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Master Thesis in Economics and Finance

The role of Identity in Politics : patriotism, religiosity, political position and redistribution choice

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"The art of rational choice is not only in weighing benefits and costs, but also in deciding which identities are worth dying for, and which are not even worth fighting about." — ***Amartya Sen*, Identity and Violence: The Illusion of Destiny (2006)**

APPENDIX

Declaration of Authenticity
(to be inserted in the thesis, after the cover page, on the first page of the Bachelor's degree or Msc degree thesis)

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Contents

Abstract

This thesis investigates the multifaceted role of identity in shaping political behavior and preferences, specifically focusing on patriotism, political positioning, and attitudes towards income redistribution. Building upon established theories of social identity, political psychology, and rational choice, we develop a comprehensive theoretical framework that integrates multiple dimensions of identity salience and conflict. The framework incorporates a Simple Identity-Based Political Choice (SIPC) model, a Conflict of Interest (COI) model accounting for identity trade-offs, insights from Intergroup Threat Theory (ITT) to capture dynamic identity shifts, and a Spherical Political Position model to represent multi-dimensional political identities beyond the traditional left-right spectrum. The theoretical model generates several propositions regarding how the relative salience of different identities (e.g., national, religious, political), perceived intergroup threats, and the structure of identity conflicts influence individual choices related to political expression and policy preferences. empirical test utilizing data samples from european countries, Balkans and russia Employing fixed-effects and instrumental variable fixed-effects regression techniques to address potential endogeneity, we examine the relationships between measures of religious identity importance, political identity importance, political positioning, and preferences for income redistribution. The empirical analysis consistently reveals a positive association between religious identity salience and patriotism across different regions, an effect often strengthened when accounting for endogeneity using confidence in religious institutions as an instrument. The relationship between the importance of politics and political positioning appears complex, with FE models suggesting a leftward lean and using IV confidence in political parties model indicating a rightward lean, highlighting significant endogeneity. Political positioning generally correlates positively with preferences for less income redistribution, although the significance varies across regions. These findings underscore the significant, yet complex and context-dependent, influence of identity on political attitudes and preferences, offering valuable insights into the mechanisms linking identity politics to policy outcomes.

1

Introduction

In the summer of 2023, Germany's far-right Alternative für Deutschland (AfD) surged to second place in national polls, fueled by rhetoric framing immigration as a threat to national identity. Simultaneously, Spain's left-wing Podemos party campaigned on promises of wealth redistribution, positioning itself as a defender of marginalized communities. These divergent movements—one rooted in nationalist pride, the other in economic equity—highlight a paradox at the heart of modern politics: identity shapes political behavior, but its influence is neither linear nor uniform. As societies worldwide grapple with populism, polarization, and the erosion of trust in institutions, understanding how identity drives political choices has become a pressing intellectual and practical challenge.

This thesis examines the complex interplay between social identity and political outcomes in contemporary Europe, focusing on three dimensions: political orientation (left-right spectrum), national pride, and support for redistribution. It asks a deceptively simple question: How do overlapping identities—ethnic, national, economic—interact to shape voter prefer-

ences in an era of fragmented loyalties? To answer this, the study moves beyond conventional single-identity frameworks, proposing a dynamic model that captures the fluidity of identity politics. Drawing on data from WVS-EVS time series data set, including Russia and ethnically fragmented Balkan states, it reveals how historical legacies, economic conditions, and symbolic threats reshape the political landscape.

The interplay between social identity and political behavior has emerged as a linchpin of contemporary political science and sociology. This thesis investigates how three interrelated dimensions of identity - political orientation (left to right), nation pride and choice of redistribution structures—affect political outcomes. On the foundation of Akerlof and Kranton (2000) where formalized identity as a crucial economic variable, and Shayo (2020), who theorised identity has a political preference. This study integrates empirical analysis with a theoretical framework to investigate how collective identities influence support for political choices.

2

Politics of Identity

In the era of emerging populism, nationalism, and polarization, understanding the role of identity in politics is more urgent than ever. Although political positioning remains a central topic for scholars and policymakers, its relationship with identity is still under-theorized. Identity often manifests in political terms, especially when certain policies are framed in ways that resonate with specific group attachments, which can align with either left- or right-wing ideologies. Voters' political choices are not made in isolation but are shaped by the social environment in which they are embedded. For instance, individuals with a strong sense of national pride may paradoxically oppose redistribution, favoring national cohesion and in-group loyalty over cross-class solidarity. In such cases, identity can shape not just cultural preferences, but also economic policy choices, as identity-driven norms influence attitudes toward redistribution and equality.

An individual's identity is a civic construct that shapes their social and political choices. The question arises: does one's socio-political identity determine political preferences? From a sci-

entific standpoint, the answer is yes. Theories in social psychology, such as Social Identity Theory (SIT) and Social Categorization Theory (SCT), explain that individuals derive their sense of self from the groups they belong to. These identities—rooted in religion, ethnicity, class, or caste—are not innate but are shaped over time through interactions with one's social environment and other identities.

Under certain conditions, identity can shift or intensify, influencing political attitudes. Individuals tend to categorize themselves as members of in-groups versus out-groups, and typically align their choices with in-group norms. As a result, people often conform to group-based preferences even when doing so reduces their individual utility or payoff. This dynamic helps explain how group identity can override personal interests in shaping political behavior, reinforcing ideological cohesion and resistance to out-group alternatives.

The concept of identity as a political force traces its bases to social psychology and sociology. Social identity theory Tajfel and turner (1979) posits that an individual derives self esteem from group membership, leading to ingroup favouritism and outgroup distance. Shayo (2010) in his model defines political preferences as a function of social identity. Shayo defines that individuals always prefer to take positions that align with their group interests and identities, which can differ but leads to social utility loss for individuals.

Akerlof and kranton introduced identity into economics , framing it as a "utility bearing social category" with prescribed norms. Their work explained how nation pride, a form of identity, might cover class based preferences for redistribution. For instinct, a right leaning voter with high nation pride may oppose progressive taxation if they perceive redistribution as undermining national unity or rewarding "undeserving" out groups.

The left–right political spectrum remains a commonly used but often reductive framework for organizing political attitudes. According to Jost et al. (2009), left-wing ideologies are typically associated with egalitarianism, welfare statism, and skepticism of hierarchy. These positions often show similarities with communism, Marxism, and socialism, although not necessarily aligning with them ideologically.

In contrast, right-wing ideologies emphasize tradition, nationalism, and individualism. These values often overlap with conservative thought, including reactionary elements. Hinich and Munger (1994) note that such ideologies prioritize stability and resistance to rapid social change. Additionally, certain liberal ideologies, such as social liberalism and classical liberalism, may align with the central left or central right depending on the context.

However, this binary classification is not without limitations. Evans (1996) cautions that the left–right divide is multidimensional, incorporating both economic and social dimensions. Some scholars argue that a single left–right axis may oversimplify the ideological variation in political attitudes, failing to capture the complexity of individuals' beliefs and identity-driven political choices.. Still some political scientists argues that single left-right scaling can be insufficient to describe the ideological variation in political beliefs Fenna (2013).

"Nation pride, a subset of national identity, reflects emotional attachment to one's nation and its symbols" Smith (1991). The nation identity fosters solidarity, enabling collective action such as welfare provision David miller (1995). This identity is applied to individuals regardless of their socio economic status Kemiläinen, Aira (1989). "Constructive nation pride involves a willingness to critically evaluate and improve national policies, while blind patriotism reflects an uncritical loyalty to one's country."Huddy & Khatib (2007). Right wingers are often considered as high nation pride but this has a contradiction that national pride of the right wing is heavily influenced by the presence of an outgroup and their activities. Nation pride is enhanced by the adherence of a national religion, civil religion or a theocracy. Michael Billig and Jean Bethke Elshtain both argued that "the difference between patriotism and faith is difficult to discern and relies largely on the attitude of the one doing the labeling" Billing and michael (1995).

Redistribution of income and wealth involves a deliberate public policy decision to reallocate resources across social groups. Traditional identity-based theories (e.g., Meltzer and Richard, 1981) predict that individuals from lower-income or disadvantaged identities will favor redistribution policies. However, these predictions have been increasingly contested by more recent

political economy literature.

Several scholars argue that identity-based motivations complicate redistribution preferences. In many cases, racial or national identity may override class-based solidarity. For example, Alesina and Glaeser (2004) explain that lower support for redistribution in the United States compared to Europe is partly due to racial fragmentation—where identity politics undermines economic class unity.

Moreover, redistribution choices cannot be fully explained by a single identity or group affiliation. The economic context matters. As Keynes noted, when the business cycle peaks and financial satisfaction is high, voters may prefer tax cuts and free-market policies over redistributive ones. Therefore, redistribution preferences are not static; they fluctuate with economic cycles, political messaging, and national sentiment.

Shayo (2010) further shows that national identity can either strengthen or weaken redistribution support, depending on how identity is framed in different countries. This illustrates that identity influences redistribution preferences in complex, context-specific ways—not through a uniform or predictable pattern.

Studies on identity and economics have interesting findings but they have some limitations in that they were unable to include multiple theories to answer the problem. Shayo in 2010 mentioned that results are not the same for all countries. The problem over here is that individuals can represent different groups. People doesn't constitute a single background or group. For instance, a group which is formed in a school or any institution may have people from different backgrounds and identities. Another argument that can arise is that a person can have more than one identity like nationality. An individual can be born in a country and can be living in another and hold dual citizenship. Decision on which country they like more on these can be dependent on different factors. And these factors will also have conflict.

An individual i may represent different groups in different forms. And each of them can clearly influence their ideology and choices that they make. $Jin = (Ai1, Ai2, Ai3, Ai4, \ldots Ain)$ where A is a social group and 1, 2, 3, 4.....n are the group identities.

3

Social psychology

The most prominent theory on social identity is social identity theory by **Tajfel and Turner.** The theory is mainly used in previous research by prominent economists. But here I would like to introduce some more questions to this from social psychology and sociology. As we talked above a person's single identity cannot define that individual's social or political choice. The spectrum of a person's political scale is not constant over time. This can be influenced by certain identities and social factors. If a person is really religious he has a high chance of becoming politically right due to his attachment to conservative ideologies. But if he presents a group that has people from different ethnic backgrounds, this can pull down that individual from being far right to central right or central left. But this doesn't stop there Previous research didn't explain the effect of sudden information and social conditions on choices, which are dependent on the social environment of the society. For example, Republicans are the right wing in the USA, and AFD in Germany. The first bill passed by Donald Trump in his second term was the abolishment of transgender rights and confined gender to just two options, but

in Germany far-right AfD openly supports LGBTQ+ communities, and their spokesperson self-represents the LGBTQ+ community. If both those right-wing political ideologies were the same, this wouldn't happen.

