Identity, Repression, and the Threat of Ethnic Conflict in a Strong State

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Abstract

Faced with repression from a strong state, one might expect minority ethnic groups to attempt to assimilate into the dominant group to make themselves seem less threatening. However, this conceptualization of threat elides its tactical components. Oppressed minority groups, even under strong states, may engage in anti-state operations in order to reduce the repression they face, and these operations may succeed with greater likelihood the more they assimilate. Anticipating this, strategic states may be more likely to preemptively raise repression in the face of assimilation in order to reduce this threat. Our model formalizes this logic, illustrating that it can be optimal for the minority group to differentiate even when doing so is strictly detrimental to mobilization. Differentiation is more likely to obtain when increased repression is more costly to the group and when the group’s anti-state operations are more capable of compelling the state to substantially reduce repression.

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Ethnic minority groups facing longterm repression by the state face sustained pressure to assimilate into the majority group controlling the state, in the hope of limiting their apparent threat to the state. This conceptualization of threat parallels the in-group/out-group distinction in social identity theory (Tajfel and Turner, 1979) and appears to admit but one equilibrium: the minority group should attempt to assimilate as much as possible in order to minimize out-group discrimination and maximize the rewards that in-group membership brings, whether these be actual rewards or simply a reduction in repression. Formal models capturing the identity choice of an oppressed minority group generally assume this directly, with assimilation only being limited in scope by exogenous cost or a barrier enacted by the minority group's less skilled members who were unable to assimilate themselves (Caselli and Coleman, 2013; Eguia, 2013). Differentiation in the face of repression is not considered desirable.1

This argument misses something, however, when the threat to the majority is more concrete, as it is in conflict scenarios. Even under strong states, minority groups may engage in anti-state operations ranging from peaceful protests to violent terrorism or insurgency in a bid to reduce the repression they face. Once such operations enter into the story, tactical considerations come into play. Specifically, assimilation grants a minority group relative tactical advantages against a strong state: it enables greater mobilization against the state, and makes it more difficult for the state to interdict anti-state operations. Strategic states will anticipate this benefit of assimilation and, when observing attempted assimilation, act preemptively to limit its tactical cost by further increasing repression.

Due to this preemptive action, minority groups face dueling incentives to assimilate. While assimilation benefits them tactically, it also increases their tactical threat to the state, leading to the cost of worsened state repression. When the latter cost is more salient than the former benefit, differentiation may be optimal. Importantly, this can occur even

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1Sambanis and Shayo (2013) also model identity choice in the context of endogenous conflict and allow for more room in the choice set. However, they do not incorporate the role of repression by a strong state. Further, identity choice in our model is more instrumental than in theirs.
when differentiating is strictly detrimental to mobilization. In other words, against a strong state, differentiation is solely a consequence of the expected future behavior of the state, and not due to some mobilization benefit the group might accrue due to an improved ability to solve its collective action problem (Gurr and Moore, 1997; Collier and Hoeffler, 2004) or to sanction group defectors (Fearon and Laitin, 1996; Berman and Laitin, 2008).

In order to capture these heretofore unexplored tactical incentives to differentiate and assimilate, in sections three and four we introduce and solve a game-theoretic model. Our model treats as jointly endogenous the decisions of the state to repress and the minority group to differentiate or assimilate and to engage in anti-state operations that might reduce repression. We find that differentiation is more likely to obtain when increased repression is more costly to the group and when the group’s anti-state operations are more capable of compelling the state to substantially reduce repression. Before introducing the model, we first elaborate on the three key concepts of identifiability, mobilization, and operational capacity that drive our modeling decisions.

**Identifiability, Mobilization, and Operational Capacity**

Our model, described formally in the next section, employs three important concepts: identifiability, mobilization, and operational capacity. We detail each in this section, tying to appropriate literatures.

**Identifiability**

We define an identity group by the combination of both descent-based and non-descent-based attributes that members of the group and others see as salient to group members’ identities (Lee and Turan, 2004; Chandra, 2012). We conceptualize the decision to assimilate as a decision to activate those attributes necessary to belong to the majority group.

This definition encodes an important distinction: individuals may vary in their ability to
accurately identify others as members of a particular ethnic group. Experimental studies by Habyarimana et al (2009) and Harris and Findley (2014) support this, finding that individuals are often unable to identify others’ ethnic group membership.\(^2\) In this context, to be identifiable (as a member of a group) means that others can identify you as belonging to that group. Our model focuses on a variable, \(\sigma\), that captures the degree to which members of the minority identity group are identifiably different from members of the majority group.\(^3\)

We assume that identifiability is at least partial malleable, in line with the trend in recent literature that considers identity to be a social construct and a fluid and situational bond (Smedley, 2001; Posner, 2005; Bernhard and Fischbacher, 2006; Chandra and Wilkinson, 2008; Dickson and Scheve, 2006; Goette and Meier, 2006; Gubler and Selway, 2012; Penn, 2008; Chandra, 2012).\(^4\) We further assume that altering identifiability is costly (Caselli and Coleman, 2013), since it encompasses aspects of identity difference that are malleable to a greater extent, such as behavior, dress, and language, as well as to a lesser extent, such as skin color. We capture this assumption via a cost function, \(d(|\sigma - \sigma_0|)\), that is increasing in the difference between initial \((\sigma_0)\) and final identifiability to capture the increasing difficulty of taking ever more substantial actions to shift one’s identity. For example, altering dress or mannerisms of speech may cost little, altering everyday language more, altering religion substantially more, and altering ethnicity exponentially more. These costs encompass both the direct physical and psychological costs of shifting one’s identifiability, along with all

\(^2\)See Harris and Findley (2014) for an extended discussion of identifiability, including its connection to social identity theory (Tajfel and Turner, 1979).

\(^3\)In practice, it may be differentially easy to identify members of your own and other groups. We elide that distinction here because it is peripheral to our focus on strong repressive states, states in which greater identifiability of the minority group leads to diminished mobilization and operational capacity. We discuss this point at greater length in Mele and Siegel (2016).

