2022)* could have
  - on the one hand, resulted in a major loophole in the system if it was adopted by the court without any additional structure,
  - but at the same time, it could have been further refined to one of three policies that each serve a distinct (but reasonable) normative objective.

## Importance of Informed Neutrality

- More broadly, while the discord between the mission of an institution and its practical implementation can be eliminated with a range of minimalist interventions, these resolutions can potentially have have disparate distributional implications.
- In some settings, this richness can be a blessing by giving policymakers additional flexibility in the design.
- In other settings, they can result in unintended consequences with benevolent but formally ill-advised policymakers or manipulations with politically-motivated ones.
  - Unintended loss of walk -none priority at BPS (Dur, Kominers, Pathak & Sönmez, 2018).
  - Reform of H1-B visa allocation rule under the Former President Trump's "Buy American, Hire American" executive order (Pathak, Rees-Jones & Sönmez, 2020).