Both these problems in identity conflict are actually explained by modern psychologists. To address this problem in identity politics we can approach two theories: first one is conflict of interest (COI) and another one is Integrated threat theory (ITT) also known as intergroup threat theory. A person's social identity can influence social choices but it has limitations on different corners. As we can analyse by taking a different choice than the individuals' group choice, they have a chance to lower their utility on choice, but rather they get better utility. An "interest" is a commitment, obligation, duty or goal associated with a specific social role or practice Komesaroff (2019). An individual can constitute different identities, and never does a human being survive with a single social identity. And different identities can bring them different interests in a choice-making situation. Interest will occur in a choice-making situation when an individual is exposed to two coexisting choices that are completely different from each other, and this can create competing interests. This multiple identities and identity salience of an individual can magnify the individual's political decision-making in a way that it does not depend on a single interest and from multiple identity salience. For instance , if a person comes from a pure native conservative family and an individual has another group with multicultural backgrounds, they can be influenced by both groups' interest in taking positions.

Conflict of interest is not denying social identity theory but rather making an upper version of it. Definitely an individual's group identity defines their social choices and decisions, but on political and economic interests, an individual can have multiple identities, and these identities can bring a conflict to his or her political and economic decision-making. Never in an election do voters vote for a single cause; even if we check a political organization's election manifesto in a democratic society, it will have inclusive policies for multiple economic and political magnitudes. This can be evidence for the above conflict of interest between the right wing in America and Germany on LGBTQ+ and also found on the left wing in Asian countries. For example,

communism in China clearly manifests as a communist governing system, but when you take this to India, communist parties manifest as socialist and communist values inside a democratic governing system. This conflict can be seen over all social and political interests for voters.

Shayo (2010) developed a theoretical model to investigate how social identity—particularly national identity—influences individuals' political and economic preferences. Drawing on data from the World Values Survey (WVS), his model posits that individuals derive utility not only from material payoffs but also from identifying with specific social groups, such as the nation. This identification affects their political attitudes in a way that can diverge from what would be expected based on class interest alone. Shayo's results show that individuals with stronger national pride are more likely to oppose redistribution policies, even when such policies would economically benefit them. In other words, the salience of national identity can override traditional class-based voting behavior. This has significant implications for how we evaluate redistribution preferences. If researchers use only simple identity markers such as "nation pride" dummies without accounting for the underlying mechanisms of identity salience, they risk misinterpreting the direction and intensity of voter preferences. Therefore, to accurately assess redistribution attitudes, it is crucial to account for the role of social identity as an endogenous and influential factor in shaping political behavior.

In the case of redistribution or Nation pride evaluating these social factors with one or two factors can bring error to the evaluation. Shayo (2010) did evaluate the effect of income on redistribution with dummies as Nation pride, but the problem that occurs here is he excluded the non-patriotic observations in his analysis, and these non-patriots can constitute a large population on the World Values Survey (WVS) and European Values Survey (EVS). Even if we exclude this with a specific reason, a chance of social error will occur in this because of not including non-patriots. This may include the majority of constructive patriots, and people who are intellectually critical with national policies and practices, encouraging citizens to strive for societal improvement. As in the same case, a person can have multiple identical reason to a patriot and non patriot this can be policy oriented, cultural oriented or economic oriented. If

one of these goes wrong in a way that a policy of state goes against individuals cultural or ethical values he may be critical to the nation but in all other aspects like economic or well being of his nation and he may be not a critic he may be a proud patriot.

Conflict of interest can create a huge risk on professional judgments or actions of individuals with their primary interest which can have a conflict with their secondary interest Lo and field (2009). Primary interest may be an individual's group choice or cultural identity and the secondary choice can either be an individual's other group choice or individual personal interests. There can be occurrences where individuals want to go with identity choice but conflict definitely brings up contradictions with it.

Another factor influencing how individuals' group identities shape political preferences is intergroup threat, as conceptualized in Intergroup Threat Theory (ITT). ITT posits that perceived threats—whether real or imagined—between social groups can intensify ingroup solidarity and prejudice against outgroups, ultimately affecting political choices (Stephan Stephan, 2000). These threats can arise even in the absence of tangible harm and are often triggered by social, economic, or political cues. There are four primary types of intergroup threats identified in the literature: realistic threats (e.g., threats to economic resources, safety, or political power), symbolic threats (threats to values, beliefs, and identity), intergroup anxiety, and negative stereotypes (Stephan et al., 2002).

Realistic threats are grounded in competition for scarce resources or existential security and can prompt support for redistribution policies when individuals feel economically insecure (Campbell, 1965). In contrast, symbolic threats are more psychological, emerging when the values of an outgroup are seen as incompatible with those of the ingroup. These symbolic threats often lead to political polarization as voters react defensively to perceived value-based encroachments by opposing groups. For example, a multicultural or secular policy agenda might be perceived as threatening by groups rooted in conservative or religious traditions, causing them to mobilize politically.

Intergroup anxiety refers to discomfort individuals feel when anticipating interactions with

members of an outgroup, which can lead to avoidance behavior and negative political attitudes (Stephan Renfro, 2002). Similarly, negative stereotypes simplify and distort outgroup behavior, reducing the likelihood of empathy and increasing support for exclusionary or punitive policies. These mechanisms contribute to identity-based misperceptions and increase susceptibility to misinformation, especially during crises or times of political uncertainty (Green et al., 2010).

The activation of these perceived threats can result in abrupt shifts in political alignment. For instance, during national economic decline or wartime, a group's pride may transform from passive neutrality to active nationalism. In such scenarios, ingroup members may deviate from their economic preferences (such as redistribution) and instead vote based on perceived symbolic or cultural threats. This phenomenon aligns with findings from Shayo (2009), who demonstrated that individuals might oppose redistributive policies not due to rational economic self-interest but due to a strong sense of national identity, which reorients their preferences away from class-based solidarity and toward symbolic group alignment.

Hence, perceived intergroup threats—particularly symbolic ones—can override rational evaluations of redistributive policies. While empirical data might show a linear correlation between left-wing affiliation and support for redistribution, this relationship is complicated by identity-based dynamics. Educated individuals or those on the left may not oppose redistribution due to ideological inconsistency, but because their broader knowledge of economic constraints tempers their idealistic support for such policies (Alesina Glaeser, 2004). This highlights the complexity of identity politics, where group threats—real or perceived—reshape policy preferences in ways that are not purely economic, but deeply psychological and symbolic.

In this thesis we are trying to address how social identity can direct political choices of an individual by keeping identity through a theoretical approach by modelling and empirical analysis as case study of the European continent. For considering the theoretical approach we consider 4 assumptions 1.) people have identity based payoff derived from their groups choice. 2.) People have identity based pay offs derived from others actions. 3.) People have identity based pay-

off derived from conflict in interest 4.) People have identity based payoff derived from threat occurrence. Every individual's choices will ultimately go for their utility with respect to individuality or group choice. If the voter strongly identifies strongly with a group and goes against the choice of group he in total voters won't lower his payoff but he will rather have a utility loss with respect to the group identity.

As individuals are multiple identity represented voters cannot always take decision based on a single identity and usually this is the most common case. Let's consider a individual **W** which have multiple identity *w1, w2, w3,w4, w5,.....wn* where *w* is the identity based magnitude of choice and 1, 2, 3, 4 ... *.n* is the each group an individual represents. An overall sum of these would be an individual's political choice and once again this is never a constant output. Alteration can happen in two ways. Individual can enter a new group and process a new identity which can alter his or her choice. This can also happen vice versa for instance after getting a lot of information political based can lead the people to change is political identity. If a person is getting a lot of liberal or socialist oriented information it can lead that person to shift his ideology and if an individual consumes informations that are more conservative or radical it can make him shift his political ideology to right and this shift can mostly be permanent or long term. But one contradiction for this theory is this is very likely to happen because people with strong political identity always try to consume or want to consume information that align with their political ideology and rarely people go for a shift in their ideology due to information. Information can be political news, political commentators etc.

Recent studies on political behavior reveal that political shifts in society cannot always be understood as a simple, linear alignment along left–right ideological lines. While some data may suggest a correlation between left-wing affiliation and support for redistribution, this relationship is far more complex in real-world contexts (Alesina Glaeser, 2004; Shayo, 2009). Political shifts are often triggered not only by ideological differences, but also by emotional, cultural, and historical factors that influence public sentiment in unpredictable ways.

For example, historical instances in Soviet Union-era politics show that authoritarian sup-

pression of liberal expression led to intense political backlash and agitation. The liberalization efforts under Gorbachev, particularly Glasnost and Perestroika, exemplify how suppressed demands can erupt into widespread political engagement when political opportunity structures shift (Brown, 2009). Similarly, in regions like Tripura and West Bengal, India, episodes of political extremism have occurred in reaction to prolonged exclusion or perceived injustice, rather than due to linear ideological shifts alone (Bhattacharyya, 2016).

These cases illustrate that the political landscape is shaped by more than policy preference; it is also the product of structural conditions, institutional openness, symbolic threats, and how identity narratives are framed. The left–right spectrum may serve as a reference point, but to understand the full dynamics of political positioning, especially in volatile or transitional contexts, one must examine the interplay of national pride, historical grievance, and intergroup tension. Simplifying this into a binary alignment risks missing the underlying identity-based currents driving political behavior.

Processing identity bases choices for an individual is theoretically difficult as an individuals identities can be represented by multiple groups. But still it can represented as a model with multiple variable sometimes to a extent of N but never it will be infinite it will be always finite. As its finite it may be difficult but not impossible. The value of choice of a voter will be sum of magnitude of each identity choice. This magnitude if the identity can be increased in the short term through information and campaign. And in most cases there will be a primary identity which will derive higher magnitude in each case this can be altered as well. For instance in our case political position and policy choice. Each policy will have different prospects if its a political policy like redistribution choice it can have primary identity as political position and income. If an individual is political left they will mostly support redistribution of wealth and if an individual is political right wing they may not support redistribution of wealth mostly. Another example is policy id based on development oriented it can have like the person who is receiver of development which will support the policy and the individual who is having negative effect or utility lose due to that development like losing of livelihood. As seen this will

be primary identity when an voter goes for their choice will consider. But this identity cannot individual decided voters choice but will have just a voter choice advantage. So to solve this problem is to expand the magnitude of primary or secondary policy this can be done in various ways including creating intergroup threat in a symbolic threat as we discussed above.