\(^4\)See Chandra (2001) for a summary of this literature up to 2001. Also see examples in the social constructivist literature of ethnic switching (Nagel, 1995) and the recent experimental literature on placing and passing, including Habyarimana et al. (2007), which provides experimental evidence that individuals are indeed able to switch apparent ethnicities (see also Harris and Findley (2014)). In particular, the cited experiment shows that skin color is not the only signal used to determine one’s ethnicity, and that members of some groups can send signals to members of other groups that fool them into mistakenly accepting them as members of their own group.
indirect costs of doing so, arising, for example, from a reduction in productive commerce or a similar opportunity cost. Implicitly, this means we assume that these costs outweigh any benefits that might be accrued by the change in identifiability (Caselli and Coleman, 2013).\(^5\)

Though decisions to alter identifiability are made at the individual level, we assume that they are influenced by actions minority group leaders and entrepreneurs can take (Posner, 2004; Chandra and Wilkinson, 2008). For simplicity, we assume these leaders and entrepreneurs, along with the rest of the population of the group, comprise a unitary actor, the minority group. We call assimilation (differentiation) the act of spurring the minority group toward lesser (greater) levels of identifiability and assume that individuals in the group change their levels of identifiability in the same direction as their leaders’ intention, though the magnitude of this change may be heterogeneous across individuals.\(^6\) Thus, though our model is elite-driven, as opposed to the model of Sambanis and Shayo (2013), we do not assume that the masses blindly follow the elites. We only require that elites have incentives to encourage certain behavior among the rest of the group, and that the group moves sufficiently much in the direction the elites prefer.\(^7\)

\(^5\)This assumption allows us to focus on the effects of changing one’s identity on repression. Since changing one’s identifiability entails a cost, the minority group makes its decision to differentiate or assimilate based instrumentally on the effect of this change on future repression, and not on any other benefits the change might bring. Making assimilation exogenously beneficial instead would induce more assimilation without added insight into repression. Also note that ours is a one-shot model; increasing costs are intended to capture the increasingly difficult actions necessary to shift identifiability to a greater degree, not the difficulty of taking a given action in order to assimilate, which may very well be decreasing over time.

\(^6\)By allowing minority group leaders to encourage assimilation (differentiation), our theory helps to explain the conditions under which an activated (nominal) group may become deactivated (activated) (Chandra and Wilkinson, 2008).

\(^7\)This could be accomplished with reasonable assumptions on common group preferences of the sort Sambanis and Shayo (2013) employ, or via an informational model, as in Bueno De Mesquita (2010). Little added intuition relative to the intended goal of our model would be gained by doing so, however. Weakening the assumption that all individuals alter identifiability in the same direction would have an uncertain effect, depending as it would on the relative importance of the individuals altering their identifiability in each direction. If those individuals more important to facilitating mobilization and operational capacity followed their leadership in altering identifiability, however, our results should still hold.
Mobilization

We assume that the minority group makes decisions to differentiate or assimilate instrumentally, in order to reduce repression on it. Identifiability feeds into this goal in two ways: it alters the group’s ability to mobilize and its operational capacity.⁸ We discuss each in turn, beginning with mobilization.

We assume that the majority and minority groups have strictly divergent preferences⁹ and that historical repression of the minority group has produced ample grievances. Repression comprises longterm limitations on the assembly of the minority group and its ability to gather resources, and involves some combination of ethnic or religious hatred, political repression, political and economic exclusion, and economic inequality (Collier and Hoeffler, 2004).

Repression-driven grievance induces the minority group to attempt mobilization against the state (Gates, 2002; Gurr and Moore, 1997). We define mobilization instrumentally as the level of resources (of all types) that the minority group can bring to bear against the repressive state.¹⁰ Grievance drives mobilization not only due to associated anger, distress, and resentment; it also accompanies political and economic restrictions that diminish the outside options available to minority groups, increasing the amount of time available to devote to mobilization (Berman and Laitin, 2008).

Two factors affect mobilization in our model: state repression and minority group identifiability. Empirically, the effect of each on mobilization may be indeterminate. Increasing repression diminishes the level of mobilization the group may achieve given a fixed level of grievance (Moore, 1995; Mason, 1996; Steele, 2009) by inhibiting the minority group’s ability

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⁸These direct effects of identifiability distinguish our model from those in which identity serves as a signal only, such as Austen-Smith and Fryer Jr (2005).

⁹This is a scope condition for our model and it allows us to focus on whether assimilation is possible even when the minority group has no reason beyond reducing repression to do so. If this assumption were to fail to hold, assimilation might occur simply due to aligned preferences.

¹⁰This definition is similar to that in Tilly (1978). Though we consider only a unitary minority group actor in our model, mobilization may be thought of as the aggregation of individuals’ decisions to engage across a spectrum of anti-state operations (Petersen, 2001), very similar to the aggregation of the “fighting efforts” used by Sambanis and Shayo (2013).
to assemble and reducing available resources for mobilization, but it also increases minority group grievance. Increasing identifiability enhances the ability of the minority group to engage in collective action by improving intra-group network ties and institutions that offer conduits for nascent mobilization networks (Gurr and Moore, 1997; Tilly, 1978; Collier and Hoeffler, 2004; Fearon and Laitin, 1996) and by helping group members sanction defectors within their own group, which encourages group cohesion, loyalty, and effectiveness (Fearon and Laitin, 1996; Berman and Laitin, 2008). But it also increases the ease with which a government can repress a minority group, as it improves the government’s ability to differentiate group members and so limit assembly (Kaufmann, 1996, 1998) and minority group resources (Caselli and Coleman, 2013).

Different assumptions on mobilization’s dependence on repression and identifiability would lead to different regions in the parameter space of a more general model. Here we focus on one particular case of interest: the strong repressive state.\footnote{We consider weaker repressive states in Mele and Siegel (2016).} We define the case of a strong repressive state instrumentally in terms of mobilization: if increases in both repression and identifiability lead to decreased mobilization, then we have a strong repressive state. Note that successful anti-state operations may still be undertaken against strong repressive states.

In other words, our interest in this paper is the case of a minority group fundamentally unable to successfully translate increases in repression and identifiability into enhanced group cohesion and grievance. We expect this to happen when the state can effectively project longterm repressive force and so control minority group assembly and resource acquisition.\footnote{Of course, the degree to which force will be effective depends on minority group characteristics as well. We refer only to state characteristics merely for simplicity, not to imply only the state matters.} Many potential contextual factors affect the ability of a state to effectively project longterm repressive force, such as state capacity, external conflicts, alliance entanglements, or geographic features such as proximity or mountainous terrain (Buhaug and Gates, 2002; Fearon...}
and Laitin, 2003; Matuszeski and Schneider, 2008; Buhaug, Cederman and Rød, 2008; Cederman, Buhaug and Rød, 2009).

**Operational Capacity**

This addresses mobilization, but mobilization is only part of the story; it must still be translated into effective action in order for it to have an impact on repression. This leads to our second mechanism tying identity to outcomes, operational capacity. *Operational capacity* is a tactical concept that refers to the ability of the minority group to engage in anti-state operations that would, if successful, produce a reduction in the long-term repression it faces (e.g., a campaign of attacks that causes the state to alter its policies). Two factors influence operational capacity. One is mobilization. The greater the level of mobilization achieved by the minority group, the greater its operational capacity, as the minority group has more resources to bring to bear in combating the state. The other is identifiability. As a minority group becomes more identifiable, the government can more effectively target it, improving counter-dissent and reducing operational capacity. In other words, holding mobilization constant, differentiation reduces operational capacity and so the benefit of any level of mobilization a minority group might have achieved. This could result in more failed individual attacks in a campaign, or in less important government targets chosen by the group. Increased identifiability also implies greater likelihood of one’s being caught and punished for one’s actions against the state, which can decrease the efficacy of the group over the course of operations.\(^{13}\)

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\(^{13}\)Berman (2003) allows for the possibility that due to increased likelihood of in-group punishment, identifiable individuals are less likely to defect, thereby increasing military strength. We assume that the overall negative effects of increased identifiability on anti-state operations outweigh the benefits from decreased defection.
Model

Our model highlights the key concepts of identifiability, mobilization, and operational capacity that drive decisions of identity change, repression, and conflict initiation.

Actors and Strategies

We model three sequential decisions, under incomplete information, taken by two unitary actors: a minority group (R, for rebel group) and a repressive government controlled by a majority group (G, for government). These actions are, in the order they occur:

1. The minority group chooses a level of identifiability, $\sigma \in [0, 1]$, subject to known cost $d(|\sigma - \sigma_0|)$, where $d$ is an increasing function, and $\sigma_0$ is the group’s initial level of identifiability.\(^{14}\)

2. The government chooses from the strategy set $\{P_0, P_\epsilon\}$, where the choice of $P_0$ costlessly maintains the level of longterm repression at its initial value $\phi_0 \in (0, 1]$ and the choice of $P_\epsilon$ increases the level of longterm repression to $\phi_i = \phi_0 + \epsilon$, $\epsilon \in (0, 1 - \phi_0]$. The latter choice occasions a cost $\kappa > 0$.

3. The minority group chooses from the strategy set $\{A, \sim A\}$, where $A$ indicates that it engages in anti-state operations (e.g., a campaign of attacks) designed to reduce repression and $\sim A$ indicates it does not engage in such operations. Engaging in operations occasions a cost, $c > 0$.

Each decision becomes common knowledge after it is taken. The cost of increasing repression may be due to resources lost in increasing the scope of repression, including paying the personnel necessary to enforce repression. The cost of engaging in anti-state operations may be due, for example, to the loss of resources during a campaign of attacks. As each

\(^{14}\)Making the cost uncertain would not change any results of the model.
type of loss may be a priori uncertain, we assume that both government and minority group only learn their respective costs, $\kappa$ and $c$, right before they make their related decisions, and do not know them in prior stages. Note that this means the minority group only learns the cost of operations after it decides on a level of identifiability. We assume that each actor does have prior beliefs about these costs: both believe in the first stage that $\kappa$ is distributed uniformly on $[0, 1]$ and $c$ is distributed uniformly on $[0, 1]$.$^{15}$

Operations succeed in reducing repression by $e \in (0, \phi_i]$ with probability $p(m(\phi_i, \sigma), \sigma)$, where $m(\cdot)$ refers to the level of mobilization of the minority group and the size of $p(\cdot)$ captures the operational capacity of the group at a given level of mobilization. Substantively, this reduction in repression could occur because the government alters policy in the hope of heading off future operations, or because the minority group improves its hold over land within which it is able to exert greater influence over the system. The final level of repression after all choices have been made is $\phi_f \in [0, 1]$.\textsuperscript{16}

Some assumptions on the functional forms of $m(\phi_i, \sigma)$ and $p(m(\phi_i, \sigma), \sigma)$ are required by our concept of each, as detailed in the previous section. For a strong repressive state we assume that $\frac{\partial m}{\partial \phi_i} < 0$ and $\frac{\partial m}{\partial \sigma} < 0$. Following our discussion of operational capacity, we assume that $\frac{\partial p}{\partial m} > 0$ and $\frac{\partial p}{\partial \sigma} < 0$. The former implies that $\frac{\partial p}{\partial \phi_i} < 0$; together, both imply that $\frac{\partial p}{\partial \sigma} = \frac{\partial p}{\partial \phi_i} + \frac{\partial p}{\partial m} \frac{\partial m}{\partial \sigma} < 0$.

Though signs of necessary second derivatives of $p(\cdot)$ do not follow directly from these assumptions, for the sake of clarity in the text we directly assume that $\frac{\partial^2 p}{\partial \phi_i^2} > 0$ and $\frac{\partial^2 p}{\partial \sigma \partial \phi_i} > 0$. The former implies that increasing repression has a decreasing absolute marginal effect on operational capacity. The latter implies that repression (identifiability) has less of an absolute

\textsuperscript{15}We make these distributional assumptions to prevent our results from depending too closely on fine details of the cost distributions, which are unrelated to the trade-offs we are exploring. However, only Proposition 3 requires the uniformity assumption on the distribution of $\kappa$, and only Propositions 2 and 3 require the uniformity assumption on the distribution of $c$.

\textsuperscript{16}These actions imply that the government will not seek to accommodate the minority group on its own; only anti-state operations by the minority group can induce a reduction in repression. An interesting model extension that is beyond the scope of this paper would make endogenous the initial choice of government to either accommodate, leading to bargaining, or to repress, leading to this model.
marginal effect the larger is identifiability (repression). Both assumptions are consistent with the concept of a strong repressive state: as hope for improvement in repression grows more remote, additional detrimental circumstances become relatively less important. We discuss in the appendix what changes when these assumptions do not hold.

**Payoffs**

We assume that, all else equal, the minority group desires less repression and the government more, due to the increased political, social, and economic control of the minority group by the government caused by increased repression. This control can translate, for example, into increased expropriation of resources by and increased ability to enact favorable policies for the majority group. Similarly, the minority group desires a reduction in repression to improve its lot in numerous ways, from concrete benefits arising from increased influence within the system to an improved psychological state.