Again Conflict of interest can arise here making confusion. But conflict of interest can happen in two ways 1.) complete shift 2.) influence. In the first case a complete shift can happen due to the influence of high magnitude of the group's choice which has arisen conflict. Second one having just having a small influence due to the low magnitude of the conflict of the group's choice. In second case there is no guarantee that the conflict can shift the choice of the voter. It may or may not but can definitely create a conflict and confusion.

4

Model

4.1 Social identity and political choice

The SIPC model formalizes how individuals with multiple social identities make political choices based on the salience of each identity and its associated utility. This model builds on the foundational work of Akerlof and Kranton (2000) and Shayo (2009), who introduced identity considerations into economic analysis.

The core insight of the SIPC model is that individuals derive utility not only from material outcomes but also from making choices that align with their salient social identities. For example, a person might identify simultaneously as a worker, a parent, a religious adherent, and a national citizen. Each of these identities may suggest different political choices, and the individual must navigate these potentially competing influences.

Main insights gained

- Political choices stem from a weighted aggregation of multiple identity utilities rather than a single identity dimension.

- Salience weights are endogenously chosen—individuals actively decide how much each identity matters.

- Entropy regularization demonstrates why real-world identity saliences exhibit graded, not all-or-nothing, patterns.

- The model predicts context-dependent dominance of certain identities (e.g., nationalism in wartime) and stable diversification when utilities are balanced.

We are trying to create a quantitative model for social identity problems here. For this first, we are addressing the simple model of social identity based on the political model (SIPC). With simply addressing a single identity and its choice magnitude. $\boldsymbol{N}$ is the number of identities (nation, class, religion, political position...), and $\boldsymbol{N} \geq 2$. And Wk is the salience weightage for each identity k, and this variable Wk ($Wk \geq 0$, k=1NWk=1) will address how much importance identity k can hold for a specific identity-based choice.

$$\sum_{k=1}^{N} w_k = 1, \quad w_k \geq 0 \quad \forall k \tag{4.1}$$

$$U(w) = \sum_{k=1}^{N} w_k \cdot S_k \tag{4.2}$$

We assume that each identity k contributes to the individual's political decision through a utility term S_k, which we define as the *identity-related utility*. This variable reflects how positively or negatively an individual perceives alignment with identity k, and is standardized to lie within the interval $S_k \in [-1, 1]$.

The total utility associated with identity k is then modeled as the product $W_k \cdot S_k$, where W_k is the *salience weight* the individual assigns to identity k. By summing across all identities, we capture the aggregate influence of multiple identities on the political choice.

Optimizing this utility function with respect to W yields the equilibrium distribution of weights that best reflects the individual's identity priorities in the political decision-making process.

In equilibrium, individuals choose salience weights W_k that maximize their overall utility subject to a constraint. This can be expressed by the following Lagrangian formulation:

$$\mathcal{L}(w, \lambda) = \sum_{k=1}^{N} w_k \cdot S_k - \lambda \left(\sum_{k=1}^{N} w_k - 1 \right) \tag{4.3}$$

For the first order condition for the Lagrangian function to find equilibrium of utility of identity k is

$$\frac{\partial \mathcal{L}}{\partial w_k} = S_k - \lambda = 0 \quad \forall k \tag{4.4}$$

$$\frac{\partial \mathcal{L}}{\partial \lambda} = \sum_{k=1}^{N} w_k - 1 = 0 \tag{4.5}$$

Solving the first-order condition from Equation yields $\lambda = S_k$ for all k. This implies that all identity utilities S_k must be equal. That is,

$$S_1 = S_2 = \cdots = S_n.$$

This results in a non-generic solution because any distribution of weights w_k satisfying

$$\sum w_k = 1$$

would be optimal—leading to indeterminacy.

This indeterminacy arises because individuals face no cost in choosing one identity over another. In reality, this is unlikely: individuals often incur social or psychological costs for holding less common or stigmatized identities. For instance, if the majority in a region identifies with X, and a person chooses Y, they may face social penalties.

To address this, we introduce entropy regularization, which penalizes uneven or extreme weight distributions and ensures a unique solution. This transforms the solution into a logit choice model, widely used in discrete choice theory, where each identity receives a probabilistic weight based on its utility.

4.1.1 Entropy regularization

One of the major challenges in studying human behavior, particularly in the context of political or identity-based decisions, is the inherent randomness and unpredictability of individual choices. Even when individuals share the same identity—such as religion, ethnicity, or political affiliation—they may make very different decisions. For example, some religious individuals may support politically left-leaning movements, while others do not. This heterogeneity cannot be easily explained by observable factors alone.

To address this variability, researchers often borrow tools from statistical physics. In particular, the concept of entropy—used to describe randomness in thermodynamic systems—is adapted to model the unpredictability in human decision-making. By incorporating entropy regularization into our model, we account for the "fuzziness" or probabilistic nature of identity choices. This approach reflects bounded rationality and allows for more realistic predictions of individual behavior under uncertainty.

This approach reflects the bounded rationality of individuals and captures the "fuzziness"

in identity choices. The modified optimization problem becomes

$$\max \left[\sum_{k=1}^{N} w_k \cdot S_k + \beta^{-1} H(w) \right] \tag{4.6}$$

$$H(w) = -\sum_{k=1}^{N} w_k \log w_k \tag{4.7}$$

The variable H represents the Shannon entropy of the identity weight distribution W = (W1, W2, W3,..... , Wn). Shannon entropy is introduced to measure the uncertainty or randomness associated with the random variable. Entropy is used because of the bounded rationality of identity. Entropy can represent the uncertainty in identity activation: Real people don't perfectly optimize, so entropy captures "fuzziness" in identity choices. High entropy replicates high uncertainty or randomness. If all outcomes are equally likely, the entropy is maximized. Low entropy replicates low uncertainty or predictability. If one outcome is much more likely than others, the entropy is lower.

4.1.2 Properties

The Shannon entropy variable ranges from $H \in [0, \log N]$. In one extended case, $H = 0$ results when one identity dominates the others ($W_k = 1$ for some k). Conversely, $H = \log N$ occurs when all identities are equally salient ($W_k = \frac{1}{N}$ for all k).

In this way, we can analyze the uncertainty and diversity of identity salience for an individual with $N \geq 2$. A higher value of H represents an ideal, unbiased situation for the individual and reflects stronger democratic values within society.

The entropy term

$$\beta_{-1} H(w) \tag{4.8}$$

is added to utility to ensure the uniqueness of the solution to avoid degenerate cases where only one identity dominates. captures bounded rationality in a way that individuals may not

perfectly optimize, introducing randomness. "βInverse will act as a temperature parameter in a way that if it tends to infinity, it recovers perfect rationality, and if "βtends to zero, it implies uniform weightage.

4.1.3 Equilibrium weights

$$\frac{\partial \mathcal{L}}{\partial w_k} = S_k - \beta^{-1}(1 + \log w_k) - \lambda = 0 \quad \forall k \tag{4.9}$$

By deriving the utility function $U(W)$ with respect to the constraint $\sum_{k=1}^{N} W_k = 1$, we get:

$$w_k = e^{\beta S_k - 1 - \beta\lambda} \tag{4.10}$$

Using the constraint

$$\sum_{k=1}^{N} w_k = 1 \tag{4.11}$$

, we get

$$\sum_{k=1}^{N} e^{\beta S_k - 1 - \beta\lambda} = 1 \tag{4.12}$$

$$e^{-1-\beta\lambda} \sum_{k=1}^{N} e^{\beta S_k} = 1 \tag{4.13}$$

$$e^{-1-\beta\lambda} = \frac{1}{\sum_{k=1}^{N} e^{\beta S_k}} \tag{4.14}$$

Substituting back into equation (4.10)

$$w_k^* = \frac{e^{\beta S_k}}{\sum_{j=1}^{N} e^{\beta S_j}} \tag{4.15}$$

By introducing entropy, the model ensures smooth and differentiable solutions that better reflect real-world behavior. Empirical studies show that individuals rarely express extreme,

single-identity salience. Even those strongly aligned with one identity (e.g., nationalism) may simultaneously acknowledge class, religion, or other social affiliations. The entropy term H captures the information complexity of such identity choices, and the resulting solutions resemble those derived from random utility theory (McFadden, 1974).

However, under extreme values of the scaling parameter "β, the model converges toward a "winner-takes-all" outcome, where the individual selects the identity with the highest perceived utility. This behavior is theoretically grounded in the assumption that individuals maximize utility subject to a cognitive or informational constraint, and the entropy regularization gradually suppresses the influence of less salient identities as $\beta \to \infty$. This allows the model to bridge between probabilistic and deterministic identity choices.

Individuals strictly maximize identity utility, selecting only the identity with the highest payoff. All other identities are suppressed when $W_k^* \to 0$. Let

$$S_m = \max S_j \tag{4.16}$$

(the highest payoff as beta tends to infinity)

$$W_{\mathrm{k}}* = \begin{cases} 1 & \text{if } S_{\mathrm{k}} = S_{\mathrm{m}} \\ 0 & \text{otherwise} \end{cases} \tag{4.17}$$

$$\lim_{\beta \to \infty} \frac{e^{\beta S_k}}{e^{\beta S_m} + \sum_{J \neq m} e^{\beta S}} \tag{4.18}$$

$$\lim_{\beta \to \infty} \frac{1}{1 + \sum_{J \neq m} e^{\beta \left(S_J - S_m \right)}} \tag{4.19}$$

$$\prod \left(S_k = S_m \right) \tag{4.20}$$

These situations are observed in high-stakes political contexts for the individual. For instance, if a state is in a state of war or under war tension, the citizens would over-identify with the national identity over the class identity. This can create a clear override of national identity over other identities of an individual. Specifically, S_{nation} will have a higher magnitude compared to S_{class}, which will lead to the adoption of the national identity by citizens, i.e., $W^*_{\text{nation}} = 1$.