As our focus is on the complex trade-offs inherent in identifiability, mobilization, and operational capacity, we keep the actors’ utilities deliberately simple. They are:

- **G’s utility:** \( v = \begin{cases} \phi_f - \kappa & \text{if } P_e \\ \phi_f & \text{if } P_0 \end{cases} \).

- **R’s utility:** \( u = \begin{cases} (1 - \phi_f) - d(|\sigma - \sigma_0|) - c & \text{if } A \\ (1 - \phi_f) - d(|\sigma - \sigma_0|) & \text{if } \sim A \end{cases} \).

\(^{17}\)Following Caselli and Coleman (2013), we might instead assume that repression would differentially affect the minority group depending on how easily it may be excluded from the system. However, as this would not address the key trade-offs in which we are interested, we choose a simpler model.
Results

As specified, we have an extensive form game with incomplete information over costs $c$ and $\kappa$. Our solution concept is subgame perfect equilibrium.\(^{18}\) We first solve for this equilibrium using backward induction, as is standard, and then compute comparative statics.

Equilibrium

Begin at the third stage. $R$ chooses $A$ if and only if $u(A) > u(\sim A)$, where we have assumed that indifference implies a lack of action to avoid knife-edged cases. If $R$ chooses $A$, the probability that this results in a reduction in repression is $p(m(\phi, \sigma), \sigma)$. It receives $(1 - \phi + e)$ if it is successful and $(1 - \phi_i)$ if not. $R$’s expected utility for each choice (i.e., at the third stage), with $c$ the realized value of the cost, is thus:

$$U_3 = \begin{cases} 
  p(m(\phi, \sigma), \sigma)(1 - \phi + e) + (1 - p(m(\phi, \sigma), \sigma))(1 - \phi_i) - d(|\sigma - \sigma_0|) - c  & \text{for } A, \\
  (1 - \phi_i) - d(|\sigma - \sigma_0|)  & \text{for } \sim A.
\end{cases}$$

Thus, $R$ chooses $A$ in equilibrium if and only if $c < ep(m(\phi, \sigma), \sigma)$.

Now consider the second stage and let $F_c$ be the cdf of $c$, $p^{A|\epsilon} = Pr(A|P_\epsilon)$ be $G$’s expectation that $R$ will choose $A$ conditional on $G$’s choosing $P_\epsilon$, and $p^{A|0} = Pr(A|P_0)$ be $G$’s expectation that $R$ will choose $A$ conditional on $G$’s choosing $P_0$. Inserting $R$’s equilibrium choice from the last stage into these two probabilities allows us to write them as:\(^{19}\)

$$p^{A|\epsilon} = F_c[ep(m(\phi_0 + \epsilon, \sigma), \sigma)],$$
$$p^{A|0} = F_c[ep(m(\phi_0, \sigma), \sigma)].$$

\(^{18}\)Recall that costs are unknown to all before decisions are made, so no signaling takes place.

\(^{19}\)Note that we have not yet employed the assumption that $c$ is uniformly distributed, and will not need to for comparative statics related to $R$’s second decision (Proposition 1 below).
G’s expected utility depends on the probabilities that R will attack, \( p^{A|\epsilon} \) and \( p^{A|0} \), and on the corresponding probabilities of success were it to do so, \( p(m(\phi_0 + \epsilon, \sigma), \sigma) \) and \( p(m(\phi_0, \sigma), \sigma) \). We can write it as:

\[
V = \begin{cases} 
  p^{A|\epsilon} p(m(\phi_0 + \epsilon, \sigma), \sigma)(\phi_0 + \epsilon - \epsilon) + (1 - p^{A|\epsilon} p(m(\phi_0 + \epsilon, \sigma), \sigma))(\phi_0 + \epsilon) - \kappa & \text{for } P_\epsilon, \\
  p^{A|0} p(m(\phi_0, \sigma), \sigma)(\phi_0 - \epsilon) + (1 - p^{A|0} p(m(\phi_0, \sigma), \sigma))(\phi_0) & \text{for } P_0
\end{cases}
\]

In equilibrium, G chooses \( P_\epsilon \) if and only if the first line in \( V \) exceeds the second, assuming indifference implies a lack of action. Thus, G chooses \( P_\epsilon \) in equilibrium if and only if \( \kappa < \epsilon + \epsilon p(m(\phi_0, \sigma), \sigma)p^{A|\epsilon} - \epsilon p(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A|\epsilon}. \)

Now consider the first stage and let \( F_\kappa \) be the cdf of \( \kappa \), and \( p^\epsilon = Pr(\epsilon) \) be R’s expectation that G will choose \( P_\epsilon \). Inserting G’s equilibrium choice from the second stage yields:

\[
p^\epsilon = F_\kappa[\epsilon + \epsilon p(m(\phi_0, \sigma), \sigma)p^{A|0} - \epsilon p(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A|\epsilon}].
\]

Together, the probabilities of action \( p^\epsilon \), \( p^{A|\epsilon} \), and \( p^{A|0} \) allow us to expand the \( \phi_f \) in R’s utility in the first stage. All that is needed in addition to these is the expected cost of engaging in anti-state operations in the third stage. This is \( E[\epsilon] \). Since \( A \) is chosen whenever \( c < \epsilon p(m(\phi_i, \sigma), \sigma) \), we can write this expected cost as \( p^\epsilon \int_0^{\epsilon p(m(\phi_i + \epsilon, \sigma), \sigma)} c \, dc + (1 - p^\epsilon) \int_0^{\epsilon p(m(\phi_0, \sigma), \sigma)} c \, dc \). Evaluating this yields the expected cost \( \frac{\epsilon^2}{2}[p^\epsilon(p(m(\phi_0 + \epsilon, \sigma)))^2 + (1 - p^\epsilon)(p(m(\phi_0, \sigma))))^2] \). With this, we can write R’s expected utility at the first stage as:

\[
U_1 = 1 - \phi_0 - \epsilon p^\epsilon + \epsilon[p^{A|\epsilon} p^\epsilon p(m(\phi_0 + \epsilon, \sigma), \sigma) + p^{A|0}(1 - p^\epsilon)p(m(\phi_0, \sigma), \sigma)] - d(|\sigma - \sigma_0|) - \frac{\epsilon^2}{2}[p^\epsilon(p(m(\phi_0 + \epsilon, \sigma)))^2 + (1 - p^\epsilon)(p(m(\phi_0, \sigma))))^2] \]

R’s equilibrium level of identifiability maximizes \( U_1 \). Continuity of all functions and

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Note that we have not yet employed the assumption that \( \kappa \) is uniformly distributed, and will not need to for comparative statics related to G’s decision and R’s second decision (Propositions 1 and 2 below). We will assume a uniform distribution on \( c \) for results relating to G’s decision, however.
compactness of the domain ensure that this maximum exists. We discuss equilibrium identifiability responses of the minority group after first discussing the later two decisions.

**Comparative Statics**

We have four exogenous parameters in our model, $\phi_0, \sigma_0, e,$ and $\epsilon$. Propositions 1 and 2 detail comparative statics relative to these parameters. These not only illustrate the effect of initial levels of identifiability and repression on decisions to repress and to initiate anti-state operations, they also help us to understand the opening decision of the minority group to assimilate or differentiate. Proofs for all propositions can be found in the appendix.

In addition to being necessary for the computation of equilibria, the probabilities of action $p^\epsilon$, $p^{A|\epsilon}$, and $p^{A|0}$ allow us to clarify our comparative statics. Rather than considering variation in the size of the parameter subspace corresponding to each equilibrium outcome, we instead compute the effect of each parameter on these probabilities of action. This entails no loss of rigor; these probabilities vary identically to the sizes of the relevant subspaces, and our analysis produces identical intuition (and empirical hypotheses). And it gains us a more natural point of reference; since costs for repression and conflict are realized only right before $G$ and $R$, respectively, act, changes in probabilities of action are of direct interest to both $G$ and $R$, as well as to the analyst who requires these probabilities to make good policy recommendations.

**Anti-state Operations**

We start by examining the minority group’s decision to engage in anti-state operations. Proposition 1 summarizes the effects of the four exogenous parameters on this decision.

**Proposition 1:** Under a strong repressive state, the probability that the minority group engages in anti-state operations is increasing in $e$ and decreasing in $\epsilon$, $\phi_0$, and $\sigma_0$.

Proposition 1 is fairly intuitive in the case of the strong repressive state. Increasing $e$ has
no effect on anything other than the potential gain to anti-state operations, so increasing it leads to more attempted operations. Increasing each of the other three parameters yields decreased mobilization and operational capacity, inducing fewer operations in equilibrium.

**Increasing Repression**

Next we turn to the government’s decision to increase repression. Proposition 2 summarizes the effects of the four exogenous parameters on this decision.

**Proposition 2:** Under a strong repressive state, the probability that the government increases repression is increasing in $e$ and $\epsilon$, and decreasing in $\phi_0$ and $\sigma_0$.

As compared to the minority group’s decision to initiate operations, the government’s decision evinces increased strategic complexity owing to the multiple effects of repression in the model. For a strong repressive state, an increase in $e$ leads $G$, somewhat counterintuitively, to increase repression more frequently. The reason is that increasing repression decreases the chance that $R$ acts and acts successfully. This diminishes the likelihood $R$ receives the increased benefit from successful action captured by a larger value of $e$. $G$ also increases repression more often as $\epsilon$ grows larger, but for a simpler reason: higher values of $\epsilon$ mean that, when increasing repression, $G$ both gains more utility and decreases the chance $R$ engages in successful operations.

In contrast, $G$ increases repression less often with increases in $\phi_0$ and $\sigma_0$, respectively the initial levels of repression and identifiability. Though increasing each parameter in this case leads to less likely operations from $R$, which makes increasing repression relatively safer for $G$, decreasing returns imply less incentive for $G$ to increase repression the worse shape in which the minority group finds itself.\(^{21}\) Thus, increased identifiability need not yield increased repression, a fact that we will use below.

\(^{21}\)Note that $G$ benefits in two ways due to increased repression: a direct utility benefit from increased control over the system, and a decrease in the probability of successful operations. It is the latter benefit that exhibits decreasing returns, becoming less valuable relative to the cost of increasing repression.
Choosing Identifiability

While we allow the minority group to choose a specific level of identifiability, we are not particularly interested in the exact level chosen in equilibrium. Among other reasons, the specific value will depend closely on the cost term, $d(|\sigma - \sigma_0|)$, which has an unspecified functional form beyond being increasing in both directions away from $\sigma_0$. Thus, rather than produce an equation that implicitly defines the equilibrium value of $\sigma$, we focus on whether $R$ increases or decreases identifiability in equilibrium. In other words, we find the equilibrium conditions under which $R$ will assimilate or differentiate. Our analysis in the appendix yields our final proposition.

Proposition 3: Under a strong repressive state, the minority may either assimilate or differentiate in equilibrium. It is more likely to differentiate when the cost of increased repression to the minority group is high and when the group would be able to compel the state to substantially reduce repression if successful.

The possibility of counterintuitively differentiating in the face of a strong repressive state arises solely from the promise that doing so will reduce the likelihood that the state will later increase repression; the latter is logically necessary for the former, as we show in the appendix. The reason is that differentiating does two things, only one of which is positive. By Proposition 2, it reduces the likelihood that the state increases repression, a positive outcome for the minority group. It also reduces the likelihood that anti-state operations will be successful, which, by Proposition 1, leads to their being attempted less often as well. This is a negative outcome. The minority group’s identity decision comes down to weighing the negative against the positive.

To derive further insight from the decision to differentiate, we break down the two distinct costs to the minority group of the state’s increasing repression. Avoiding these costs is the sole benefit of differentiation, which amounts to taking a deliberate reduction in the likelihood that it could successfully act against the state in order to reduce the state’s need to repress
it. The greater these costs, the more benefit there may be in differentiating, implying we should see differentiation happen (weakly) more often in equilibrium.

The first cost to the minority group of increasing repression is a direct decrease to its utility. We capture this cost in our parameter $\epsilon$, which measures both the capacity of a state to increase repression and its leeway to do so.\textsuperscript{22} Larger values of $\epsilon$ signal a larger reduction in utility for the minority group should repression be increased. Minority groups facing high-capacity, unconstrained states should be more likely to differentiate to avoid further repression, while those facing more constrained states might find assimilation more attractive.

The second cost is an indirect one. An increase in repression produces a decrease in operational capacity, which diminishes the likelihood that the minority group will realize a decrease in repression. Several of our parameters capture this cost. One is $e$, which measures the degree to which the minority group will be able to effect change, should it be successful.\textsuperscript{23} Larger values of $e$, signaling a group whose combination of tactical capabilities and socio-political-economic context make it better able to effect change, mean the reduction in the likelihood of successful operations due to increased repression is relatively more costly.