Now let's evaluate for the uniform randomness limit, which is "βtending to zero. In this situation, identities become the least rational in choice making. It becomes completely random with equal weights assigned to all identities in a way that there is no political pressure situation to override opportunity for one identity. And now the payoff differences S_k are ignored.

$$\lim_{\beta \to 0} w_k^* = \lim_{\beta \to 0} \frac{e^{\beta S_k}}{\sum_j^{\beta e^{\beta S_j}}} = \frac{1}{N} \tag{4.21}$$

This evaluation is out from taylor expansion series

$$e^{\beta S_k} \approx 1 + \beta S_k + o\left(\beta^2\right) \tag{4.22}$$

The occurrence of this situation arises when identity lacks salience. This can correspond to a completely apolitical population, making the probability of such an outcome very low. From a realistic perspective, this resembles a utopian social concept, as the individual is analogous to a perfectly competitive agent in a market economy.

In real life, a disengaged voter may assign equal weight to national, class, and religious identities, such that $W_k^* = \frac{1}{3}$ where $N = 3$.

Now let us consider a real-life situation—an intermediate case—where $0 \prec \beta \prec \infty$.

The parameter β captures the trade-off between payoff sensitivity and randomness. A higher β amplifies small payoff differences, leading to more deterministic identity selection.

Bounded rationality, modeled through a finite β, realistically captures imperfect identity pri-

oritization in the real world. For instance, voters may balance class and national interests without strictly maximizing one.

In the transition phase, sharp shifts in political behavior can occur as β crosses critical thresholds. A sudden rise in nationalism during a crisis is an example. Such changes in identity salience can be estimated using survey data through maximum likelihood methods.

$$\beta_{avg} = \arg MAX \prod_{i=1}^{M} \prod_{k=1}^{N} \left(W_k^* \right)^{y_k^i} \mid \tag{4.23}$$

Where $Y_k i$ are observed identity choices.

The SIPC model provides insights into several real-world phenomena. In high-stakes situations (high β), one identity tends to dominate. For example, during war or national crisis, national identity often overrides class or other identities. Most individuals maintain multiple active identities (intermediate β), with varying degrees of salience depending on context. In some cases (low β), individuals may assign roughly equal weights to different identities, reflecting political disengagement or apathy.

The model also explains why individuals sometimes make political choices that seem contrary to their material interests. If an identity with high salience (large W_k) is associated with a particular political position, the individual may support that position even if another identity (e.g., economic class) would suggest a different choice.

4.2 Conflict of interest (COI)

The simple identity-based political choice model assumes that identities operate independently, with no direct interactions between them. In reality, however, different identities often come into conflict. For example, a person's religious identity might suggest conservative social policies, while their economic class identity might favor progressive economic policies.

The Conflict of Interest (COI) model extends the SIPC framework by incorporating potential conflicts between identities. This allows us to analyze how identity conflicts affect political

choices and potentially drive polarization.

We introduce a conflict matrix C where each element c_{ij} represents the degree of conflict between identities i and j:

$$c_{ij} \in [0, 1] \quad \forall i, j \tag{4.24}$$

A value of $c_{ij} = 0$ indicates no conflict between identities i and j, while $c_{ij} = 1$ indicates maximum conflict.

The conflict matrix is symmetric ($c_{ij} = c_{ji}$) and has zeros on the diagonal ($c_{ii} = 0$), as an identity cannot conflict with itself.

extended utility function will be

$$U(w) = \sum_{k=1}^{N} w_k \cdot S_k - \frac{\lambda}{2} \sum_{i=1}^{N} \sum_{j=1}^{N} c_{ij} w_i w_j \tag{4.25}$$

where $\lambda > 0$ is a parameter that controls the sensitivity to identity conflicts. The second term represents the disutility from holding conflicting identities simultaneously. The factor "λ accounts for the symmetry of the conflict matrix.

Equilibrium Analysis

$$\mathcal{L}(w, \mu) = \sum_{k=1}^{N} w_k \cdot S_k - \frac{\lambda}{2} \sum_{i=1}^{N} \sum_{j=1}^{N} c_{ij} w_i w_j - \mu \left(\sum_{k=1}^{N} w_k - 1 \right) \tag{4.26}$$

where *mu* is the Lagrange multiplier for the constraint

$$\sum_{k=1}^{N} w_k = 1 \tag{4.27}$$

First order conditions are

$$\frac{\partial \mathcal{L}}{\partial w_k} = S_k - \lambda \sum_{j=1}^{N} c_{kj} w_j - \mu = 0 \quad \forall k \tag{4.28}$$

$$\frac{\partial \mathcal{L}}{\partial \mu} = \sum_{k=1}^{N} w_k - 1 = 0 \tag{4.29}$$

From equation (4.28), we can write

$$S_k - \lambda \sum_{j=1}^{N} c_{kj} w_j = \mu \quad \forall k \tag{4.30}$$

This can be expressed in matrix form as:

$C = [\,Cij\,]$, $S = [Sk]$, $W = [Wk]$

then

$S - \lambda C w = \mu \mathbf{1}$

where S is the vector of baseline utilities, C is the conflict matrix, w is the vector of identity weights, and $\mathbf{1}$ is a vector of ones.

Solving for w:

$\lambda C w = S - \mu \mathbf{1}$

$$w = \frac{1}{\lambda} C^{-1}(S - \mu \mathbf{I}) \tag{4.31}$$

Using the constraint $\mathbf{1}^T w = 1$:

$$\mathbf{I}^T w = \frac{1}{\lambda} \mathbf{I}^T C^{-1}(S - \mu \mathbf{I}) = 1 \tag{4.32}$$

Assume c is invertible. For singular C, use pseudo inverse. Akerlof & Kranton (2000) used this method for identity utility, generalized to matrix form.

$$\frac{1}{\lambda} 1^T C^{-1} S - \frac{\mu}{\lambda} 1^T C^{-1} 1 = 1 \tag{4.33}$$

Solving for μ:

$$\mu = \frac{1^T C^{-1} S - \lambda}{1^T C^{-1} 1} \tag{4.34}$$

substituting back into equation (32)

$$w^* = \frac{1}{\lambda} C^{-1} \left(S - \frac{1^T C^{-1} S - \lambda}{1^T C^{-1} 1} 1 \right) \tag{4.35}$$

This solution represents the equilibrium weights W^* that individuals assign to different identities, taking into account both the salience signals S and the covariance structure C among identities. Specifically, it shows how each identity's weight is influenced not only by its own salience but also by its statistical relationship with other identities.

From a behavioral perspective, the solution reveals that when identities are interrelated (i.e.,C is not diagonal), the optimal weight given to one identity depends on the salience and interaction with others. For example, if religious and national identities are strongly correlated, an increase in one may affect the optimal choice of the other.

Thus, this matrix-based formulation generalizes the identity utility model by incorporating dependency structures, and it demonstrates that optimal identity choice is not independent across dimensions but influenced by the broader context of competing identities.

4.2.1 Entropy regularization.

Entropy regularization adds an essential behavioral dimension to the identity model. While the base model focuses solely on maximizing identity utility subject to constraints, it may lead to multiple or degenerate solutions where individuals choose only one dominant identity. Entropy regularization addresses this by introducing a preference for diversity and uncertainty in identity weights. This reflects more realistic behavior: individuals often express multiple identities simultaneously rather than a single all-or-nothing choice. Mathematically, it ensures the solution is unique, smooth, and differentiable. Behaviorally, it aligns with findings from

psychology and political science showing that identity salience is graded, not binary.

As with the SIPC model, we can introduce entropy regularization to ensure a unique solution and capture bounded rationality:

$$U(w) = \sum_{k=1}^{N} w_k \cdot S_k - \frac{\lambda}{2} \sum_{i=1}^{N} \sum_{j=1}^{N} c_{ij} w_i w_j + \beta^{-1} H(w) \tag{4.36}$$

The first order conditions become

$$\frac{\partial \mathcal{L}}{\partial w_k} = S_k - \lambda \sum_{j=1}^{N} c_{kj} w_j - \beta^{-1}(1 + \log w_k) - \mu = 0 \quad \forall k \tag{4.37}$$

This can lead to a altered model of logit choice formula

$$w_k^* = \frac{e^{\beta(S_k - \lambda \sum_{j=1}^{N} c_{kj} w_j)}}{\sum_{j=1}^{N} e^{\beta(S_j - \lambda \sum_{i=1}^{N} c_{ji} w_i)}} \tag{4.38}$$

This implicit equation for wk* will generally require numerical methods to solve.

4.2.2 Stability analysis

To analyze the stability of the equilibrium, we linearize the dynamics around the equilibrium point. Let δw be a small perturbation from the equilibrium w^*. The linearized dynamics

$$\frac{d(\delta w)}{dt} = J \delta w \tag{4.39}$$

where J is the Jacobian matrix:

$$J_{ij} = \frac{\partial^2 U}{\partial w_i \partial w_j} = -\lambda c_{ij} \tag{4.40}$$

In matrix form:

$$J = -\lambda C \tag{4.41}$$

Stability requires Re(eig(j)) < 0 $\Rightarrow$ *c* positive definite. This is from equation (26), its linearization and equilibrium ($\delta W^* = J\delta W$). Solutions are stable if all eigenvalues of *J* have negative and real parts. And finally, for symmetric *C,* positive definiteness ensures it -λC has negative eigenvalues.

Positive definites *C* implies conflicts are balanced with no self-reinforcing loops. For $N = 2$ with $C_{12} = C_{21} = C$

$$C = \begin{pmatrix} 0 & C \\ C & 0 \end{pmatrix} \tag{4.42}$$

$$\text{eig}(C) = \{-C, C\} \tag{4.43}$$

Equilibrium is stable if $\lambda C > 0$ and requires the dampening of cross-identity conflicts. Will be unstable if $\lambda C < 0$, where conflicts amplify over time (Weibull 1995).

The COI model provides key insights into identity dynamics under different levels of cross-identity conflict. Depending on the parameter λC, we observe distinct identity behaviors: Identity Polarization (when $\lambda C<0$). Conflicts are strong and self-reinforcing. Individuals fully embrace one identity while rejecting others. System becomes unstable, with increasing polarization over time.Identity Pluralism (when $\lambda C\approx 0$): Conflicts are moderate and balanced.

Individuals can maintain multiple identities across different contexts. The system allows for flexible identity salience.Identity Integration (when $\lambda C>0$): Cross-identity conflicts are low.

Individuals smoothly blend multiple identities into a coherent self. This condition supports social cohesion and stability. The model also explains why societies with strong identity conflicts (e.g., religious vs. secular, ethnic divisions) often exhibit greater political polarization than societies with more compatible identity structures.

4.3 Intergroup threat theory (ITT) Integration

The SIPC and COI models provide static frameworks for understanding how individuals with multiple identities make political choices. However, identity salience is not fixed but can change over time in response to various factors, particularly perceived threats.

Intergroup Threat Theory (ITT), developed by Stephan and Stephan (2000), distinguishes between two types of threats: 1. **Realistic threats**: Threats to a group's power, resources, or physical well-being 2. **Symbolic threats**: Threats to a groups values, beliefs, or worldview

The ITT Dynamic Model extends our framework by incorporating how perceived threats affect identity salience over time and, consequently, political choices.

4.3.1 Dynamic threat modulation.

We define a threat variable T that evolves according to

$$\frac{dT}{dt} = \gamma R + (1 - \gamma)S - \delta T \tag{4.44}$$

where R is the level of realistic threat - S is the level of symbolic threat $\gamma \square [0, 1]$ is the relative weight of realistic versus symbolic threats $\delta > 0$ is the decay rate of perceived threats

This differential equation captures how threats accumulate and dissipate over time. The steady-state threat level is

$$T_{ss} = \frac{\gamma R + (1 - \gamma)S}{\delta} \tag{4.45}$$

4.3.2 Identity Modulation

Perceived threats modulate identity salience according to:

$$\frac{dw_k}{dt} = \alpha w_k (TM_k - \overline{TM}) \tag{4.46}$$

where: - M_k □ $[-1, 1]$ is the threat-identity alignment for identity k -

$$\overline{TM} = \sum_{j=1}^{N} w_j TM_j \tag{4.47}$$

is the weighted average threat alignment - $\alpha > 0$ is the adaptation rate

A positive value of M_k indicates that identity k is positively aligned with the threat (i.e., the threat enhances this identity), while a negative value indicates negative alignment (i.e., the threat diminishes this identity).

4.3.3 Equilibrium analysis

The steady-state condition for identity weights is

$$\frac{dw_k}{dt} = 0 \quad \forall k \tag{4.48}$$

This is satisfied when either: 1. $w_k = 0$, or 2.

beginequation T $M_k = \overline{TM}$

For weights that are strictly positive at equilibrium, we have:

$$TM_k = \overline{TM} \quad \forall k \text{ such that } w_k > 0 \tag{4.49}$$

This implies that all active identities (those with positive weight) must have the same threat alignment at equilibrium.

4.3.4 Stability Analysis

To analyze stability, we compute the Jacobian matrix.

$$J_{kj} = \frac{\partial}{\partial w_j} \left(\alpha w_k (TM_k - \overline{TM}) \right) \tag{4.50}$$

$$J_{kj} = \alpha \delta_{kj}(TM_k - \overline{TM}) - \alpha w_k TM_j \tag{4.51}$$

where δ_{kj} is the Kronecker delta.

At equilibrium, for all k such that $w_k > 0$,

$$J_{kj} = -\alpha w_k TM_j \quad \text{for } k \neq j \tag{4.52}$$

$$J_{kk} = -\alpha w_k TM_k + \alpha w_k \overline{TM} = 0 \tag{4.53}$$

The stability of this equilibrium depends on the eigenvalues of J. A detailed analysis shows that the equilibrium is stable when the threat level T is positive and there is sufficient diversity in the alignments of the threat and the identity.

4.3.5 Threat Response Dynamics

Positive Threat Response

When a threat emerges ($T > 0$), identities with positive alignment ($M_k > 0$) will tend to increase in salience, while those with negative alignment ($M_k < 0$) will decrease. This captures how threats can enhance certain identities at the expense of others.

For example, a terrorist attack (realistic threat) might enhance national identity ($M_{nation} > 0$) while diminishing cosmopolitan identity ($M_{cosmopolitan} < 0$).

Threshold Effects

The model can exhibit threshold effects, where small changes in threat levels lead to dramatic shifts in identity salience. This occurs when:

$$T > \frac{1}{\alpha |M_k - \overline{M}|} \tag{4.54}$$

where

$$\overline{M} = \sum_{j=1}^{N} w_j M_j \tag{4.55}$$

is the weighted average alignment.

When the threat exceeds this threshold, the system can rapidly transition to a new equilibrium dominated by different identities.

4.3.6 Integration with SIPC and COI models.

The ITT Dynamic Model can be integrated with the SIPC and COI models by allowing the threat-modulated identity weights to influence utility calculations.

$$U(w) = \sum_{k=1}^{N} w_k \cdot S_k - \frac{\lambda}{2} \sum_{i=1}^{N} \sum_{j=1}^{N} c_{ij} w_i w_j + \beta^{-1} H(w) \tag{4.56}$$

where the weights w_k evolve according to the threat dynamics described above.

This integrated model captures how threats can shift political preferences by altering the salience of different identities, potentially overriding the utility considerations that would dominate in the absence of threats.

where the weights w_k evolve according to the threat dynamics described above.

This integrated model captures how threats can shift political preferences by altering the salience of different identities, potentially overriding the utility considerations that would dominate in the absence of threats.

The ITT dynamic model provides insights into three important phenomena. The first one is the rally-round-the-flag effect, in which the external threats often enhance national identity and increase support for incumbent leaders. The second one is identity shifts during crises. For instance, economic crises can enhance class identity, while cultural threats can enhance religious or ethnic identity. The third one is manipulation of perceived threats, like political actors who may strategically emphasize certain threats to activate specific identities and gain support.

The model also explains why societies experiencing high threat levels (e.g., conflict zones,

economic crises) often exhibit more extreme identity-based politics than societies in stable, low-threat environments.

4.4 Spherical Political Position Model

Traditional models of political ideology typically represent political positions on a one-dimensional left-right spectrum. However, this linear representation fails to capture the complexity of political belief systems and cannot explain certain observed phenomena, such as direct transitions from far-left to far-right positions without passing through the center.

The Spherical Political Position Model represents ideological space as a multidimensional unit sphere rather than a line. This geometric approach allows for non-linear transitions between political positions and provides a more nuanced understanding of ideological movement.

Before going to the nonlinear spherical model, let's introduce a new mathematical method to analyze this as we are interacting with a geometric representationlet introduce arccos, which is the inverse of cos Θ. Why we introduce this is we can use this method to find the distance between two positions. With the application of arccos on a triangle. We attach the two political positions to the center of the sphere with two tangents to form a triangle. This triangle would always be an isosceles triangle. Which can be cut into two equal right angled triangles and use the formula of (cos-1adjacent/hypotenuse) for arccos in this way, we can find the distance between to political positions

4.4.1 Geometric Representation

We represent the ideological space as a unit sphere in D-dimensional space.

$$\mathbb{S}^{D-1} = \{x \in \mathbb{R}^D : \|x\| = 1\} \tag{4.57}$$

Each point x on the sphere represents a possible political position. The dimensionality D

depends on the complexity of the political space being modeled, but typically $D \geq 3$ to capture the multifaceted nature of political ideology.

4.4.2 Utility Function

An individual's utility from a political position x is given by:

$$U(x) = \sum_{k=1}^{N} w_k \cdot x \cdot x_k \tag{4.58}$$

where: - w_k is the salience weight of identity k - x_k is the ideal political position associated with identity k - $x \cdot x_k$ is the dot product, representing the alignment between the individual's position and the ideal position for identity k

This utility function rewards positions that align with the ideal positions of salient identities.

4.4.3 Geodesic Dynamics

Riemannian Gradient

To model how individuals move in this ideological space, we use the Riemannian gradient on the sphere. The Riemannian gradient of the utility function is:

$$\nabla_{\mathcal{S}} U = \nabla U - (x \cdot \nabla U)x \tag{4.59}$$

where ∇U is the standard Euclidean gradient:

$$\nabla U = \sum_{k=1}^{N} w_k x_k \tag{4.60}$$

The Riemannian gradient ensures that movement remains on the surface of the sphere.

Dynamical System

The dynamics of political position are given by:

$$\frac{dx}{dt} = \nabla_S U = \sum_{k=1}^{N} w_k x_k - \left(x \cdot \sum_{k=1}^{N} w_k x_k \right) x \tag{4.61}$$

This differential equation describes how an individual's political position evolves over time in response to their identity-weighted ideal positions.

Equilibrium Analysis

The equilibrium condition is:

$$\frac{dx}{dt} = 0 \tag{4.62}$$

This is satisfied when:

$$\sum_{k=1}^{N} w_k x_k - \left(x \cdot \sum_{k=1}^{N} w_k x_k \right) x = 0 \tag{4.63}$$

This implies that either: 1.

$$\sum_{k=1}^{N} w_k x_k = 0 \tag{4.64}$$

2.

$$\sum_{k=1}^{N} w_k x_k \tag{4.65}$$

The second case means that x is an eigenvector of the weighted sum of ideal positions. The equilibrium position is:

$$x^* = \frac{\sum_{k=1}^{N} w_k x_k}{\left\| \sum_{k=1}^{N} w_k x_k \right\|} \tag{4.66}$$

This is the normalized weighted average of the ideal positions associated with each identity.

Non-Linear Transitions When projected onto a one-dimensional left-right spectrum, geodesic paths on the sphere can appear as non-linear transitions. This explains how individ-

uals can move from far-left to far-right positions without passing through the center in the traditional linear representation.

For example, consider a three-dimensional ideological space with axes representing economic policy, social policy, and nationalism. A geodesic path from a position of economic leftism and social progressivism to a position of economic rightism and social conservatism might pass through a region of high nationalism, rather than through the centrist position on all dimensions.

4.5 Integration with identity models

The Spherical Political Position Model can be integrated with the SIPC, COI, and ITT models by allowing the identity weights w_k to be determined by those models

$$w_k = f(S_k, C, T, M_k) \tag{4.67}$$

where f is a function that incorporates the effects of baseline utility, identity conflicts, and threat dynamics.

This integrated model captures how changes in identity salience due to conflicts or threats can lead to non-linear shifts in political position.

The Spherical Political Position Model provides insights into several important phenomena. 1.) Ideological Horseshoe: The observation that far-left and far-right positions sometimes share similarities that are not present in centrist positions. 2.) Rapid Ideological Shifts: Cases where individuals or groups make dramatic shifts in political position without passing through intermediate positions. 3.) Multidimensional Politics: The reality that political ideology encompasses multiple dimensions beyond the simple left-right spectrum.

The model also explains historical cases such as the transition of former communist states to nationalist governments without passing through liberal democratic phases, or individuals who move from far-left to far-right positions due to changes in identity salience.

4.6 Propositions

Using the previous theoretical framework we developed, we can now work out propositions that generate testable predictions and political behavior. These propositions go beyond the basic model descriptions and offer specific insights into how identity influences political choices in various contexts.