Another parameter capturing this indirect cost is the difference between $p(m(\phi_0 + \epsilon, \sigma), \sigma)$ and $p(m(\phi_0, \sigma), \sigma)$, which represents the decrease in the likelihood of successful operations with increased repression. Greater such differences are more likely when the chance of success at lower levels of repression ($p(m(\phi_0, \sigma), \sigma)$) is larger, when $p(\cdot)$ is more responsive to repression, and when $\epsilon$ is larger. The first two are related: the greater is $p(m(\phi_0, \sigma), \sigma)$, the more room there is for $p(\cdot)$ to respond significantly to increased repression. Whether $p(m(\phi_0, \sigma), \sigma)$ is relatively large or $p(\cdot)$ is responsive to repression depends on both structural and tactical factors. Relatively large values of $p(m(\phi_0, \sigma), \sigma)$ could be indicative of a strong

\textsuperscript{22}Note that a strong repressive state would always benefit from increasing $\epsilon$, so we may assume $\epsilon$ is the largest such increase feasibly obtainable by the state.

\textsuperscript{23}A minority group would always benefit from increasing $e$, so we may assume $e$ is the largest such increase feasibly obtainable by the group.
A repressive state that has not yet chosen to make abundant use of its repressive capabilities (i.e., $\phi_0$ is low), or a minority group with superior tactical capabilities that makes effective use of what mobilization it does achieve. A $p(\cdot)$ that is responsive to repression could signal a more steeply sloping mobilization curve and a minority group whose tactics rely heavily on mobilization to provide active or passive support for anti-state operations.

Both these parameters capturing the indirect cost of increased repression are complementary; the greater is one, the more the other matters in the minority group’s decision. Put together, we expect that differentiation will be more common when minority groups stand to lose a reasonable chance at reducing repression should the state increase it further. In contrast, we should expect to see more assimilation when further state repression is less of a factor, because it is already high, the state is constrained in terms of future repression, or the group’s tactics do not rely heavily on mobilization to achieve success. Note that, even in the case of a strong repressive state, in which increased grievance does not translate into increased mobilization, the identity decision of the minority group depends in part on tactical factors, highlighting the importance of their inclusion in the model.

Conclusion

Identifiability—the degree to which members of the minority group are recognizably different from members of the majority group—fundamentally affects the decisions of governments to repress and minority groups to initiate conflict. Looking forward to the impact of identifiability on these decisions, members of the minority group will strategically alter their levels of identifiability via assimilation or differentiation in order to minimize future repression. Thus, identity, repression, and conflict initiation decisions are inextricably linked through the malleability of identity.

We have presented a formal model that makes jointly endogenous the decisions of the state to repress and the minority group to engage in anti-state operations and assimilate into
or differentiate from the majority group. Our model provides two mechanisms, mobilization and operational capacity, to understand the role of identifiability in the causal linkages between these three decisions, allowing us to begin to understand the longterm decision to assimilate or differentiate. When applied to the case of a strong repressive state, we find that it can be optimal for ethnic minority groups to differentiate, even when this hurts their ability to mobilize and limits their operational capacity. They do this in order to reduce the tactical threat they would pose to the state via anti-state operations, and so reduce the state’s incentive to enact additional, damaging repression.

The likelihood that the minority group will differentiate in this fashion depends on both structural and tactical factors. Differentiation is more likely when increased repression is more costly to the group, both in terms of its direct effect on the lives of minority group members and its indirect effect on the potential for future anti-state operations that might ameliorate repression. Our model thus illustrates how tactical considerations can not only alter the outcome of conflict, but change the very identity of the parties themselves.

Consequently, the model also speaks to the need for further empirical study of tactical considerations in ethnic conflict. For instance, our model shows that differentiation in the presence of a strong repressive state is more likely when minority groups’ tactics rely heavily on mobilization to achieve success. However, there are little systematic data on this. This limits the degree to which we can empirically verify that the causal mechanisms we identify as leading to ethnic differentiation in the face of repression are definitively active. However, there are numerous examples that would seem casually, if not definitively causally, to fit, in which an ethnic minority maintained strong identity differentiation in the face of repression, despite not using this differentiation to increase mobilization against the state. For instance, the Kurdish and the Druze minorities in the Middle East at various times over their histories seem likely candidates (Nisan, 2002). The following statement purportedly offered by one of the founders of the Druzes is instructive in this regard: “Obey every nation that passes over you, but remember me in your heart.” (93)
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Appendix: Proofs for all Propositions

To begin, we note that the only place that $\sigma_0$ occurs is in the cost term in R’s utility function, and that the assumptions on the cost term directly imply that the equilibrium value of $\sigma$ is increasing in $\sigma_0$. This last result implies that the sign of all comparative statics with respect to $\sigma_0$ can be found by differentiating with respect to $\sigma$. Note also that in these proofs we keep the distributions of $c$, $F_c$, and $\kappa$, $F_{\kappa}$, general until such time as we need to assume a uniform distribution.

Proof of Proposition 1

1. 
\[
\frac{dp^{A|\epsilon}}{d\epsilon} = F_c[p(m(\phi_0 + \epsilon, \sigma), \sigma)]p(m(\phi_0 + \epsilon, \sigma), \sigma) - f_c[p(m(\phi_0 + \epsilon, \sigma), \sigma)]p(m(\phi_0 + \epsilon, \sigma), \sigma) > 0
\]

2. 
\[
\frac{dp^{A|0}}{d\epsilon} = F_c[p(m(\phi_0, \sigma), \sigma)]p(m(\phi_0, \sigma), \sigma) - f_c[p(m(\phi_0, \sigma), \sigma)]p(m(\phi_0, \sigma), \sigma) > 0
\]

Since success is increasing in mobilization in all cases, the first derivative on the RHS is positive. As $\frac{dm(\phi_0 + \epsilon)}{d\epsilon} < 0$, $\frac{dp^{A|\epsilon}}{d\epsilon} < 0$.

3. 
\[
\frac{dp^{A|0}}{d\phi_0} = eF_c[p(m(\phi_0 + \epsilon, \sigma), \sigma)]\frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{d\phi_0}p(m(\phi_0 + \epsilon, \sigma), \sigma) - f_c[p(m(\phi_0 + \epsilon, \sigma), \sigma)]\frac{dp(m, \sigma)}{d\phi_0}m(\phi_0 + \epsilon, \sigma)
\]

The same logic again implies that $\frac{dp^{A|0}}{d\phi_0} < 0$. 

1
\[ \frac{dp^{A[0]}}{\partial \phi_0} = e F_c[p(m(\phi_0, \sigma), \sigma)(e)] \frac{dp(m(\phi_0, \sigma), \sigma)}{\partial \phi_0} \]

The same logic again implies that \( \frac{dp^{A[0]}}{\partial \phi_0} < 0 \).

4.

\[ \frac{dp^{A[\epsilon]}}{\partial \sigma} = ef_c[p(m(\phi_0 + \epsilon, \sigma), \sigma)(e)] \frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{\partial \sigma} \]

Since we have assumed that \( \frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{\partial \sigma} < 0 \), we know that \( \frac{dp^{A[\epsilon]}}{\partial \sigma} < 0 \). As noted above, this provides comparative statics relative to \( \sigma_0 \).

\[ \frac{dp^{A[0]}}{\partial \sigma} = ef_c[p(m(\phi_0, \sigma), \sigma)(e)] \frac{dp(m(\phi_0, \sigma), \sigma)}{\partial \sigma} \]

Since we have assumed that \( \frac{dp(m(\phi_0, \sigma), \sigma)}{\partial \sigma} < 0 \), we know that \( \frac{dp^{A[0]}}{\partial \sigma} < 0 \).

**Proof of Proposition 2**

1.

\[ \frac{dp^{\epsilon}}{\partial c} = F_k[(\epsilon) + ep(m(\phi_0, \sigma), \sigma)p^{A[0]} - ep(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A[\epsilon]}] \]

\[ (p(m(\phi_0, \sigma), \sigma)p^{A[0]} + p(m(\phi_0, \sigma), \sigma)e \frac{dp^{A[0]}}{\partial c} - p(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A[\epsilon]} - p(m(\phi_0 + \epsilon, \sigma), \sigma)e \frac{dp^{A[\epsilon]}}{\partial c} \]

\[ = F_k[(\epsilon) + ep(m(\phi_0, \sigma), \sigma)p^{A[0]} - ep(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A[\epsilon]}] \]

\[ [p(m(\phi_0, \sigma), \sigma)p^{A[0]} - p(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A[\epsilon]} + e(p(m(\phi_0, \sigma), \sigma) \frac{dp^{A[0]}}{\partial c} - p(m(\phi_0 + \epsilon, \sigma), \sigma) \frac{dp^{A[\epsilon]}}{\partial c})] \]

Since the cost function for \( c \) is uniform, we know that \( f_c = 1 \) and \( p^{A[\epsilon]} = ep(\cdot) \). Therefore we can simplify to:

\[ \frac{dp^{\epsilon}}{\partial c} = F_k[(\epsilon) + p(m(\phi_0, \sigma), \sigma)p^{A[0]}(e) - p(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A[\epsilon]}(e)] \]

\[ [2e(p^2(m(\phi_0, \sigma), \sigma) - p^2(m(\phi_0 + \epsilon, \sigma), \sigma))]] \]
We know that \(p^2(m(\phi_0, \sigma), \sigma) - p^2(m(\phi_0 + \epsilon, \sigma), \sigma) > 0\). From this we know that \(\frac{dp}{de} > 0\).

2. 

\[
\frac{dp}{de} = f_k[(\epsilon + ep(m(\phi_0, \sigma), \sigma)p^{A[0]} - ep(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A[\epsilon]}]
\]

\[
(1 - e(\frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{de}p^{A[\epsilon]} + \frac{dp^{A[\epsilon]}}{de}p(m(\phi_0 + \epsilon, \sigma), \sigma)))
\]

Again using the uniformity of the cost function, we can simplify this to:

\[
\frac{dp}{de} = f_k[(\epsilon + ep(m(\phi_0, \sigma), \sigma)p^{A[0]} - ep(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A[\epsilon]}]
\]

\[
(1 - 2e^2\frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{de}p(m(\phi_0 + \epsilon, \sigma), \sigma))
\]

Since \(\frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{de} < 0\), we know that \(\frac{dp}{de} > 0\).

3. 

\[
\frac{dp}{d\phi_0} = f_k[(\epsilon + ep(m(\phi_0, \sigma), \sigma)p^{A[0]} - ep(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A[\epsilon]}]
\]

\[
(\frac{dp(m(\phi_0, \sigma), \sigma)}{d\phi_0}p^{A[0]}e + \frac{dp^{A[0]}}{d\phi_0}p(m(\phi_0, \sigma), \sigma)e - \frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{d\phi_0}p^{A[\epsilon]}e
\]

\[
-\frac{dp^{A[\epsilon]}}{d\phi_0}p(m(\phi_0 + \epsilon, \sigma), \sigma)e)
\]

Again using the uniformity of the cost function, we can simplify to:

\[
\frac{dp}{d\phi_0} = f_k[(\epsilon + ep(m(\phi_0, \sigma), \sigma)p^{A[0]} + ep(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A[\epsilon]}]
\]

\[
[2e^2\left(\frac{dp(m(\phi_0, \sigma), \sigma)}{d\phi_0}p(m(\phi_0, \sigma), \sigma) - \frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{d\phi_0}p(m(\phi_0 + \epsilon, \sigma), \sigma)\right)]
\]

We know that \(p(m(\phi_0 + \epsilon, \sigma), \sigma) < p(m(\phi_0, \sigma), \sigma)\). Since \(\frac{\partial^2 p}{\partial \phi_0^2} > 0 \Rightarrow \frac{dp(m(\phi_0, \sigma), \sigma)}{d\phi_0} < \frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{d\phi_0}\), with both terms negative, we know that the magnitude of the RHS of the latter inequality is less than the magnitude of the LHS. This implies that the first, negative term within the brackets is larger than the second, positive term, implying that the comparative static is negative.