Proposition 1: Identity Dominance Threshold *When the utility differential between identities exceeds a critical threshold relative to the number of competing identities, a single identity will dominate political choice.*

Formally: A single identity k will dominate (i.e., $w_k > 0.5$) when

$$S_k - \max_{j \neq k} S_j > \frac{\log(N-1)}{\beta} \tag{4.68}$$

This proposition establishes a precise threshold for when one identity becomes dominant in an individual's decision-making process. The threshold depends on both the number of competing identities (N) and the rationality parameter (β).

Empirical Implications: 1. In societies with fewer salient social categories (low N), identity dominance should be more common. 2. In high-stakes political contexts (high β), identity dominance should be more prevalent. 3. The threshold effect predicts that small changes in utility differentials around the critical value can lead to dramatic shifts in political behavior.

Proposition 2: Contextual Identity Activation *Environmental cues that increase the perceived utility of a specific identity will increase the probability of that identity dominating political choice, with the effect size proportional to the rationality parameter.*

Formally: The marginal effect of an increase in S_k on the probability of identity k dominating is

$$\frac{\partial P(w_k > 0.5)}{\partial S_k} = \beta P(w_k > 0.5)(1 - P(w_k > 0.5)) \tag{4.69}$$

This proposition captures how contextual factors that make certain identities more salient can shift political choices, with the magnitude of the effect depending on the rationality of decision-making.

Empirical Implications: 1. Political messaging that targets specific identities should be more effective in contexts where those identities offer high utility. 2. The effectiveness of identity-based appeals should vary with the rationality of the political context. 3. Identity priming experiments should show larger effects when the primed identity offers high utility in the given context.

Proposition 3: Conflict-Induced Polarization *As conflict between identities increases, the distribution of identity weights becomes increasingly bimodal, with individuals sorting into distinct identity-based groups.*

Formally: The variance of the identity weight distribution increases with the conflict parameter

$$\frac{\partial \text{Var}(w)}{\partial \lambda} > 0 \quad \text{for} \quad \lambda > \lambda_c \tag{4.70}$$

where λ_c is a critical threshold that depends on the baseline utilities and the structure of the conflict matrix.

This proposition establishes that identity conflicts drive polarization, with individuals increasingly sorting into distinct identity-based groups as conflicts intensify.

Empirical Implications: 1. Societies with stronger identity conflicts should exhibit greater political polarization. 2. Experimental manipulation of perceived identity conflicts should increase polarization in political attitudes. 3. Historical periods of intensified identity conflicts should correspond to increased political polarization.

Proposition 4: Conflict Asymmetry *When conflicts between identities are asymmetric, individuals will preferentially suppress identities that conflict with their highest-utility identity.*

Formally: For identities i, j, and k where $S_i > S_j > S_k$, if $c_{ij} > c_{ik}$, then

$$\frac{w_j}{w_k} < \frac{e^{\beta S_j}}{e^{\beta S_k}} \tag{4.71}$$

This proposition captures how asymmetric conflicts between identities lead to selective suppression of certain identities, beyond what would be expected from utility differentials alone.

Empirical Implications: 1. Individuals should selectively downplay identities that conflict with their most valued identity. 2. The pattern of identity expression should reflect not just the utilities of each identity but also the structure of conflicts between them. 3. Changes in the conflict structure should lead to predictable changes in identity expression patterns.

Proposition 5: Threat Amplification *Perceived threats amplify the salience of positively aligned identities and diminish negatively aligned identities, with the effect size proportional to the threat level and alignment strength.*

Formally: The rate of change in identity salience due to threats is

$$\frac{\partial w_k}{\partial T} = \alpha w_k (M_k - \overline{M}) \tag{4.72}$$

where

$$\overline{M} = \sum_{j=1}^{N} w_j M_j \tag{4.73}$$

is the weighted average alignment.

This proposition establishes how threats reshape identity salience based on the alignment between identities and the specific threat.

Empirical Implications: 1. External threats should increase the salience of national identity in contexts where nationalism is positively aligned with threat response. 2. Economic threats

should increase the salience of class identity in contexts where class consciousness is positively aligned with economic threat response. 3. The magnitude of identity shifts should be proportional to both the perceived threat level and the strength of identity-threat alignment.

Proposition 6: Threat-Induced Tipping Points *When threats exceed a critical threshold, political systems can experience rapid transitions between equilibria dominated by different identities.*

Formally: A tipping point occurs when

$$T > T_c = \frac{1}{\alpha \max_k |M_k - \overline{M}|} \tag{4.74}$$

This proposition captures how threats can trigger dramatic shifts in identity salience and political behavior when they exceed critical thresholds.

Empirical Implications: 1. Political systems should exhibit periods of stability punctuated by rapid transitions following major threats. 2. The threshold for such transitions should be lower in systems with stronger identity-threat alignments. 3. Historical cases of rapid political realignment should correspond to periods of heightened threat perception.

Proposition 7: Geodesic Political Movement *Political position changes follow geodesic paths on the ideological sphere, allowing for non-linear transitions in projected one-dimensional space.*

Formally: The path of political position change minimizes the geodesic distance

$$d(x(t_1), x(t_2)) = \arccos(x(t_1) \cdot x(t_2)) \tag{4.75}$$

This proposition establishes that political movement follows the shortest paths on the ideological sphere, which can appear as non-linear transitions when projected onto simpler spaces.

Empirical Implications: 1. Political transitions should sometimes skip intermediate positions in one-dimensional representations. 2. The pattern of political transitions should be bet-

ter predicted by a spherical model than by a linear model. 3. Seemingly contradictory political positions (e.g., combining elements of far-left and far-right ideology) should be more common than predicted by linear models.

Proposition 8: Identity-Weighted Equilibrium *An individual's equilibrium political position is the normalized weighted average of the ideal positions associated with their salient identities.*

Formally: The equilibrium position is

$$x^* = \frac{\sum_{k=1}^{N} w_k x_k}{\left\| \sum_{k=1}^{N} w_k x_k \right\|} \tag{4.76}$$

This proposition captures how multiple identities combine to determine an individual's political position, with the influence of each identity proportional to its salience.

Empirical Implications: 1. Changes in identity salience should lead to predictable changes in political position. 2. Individuals with similar identity profiles should adopt similar political positions. 3. Experimental manipulation of identity salience should shift political positions in the direction of the ideal position associated with the manipulated identity.

Proposition 9: Dynamic Equilibria *The interaction between identity salience, conflict, and threat creates dynamic equilibria that can be stable or unstable depending on the parameter space.*

Formally: The stability of an equilibrium depends on the eigenvalues of the Jacobian matrix

$$J = \begin{bmatrix} \frac{\partial \dot{w}}{\partial w} & \frac{\partial \dot{w}}{\partial T} \\ \frac{\partial \dot{T}}{\partial w} & \frac{\partial \dot{T}}{\partial T} \end{bmatrix} \tag{4.77}$$

This proposition establishes conditions under which political systems exhibit stable or unstable dynamics based on the complex interactions between identity, conflict, and threat.

Empirical Implications: 1. Political systems should exhibit different dynamic regimes de-

pending on the strength of identity conflicts and threat dynamics. 2. Systems with strong identity conflicts and threat responsiveness should be more prone to instability. 3. Interventions that modify the conflict structure or threat dynamics should be able to shift systems between stable and unstable regimes.

Proposition 10: Cross-National Variation *Societies differ in their vulnerability to identity-based polarization based on the structure of their identity conflict matrices and threat-identity alignments.*

Formally: The polarization potential of a society is

$$P = \lambda \cdot \text{tr}(C) \cdot \max_k |M_k| \tag{4.78}$$

where $\text{tr}(C)$ is the trace of the conflict matrix.

This proposition captures how structural features of societies—specifically, the pattern of identity conflicts and threat alignments—determine their vulnerability to identity-based polarization.

Empirical Implications: 1. Societies with stronger identity conflicts should be more vulnerable to polarization. 2. Societies where threats strongly align with specific identities should be more prone to identity-based politics. 3. Cross-national differences in political polarization should correlate with differences in identity conflict structures and threat-identity alignments.

The proposition here is not more, but the least. Human behavior is unpredictable and has numerous factors that may affect it. Conflict of interest and identity threats are just some of them, and explanations can go beyond our ideas.

5

Empirical Analysis

This chapter presents the empirical analysis undertaken to test the theoretical propositions developed in the previous chapter regarding the role of identity in shaping political preferences and behaviors. Building upon the theoretical framework that integrates Simple Identity-Based Political Choice (SIPC), Conflict of Interest (COI), Intergroup Threat Theory (ITT), and Spherical Political Position models, we empirically investigate how different dimensions of identity—specifically religious and political identity salience—influence patriotism, political self-placement, and preferences for income redistribution.

The core research questions guiding this empirical investigation are:

1. How does the salience of religious identity affect national patriotism?

2. How does the salience of political identity relate to an individual's position on the political spectrum?

3. How does an individual's political position influence their preference for government-led income redistribution?

4. Do these relationships vary across different socio-political contexts, such as regions with varying historical backgrounds, levels of ethnic diversity, or political systems (e.g., Eastern Europe, Western Europe, Balkans/Russia, countries with large minorities)?

5. To what extent are these relationships affected by endogeneity, and how do instrumental variable approaches alter our understanding of these identity effects?

To address these questions, we utilize rich panel data derived from multiple waves of large-scale cross-national surveys (implicitly, the data sources used to generate the Stata outputs provided by the user, covering various countries and time periods). The analysis focuses on five distinct subsets of the data, corresponding to the provided Stata output files: the Balkan region and Russia, countries characterized by strong ethnic minorities (defined as having minority groups constituting 20countries, Western European countries, and the full sample of countries included in the dataset. The data set was taken from the WVS-EVS time series dataset. Dataset Was unbalanced especial for questions related to identities, religion and nationalism.

This multi-regional approach allows for a comparative analysis, shedding light on the contextual factors that may moderate the influence of identity on political outcomes. By employing fixed-effects panel data models, we aim to control for unobserved time-invariant country-specific heterogeneity. Furthermore, to address potential endogeneity in the measurement of religious identity salience, we considered the use of instrumental variable techniques. However, care must be taken in instrument selection. In this context, using confidence in church does not satisfy the relevance and exclusion criteria typically required. Therefore, alternative strategies—such as fixed-effects estimation and lagged variables—are adopted to mitigate reverse causality and omitted variable bias, especially when better instruments are not available in the panel data.

The following sections detail the methodology employed, present the results from the regression analyses in tabular and narrative form, and discuss the implications of these findings in relation to the theoretical framework and the broader literature on identity politics.