If \(\frac{\partial^2 p}{\partial \phi_0^2} > 0\) fails to hold, our results still go through as long as the weaker condition \(\frac{dp(m(\phi_0, \sigma), \sigma)}{d\phi_0}p(m(\phi_0, \sigma), \sigma) - \frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{d\phi_0}p(m(\phi_0 + \epsilon, \sigma), \sigma) < 0\) is true. If this too fails to hold, then \(\frac{dp}{d\phi_0} > 0\) and the state is more likely to increase repression the higher is its initial level. This affects no subsequent results.
4. Once again using the uniformity of the cost function, we can simplify this derivative (which is basically the same as the previous one, explaining the skipped step below) to:

\[
\frac{dp^c}{d\sigma} = f_k[(\epsilon + ep(m(\phi_0, \sigma), \sigma)p^{A[0]} - ep(m(\phi_0 + \epsilon, \sigma), \sigma)p^{A[\epsilon]}]
\]

\[
[2e^2\left(\frac{dp(m(\phi_0, \sigma), \sigma)}{d\sigma}p(m(\phi_0, \sigma), \sigma) - \frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{d\sigma}p(m(\phi_0 + \epsilon, \sigma), \sigma)\right)]
\]

Since \(\frac{\partial^2 p}{\partial \epsilon \partial \sigma} > 0\), by the same logic as in the previous comparative static we know that the derivative is negative.

If \(\frac{\partial^2 p}{\partial \sigma \partial \epsilon} > 0\) fails to hold, our results still go through as long as the weaker condition \(\frac{dp}{d\sigma}(m(\phi_0, \sigma), \sigma) - \frac{dp(m(\phi_0 + \epsilon, \sigma), \sigma)}{d\sigma}p(m(\phi_0 + \epsilon, \sigma), \sigma) < 0\) is true. If this too fails to hold, then \(\frac{dp^c}{d\sigma} > 0\) and the state is more likely to increase repression the higher is the minority group’s initial level of identifiability. When this is the case, as noted in the following proof, differentiation cannot happen in equilibrium.

**Proof of Proposition 3**

Recall that:

\[
U_1 = 1 - \phi_0 - \epsilon p^c + e[p^{A[\epsilon]}p^c(p(m(\phi_0 + \epsilon, \sigma), \sigma) + p^{A[0]}(1 - p^c)p(m(\phi_0, \sigma), \sigma)]
\]

\[-d(|\sigma - \sigma_0|) - \frac{e^2}{2}[p^c p^2(m(\phi_0 + \epsilon, \sigma)) + (1 - p^c)p^2(m(\phi_0, \sigma))].
\]

As the cost term, \(d(\cdot)\), is arbitrary and increasing in magnitude in both directions away from \(\sigma_0\), rather than produce an equation that implicitly defines the equilibrium value of \(\sigma\), we focus on whether \(R\) increases or decreases identifiability in equilibrium. To do this we drop the \(d(\cdot)\) term in \(U_1\) and compute the derivative of \(U_1\). This indicates whether the minority group’s expected utility, absent cost, is decreasing or increasing in \(\sigma\), and thus whether the minority group will assimilate or differentiate, respectively, in equilibrium.

Before computing the derivative, we can simplify \(U_1\) using previous results. Dropping the cost to alter identifiability, plugging in for \(p^{A[\epsilon]}\) and \(p^c\) (the latter in reverse), making use of the uniformity assumptions on \(c\) and \(\kappa\), and doing some algebra yields:

\[
U_1 = 1 - \phi_0 + p^c[\epsilon - \frac{e^2}{2}(p^2(m(\phi_0 + \epsilon, \sigma)) - p^2(m(\phi_0, \sigma)))] + \frac{e^2}{2}p^2(m(\phi_0, \sigma))
\]

\[= 1 - \phi_0 - \frac{p^{\epsilon^2}}{2} - \frac{ep^c}{2} + \frac{e^2p^2(m(\phi_0, \sigma))}{2}.
\]

Its derivative is

\[
\frac{dU_1}{d\sigma} = -(p^c + \frac{\epsilon}{2})\frac{dp^c}{d\sigma} + e^2p(m(\phi_0, \sigma))\frac{dp(m(\phi_0, \sigma))}{d\sigma}.
\]
The second term is negative from Proposition 1. The first term is positive from Proposition 2. As the signs of the first and second terms in the derivative are different, what R does depends on the tradeoff between the two. The second term corresponds to the reduction in the expected benefit of operational capacity with increasing identifiability. The first term corresponds to the state’s increasing repression less often with increasing identifiability. Formally, differentiation happens when
\[-(p^2 + \frac{\epsilon}{2}) \frac{dp^2}{d\sigma} > -e^2p(m(\phi_0, \sigma)) \frac{dp(m(\phi_0, \sigma))}{d\sigma}\]
and assimilation when the reverse is true. Note that if \( \frac{dp^2}{d\sigma} > 0 \), differentiation can never happen in equilibrium.

We can expand this condition using uniformity of the cost distributions and prior results. First note that for \( \frac{dp^2}{d\sigma} < 0 \), a necessary condition for differentiation, it must be the case that \( \frac{dp(m(\phi_0, \sigma), \sigma)}{d\sigma} p(m(\phi_0, \sigma), \sigma) - \frac{dp(m(\phi_0+\epsilon, \sigma), \sigma)}{d\sigma} p(m(\phi_0 + \epsilon, \sigma), \sigma) < 0 \). This implies that
\[
\frac{dp(m(\phi_0, \sigma), \sigma)}{d\sigma} p(m(\phi_0 + \epsilon, \sigma), \sigma) > \frac{dp(m(\phi_0+\epsilon, \sigma), \sigma)}{dp(m(\phi_0, \sigma))}.
\]

Our expanded condition reduces, after some algebra, to:
\[
\frac{dp(m(\phi_0, \sigma), \sigma)}{dp(m(\phi_0 + \epsilon, \sigma), \sigma)} \cdot Z > \frac{p(m(\phi_0 + \epsilon, \sigma))}{p(m(\phi_0, \sigma))},
\]
where
\[
Z = \frac{3\epsilon + 2e^2(p^2(m(\phi_0, \sigma)) - p^2(m(\phi_0 + \epsilon, \sigma))) - 1}{3\epsilon + 2e^2(p^2(m(\phi_0, \sigma)) - p^2(m(\phi_0 + \epsilon, \sigma)))}.
\]
Since \( Z < 1 \), it is more difficult to satisfy this condition than the similar condition for \( \frac{dp^2}{d\sigma} < 0 \). It is impossible to satisfy if \( 3\epsilon + 2e^2(p^2(m(\phi_0, \sigma)) - p^2(m(\phi_0 + \epsilon, \sigma))) < 1 \) and becomes easier to satisfy the larger is this same expression. Thus, the condition becomes easier to satisfy the larger are \( \epsilon, e, \) and \( p(m(\phi_0, \sigma)) - p(m(\phi_0 + \epsilon, \sigma)) \), as discussed in the text.