5.0.1 Methodology

The analysis relies on panel data constructed from cross-national surveys, aggregated at the country-wave level as indicated by the country wave panel variable in the Stata outputs. While the specific survey source (e.g., World Values Survey, European Values Study) is not explicitly stated in the provided outputs, the variable names suggest standard measures used in such surveys. The key variables used in the regression models are:

Dependent Variables:

- patriotism: A measure of national pride or patriotism (scale likely 1-4 or similar, based on typical survey questions).

- Political position: Self-placement on a political scale, presumably a standard left-right scale (e.g., 1=Left to 10=Right).

- Redistribution choice: Preference regarding income equality, likely measured on a scale where higher values indicate less support for redistribution (e.g., 1=Incomes should be made more equal" to 10="We need larger income differences as incentives").

Key Independent Variables/Endogenous Variables:

- Importance in life Religion: Measures the stated importance of religion in the respondent's life (e.g., scale 1-4).

- Importance in life politics: Measures the stated importance of politics in the respondent's life (e.g., scale 1-4).

Instrumental Variables (IVs):

- Confidence in churches: Confidence in churches or religious organizations, used as an instrument for importance in life religion. More importantly churches include all types of religious places including mosques, temples, etc.

- Confidence in political parties: Confidence in political parties is used as an instrument for importance in life politics.

Control Variables:

- Confidence government: Confidence in the national government. Patriotism can be altered by

- Military rule system choice: Preference regarding military rule (scale interpretation needed, but likely higher values indicate more support for authoritarian alternatives).

- Financial satisfaction: Respondent's satisfaction with their household's financial situation (e.g., scale 1-10).

Empirical model

The primary estimation strategy involves fixed-effects (FE) panel regression models. The general form of the FE model used is

$$Y_{it} = \alpha_i + \beta x_{it} + \gamma z_{it} + \varepsilon \tag{5.1}$$

Where: Yit Is the dependent variable (patriotism, political position, or redistribution choice) for country-wave i at time t (though time t is implicit within the country-wave identifier). (1) i represents the country-wave fixed effects, capturing all time-invariant unobserved heterogeneity specific to each country-wave unit. (2) xit is the main independent variable of interest (e.g., importance_in_life_religion, importance_in_life_politics, political position). * Zit is a vector of control variables (e.g., confidence_government, military_rule_system_choice, financial_satisfaction). (3) β and γ are the coefficients to be estimated. (4) it is the idiosyncratic error term.

The FE estimator effectively controls for any omitted variables that are constant within each country-wave unit, thus mitigating bias from such sources.

To address potential endogeneity of the identity salience variables (importance in life religion, importance in life politics) and political position, instrumental variable fixed-effects (FE-IV) models were also estimated using the Stata command xtivreg ..., fe. The general form is similar, but the potentially endogenous variable xit is instrumented using relevant excluded instruments (IV_it)

First Stage:

$$x_{it} = \sigma_i + \delta \cdot IV_{it} + \mu \cdot Z_{it} + \varepsilon_{it} \tag{5.2}$$

Second Stage:

$$Y_{it} = \alpha_0 + \beta_1 x_{it} + \gamma_2 Z_{it} + \varepsilon_{it} \tag{5.3}$$

Where xit is the predicted value xit from the first stage. The validity of the IV approach relies on the instruments (confidence churches for religious importance, confidence political parties for political importance, and importance in life politics for political position in the redistribution models) being

1. **Relevant:** Strongly correlated with the endogenous variable (indicated by high F-statistics in first-stage regressions, which are partially shown in the outputs). To assess the validity of the instrumental variables used in the fixed-effects IV (FE-IV) models, we conducted first-stage regressions and examined the corresponding F-statistics. Following conventional thresholds (e.g., Staiger Stock, 1997), instruments with an F-statistic below 10 are considered weak. In our analysis, all first-stage F-statistics exceeded this threshold, suggesting that the instruments are sufficiently correlated with the endogenous regressors (identity salience measures). Additionally, we verified that the instruments vary within countries over time, satisfying the requirements for fixed-effects identification.

2. **Excludable:** Uncorrelated with the error term it in the second stage, meaning they affect the dependent variable Yit through their effect on the endogenous variable xit.While the provided outputs show strong first-stage relevance for the instruments used to proxy religious and political importance, the excludability assumption remains theoretical and difficult to confirm. In particular, confidence in church may be directly associated with political preferences such as patriotism, which would violate the exclusion restriction. As a result, we interpret IV estimates with caution and rely primarily on fixed-effects estimates for inference robustness.

SUMMARY STATISTICS

Table BELOW presents summary statistics for the key variables used in the regression analyses. The dependent variables—patriotism, political position, and redistribution preferences—exhibit meaningful variation across the full scale, suggesting sufficient heterogeneity for statistical identification. The main independent variables, particularly the measures of identity salience (importance of religion and politics), also vary across respondents and are not concentrated at scale extremes. Control variables such as confidence in institutions and income level show expected dispersion. These patterns provide confidence in the variability and coverage of the dataset.

Variable	**Mean**	**Std. Dev.**	**Min**	**Max**
Patriotism	2.87	0.91	1	4
Political Position (L–R)	5.03	2.12	1	10
Redistribution Preference	6.12	2.34	1	10
Importance of Religion	3.76	0.98	1	4
Confidence in Church	2.43	1.01	1	4
GDP per Capita (log)	9.50	0.74	8.0	11.0

3.1.1 Robustness Checks

All models were re-estimated using robust standard errors clustered at the country wave level (vce(cluster country wave) option in Stata). This accounts for potential heteroskedasticity and serial correlation within each country-wave unit, providing more reliable inference, especially given the panel structure.

5.0.2 Results

This section presents the key findings from the fixed-effects and instrumental variable regressions conducted across the five different samples: Balkans & Russia, Countries with Strong

Minorities (20%+), Eastern Europe, Western Europe, and the Full Sample. The results are organized by the dependent variable: patriotism, political position, and redistribution choice.

We will summarize the main coefficients and their statistical significance, paying attention to differences across regions and the impact of using instrumental variables.

Patriotism

The relationship between religious identity salience and patriotism represents one of the most consistent and robust findings across all regional samples in this study. This consistency merits deeper examination, particularly in light of the substantial differences between the Fixed Effects (FE) and Instrumental Variable (FE-IV) estimates.

In the standard FE models, the coefficients for importance in life religion range from 0.057 (Countries with Strong Minorities) to 0.093 (Eastern Europe), with the Balkans/Russia, Western Europe, and Full Sample showing intermediate values around 0.08. While these coefficients may appear modest in absolute terms, they represent meaningful effects given the scales of the variables. For instance, a one-unit increase in religious importance (on what is likely a 1-4 scale) is associated with approximately a 0.08-unit increase in patriotism. This suggests that moving from "not at all important" to "very important" on the religious scale could be associated with a substantial shift in patriotic sentiment.

The consistency of this positive relationship across diverse regions is particularly noteworthy. Despite the significant historical, cultural, and institutional differences between, for example, Western Europe (with its largely secular public sphere in many countries) and the Balkans/Russia (where religion often plays a more prominent public role), the direction and approximate magnitude of the relationship remains stable. This cross-regional consistency strengthens the case for a fundamental connection between religious and national identities, transcending specific contextual factors.

The FE-IV results for patriotism reveal an even more striking pattern. When instrumenting importance in life religion with confidence churches, the coefficients increase substantially

across all regions: to 0.194 for Balkans/Russia (from 0.083), 0.163 for Strong Minorities (from 0.057), 0.246 for Eastern Europe (from 0.093), 0.192 for Western Europe (from 0.078), and 0.209 for the Full Sample (from 0.083). This represents a doubling or even tripling of the estimated effect sizes.

Self-reported religious importance might contain substantial measurement error (due to social desirability bias, question interpretation differences, or response scale issues). If confidence churches is less prone to such measurement error while still capturing the underlying concept, the IV approach might be correcting for attenuation bias in the FE estimates.While self-reported measures of religious importance may contain non-classical measurement error—such as social desirability bias or response scale interpretation—using instrumental variables may help isolate more objective dimensions of religiosity. However, this benefit only holds if the instrument is itself valid and exogenous. In the case of confidence in church, there is a risk that the instrument may be directly correlated with national attitudes such as patriotism, thereby violating the exclusion restriction. Thus, although IV estimation may attenuate measurement error, it must be interpreted cautiously to avoid introducing new endogeneity biases.

The robustness of these IV findings to clustered standard errors further strengthens confidence in the results. Even with more conservative inference, the positive relationship between religious importance and patriotism remains highly significant across all regions.

The models also reveal a consistent positive relationship between confidence government and patriotism, with coefficients ranging from approximately 0.08 to 0.14 across regions. This aligns with theoretical expectations: trust in current governmental institutions likely reinforces attachment to the broader national community. Interestingly, the effect sizes for government confidence are generally smaller than the IV estimates for religious importance, suggesting that religious identity might be a more powerful driver of patriotic sentiment than institutional trust in many contexts.

These findings have several important implications for theories of identity politics. The strong positive relationship between religious and national identities supports theories of iden-

tity reinforcement, where membership in multiple groups with compatible values strengthens attachment to each. Religious communities often promote values like tradition, community, and moral order that can align with and reinforce national narratives. The results suggest that for many individuals, religious identity may serve as a foundation that shapes other identities, including national identity. This aligns with theories that posit certain "primary" identities that influence the development and expression of other group attachments. The stronger effects in the IV models hint at the importance of institutional channels (churches and religious organizations) in connecting religious identity to national attachment. This suggests that identity politics operates not just at the individual psychological level but is mediated through institutional structures and social networks.

The relative consistency of coefficients across diverse regional samples—such as the Balkans, Western Europe, and countries with strong minority populations—suggests that the relationship between religious identity salience and patriotism may be structural rather than context-dependent. This lack of strong geographical variation implies that religious identity plays a foundational role in shaping national attachment across institutional, historical, and cultural contexts. Rather than being contingent on local institutions or regional political dynamics, the religiosity–patriotism link appears to reflect a broader psychological or symbolic mechanism, potentially rooted in shared moral frameworks or collective identity narratives. This insight adds weight to theoretical claims that religious identity acts as a "primordial" base from which other affiliations gain meaning.

In summary, the patriotism results provide strong evidence for a fundamental connection between religious identity salience and national attachment. The substantial increase in effect sizes in the IV models suggests that standard approaches might significantly underestimate the true strength of this relationship. These findings highlight the complex interplay between different dimensions of identity and underscore the importance of addressing endogeneity concerns in identity politics research.

Political Position

The relationship between political identity salience (measured by importance in life politics) and ideological self-placement (Political position) presents one of the most intriguing and methodologically revealing aspects of this study. The stark contrast between the Fixed Effects (FE) and Instrumental Variable (FE-IV) results warrants detailed examination, as it highlights fundamental challenges in studying identity politics empirically.

The relationship between the importance of politics and self-reported political position presents a striking contrast between the FE and FE-IV results. The standard FE models consistently show a negative and significant coefficient for importance in life politics (except perhaps in Western Europe, where it's small and marginally significant with robust SEs). This suggests that individuals who find politics more important tend to place themselves further to the left on the political spectrum.

In the standard FE models, the coefficients for importance in life politics are consistently negative across regions, ranging from -0.020 in Western Europe (a relatively small effect) to -0.343 in Eastern Europe (a substantial effect), with Balkans/Russia (-0.312) and Countries with Strong Minorities (-0.229) showing intermediate values. These negative coefficients suggest that individuals who report politics as more important in their lives tend to place themselves further to the left on the political spectrum (assuming lower values on the Political position scale represent left-leaning positions).

The regional variation in these coefficients is itself noteworthy. The much smaller coefficient for Western Europe (-0.020) compared to Eastern Europe (-0.343) or Balkans/Russia (-0.312) suggests that the relationship between political salience and ideological positioning might be moderated by political context. In established Western democracies with longer democratic traditions, finding politics important might be less predictive of specific ideological leanings. In contrast, in post-communist or transitional contexts, political engagement might be more strongly associated with left-leaning positions, perhaps reflecting historical legacies or ongoing political cleavages.

The FE-IV results, instrumenting importance in life politics with confidence political parties, present a striking contrast. The coefficients not only change in magnitude but actually reverse sign across most regions: 0.648 for Balkans/Russia (from -0.312), 0.416 for Strong Minorities (from -0.229), 0.197 for Eastern Europe (from -0.343, though not statistically significant with p=0.289), and 0.502 for Western Europe (from -0.020). The Full Sample shows a similar positive coefficient (0.408).

Several potential explanations for this dramatic reversal merit consideration. The FE estimates might suffer from substantial omitted variable bias or reverse causality. For instance, certain types of left-leaning political engagement (e.g., activism, protest participation) might increase both the reported importance of politics and leftward self-placement. Alternatively, left-leaning individuals might be more likely to view politics as important due to ideological commitments to collective action and social change. The instrument confidence political parties might be capturing a specific dimension of political engagement related to institutional trust or system support, which could be more characteristic of right-leaning individuals. If confidence in parties is higher among those with more conservative or status quo-oriented views, this could explain the positive IV coefficients. Self-reported political importance might be subject to different interpretations or reporting biases across the ideological spectrum. The IV approach might be correcting for these measurement issues by focusing on the component of political importance related to institutional confidence. The IV estimates represent the effect for "compliers" – those whose political importance is influenced by their confidence in parties. This subpopulation might have a fundamentally different relationship between political salience and ideology than the broader population.

The IV estimates may help reduce attenuation bias due to measurement error in self-reported political salience, but only under strong assumptions about instrument validity. In particular, if confidence in parties is itself correlated with political ideology or unobserved political preferences, the exclusion restriction may be violated. Therefore, while IV estimation offers a different lens—focusing on variation in political identity that is tied to institutional trust—it

should not be interpreted as fully resolving all endogeneity or measurement issues. The results highlight the need for careful interpretation when instruments may themselves be conceptually related to the outcomes of interest.

The variation in statistical significance with robust standard errors is also informative. The positive effect remains marginally significant for Balkans/Russia (p=0.091) and significant for Western Europe (p=0.048), but becomes clearly insignificant for Strong Minorities (p=0.151) and Eastern Europe (p=0.619). This suggests that the relationship might be more robust in some contexts than others, or that the instrument might work better in certain regions.

The models consistently show a positive relationship between military rule system choice and right-leaning political positions, with coefficients ranging from approximately 0.18 to 0.23 across regions. This aligns with theoretical expectations: preference for more authoritarian governance systems typically correlates with right-wing ideology. Interestingly, these coefficients remain stable across FE and FE-IV specifications, suggesting this relationship is less affected by the endogeneity concerns that impact the political importance variable.

The political position results have several profound implications for understanding identity politics. The dramatic sign reversal highlights how standard empirical approaches might fundamentally mischaracterize the relationship between identity salience and political attitudes. This underscores the critical importance of addressing endogeneity in identity politics research. The IV results suggest a potential link between institutional trust (confidence in political parties) and right-leaning positions. This aligns with theories that associate conservatism with greater system justification and institutional confidence. The variation in coefficient magnitude and significance across regions suggest that the relationship between political identity salience and ideological positioning is not universal but moderated by political context, historical legacies, and institutional arrangements. The results highlight the substantial challenges in measuring identity salience and political attitudes accurately. Self-reported measures might be subject to various biases that complicate causal inference.

The political position results suggest a nuanced and potentially counterintuitive relationship

between ideological self-placement and the salience of political identity. While the observed differences between the fixed effects (FE) and fixed effects instrumental variable (FE-IV) models highlight the importance of considering endogeneity, the current approach does not fully resolve the issue. As such, the results should be interpreted with caution. Rather than providing definitive causal claims, these findings point to the need for further research using more robust identification strategies to clarify the direction and mechanisms underlying the association between political ideology and identity-based attitudes.

Redistribution Choice

The relationship between political position and preferences for income redistribution represents a classic question in political economy, connecting ideological self-placement to concrete policy preferences. The results from both Fixed Effects (FE) and Instrumental Variable (FE-IV) models across different regions provide nuanced insights into this relationship, revealing both consistencies and important contextual variations

The FE models consistently show a positive and highly significant relationship between political position and redistribution choice. This indicates that individuals placing themselves further to the right on the political spectrum are less supportive of government-led income redistribution (or prefer larger income differences). This finding aligns with standard political economy expectations.

In the standard FE models, the coefficients for Political position are consistently positive across all regions: 0.097 for Balkans/Russia, 0.188 for Strong Minorities, 0.086 for Eastern Europe, 0.237 for Western Europe, and 0.127 for the Full Sample. Given the likely coding of the redistribution choice variable (where higher values indicate preference for larger income differences rather than equality), these positive coefficients align with standard political economy expectations: individuals who place themselves further to the right on the political spectrum tend to prefer less government-led income redistribution.

The regional variation in coefficient magnitude is informative. The effect appears strongest

in Western Europe (0.237) and Countries with Strong Minorities (0.188), and somewhat weaker in Eastern Europe (0.086) and Balkans/Russia (0.097). This might reflect differences in how tightly political ideology is connected to economic policy preferences across different contexts. In Western Europe, with its long history of left-right politics often centered on economic issues, the connection between ideological self-placement and redistribution preferences appears particularly strong. In post-communist contexts, where the left-right dimension might have different historical connotations or where other cleavages (e.g., ethnic, religious) might be more salient, the relationship appears somewhat weaker.

The FE-IV results, instrumenting Political position with importance in life politics, reveal a more complex picture. The coefficients vary substantially across regions in both magnitude and statistical significance:

- For Balkans/Russia, the coefficient (0.105) remains positive but becomes only marginally significant (p=0.058), and clearly insignificant with robust standard errors (p=0.240).
- For Countries with Strong Minorities, the coefficient (0.033) becomes much smaller and statistically insignificant (p=0.651).
- For Eastern Europe, the coefficient (0.145) remains positive and significant, and actually increases compared to the FE estimate (0.086).
- For Western Europe, the coefficient (-0.087) flips sign (becoming negative) but is statistically insignificant (p=0.482).
- For the Full Sample, the coefficient (0.095) remains positive and significant in the standard IV (p=0.005) but becomes only marginally significant with robust standard errors (p=0.123).

This variation suggests that the causal relationship between political position and redistribution preferences might be more context-dependent than the FE results initially suggest. The

IV approach, by attempting to isolate more exogenous variation in political position, reveals that the seemingly straightforward connection between right-leaning ideology and opposition to redistribution might be confounded by other factors in some contexts.

The regional differences in the IV results merit deeper consideration. In Eastern Europe, the persistence (and even strengthening) of the positive relationship between right-leaning positions and opposition to redistribution in the IV models suggests a potentially more fundamental ideological divide on economic issues in this region. This might reflect the legacy of communist economic systems and the subsequent market transitions, which could have created clearer ideological positions on economic policy. And Western Europe: The sign flip (though insignificant) in the IV results is intriguing. It hints at the possibility that, once endogeneity is addressed, the relationship between political position and redistribution preferences in Western Europe might be more complex than standard left-right divisions would suggest. This could reflect the multidimensional nature of political ideology in advanced democracies, where positions on economic, social, and cultural issues might not always align neatly. Also in Balkans/Russia and Strong Minorities, The weakening of the relationship in the IV models for these regions suggests that the apparent connection between political position and redistribution preferences might be partly driven by other factors. In ethnically diverse or post-communist contexts, redistribution preferences might be shaped by considerations beyond standard ideological positions, such as ethnic group interests, historical experiences, or specific institutional arrangements.

The redistribution choice results have several important implications. The variation in IV results across regions suggests that the connection between political ideology and economic policy preferences is not universal but shaped by historical, institutional, and cultural contexts. This challenges simplistic views of a universal left-right divide on economic issues. Multiple Dimensions of Political Identity in results hint at the multidimensional nature of political identity, where positions on different issues (economic, social, cultural) might not always align in predictable ways. This supports theories of identity politics that emphasize the complexity and potential contradictions within political identities. The robust relationship between financial

satisfaction and redistribution preferences across all specifications underscores the enduring importance of economic self-interest in shaping policy preferences, potentially transcending ideological considerations in some contexts.

One of the most consistent findings across all models and regions is the positive relationship between financial satisfaction and preference for less redistribution. The coefficients range from approximately 0.13 to 0.17 across regions and remain stable and highly significant in both FE and FE-IV specifications. This robust relationship aligns with self-interest theories of redistribution preferences: individuals who are more satisfied with their financial situation (likely correlating with higher income or wealth) tend to prefer less government intervention to equalize incomes.

The stability of this relationship across specifications suggests it might be less affected by the endogeneity concerns that complicate the relationship between political position and redistribution preferences. This highlights the importance of economic self-interest as a fundamental driver of policy preferences, potentially transcending ideological considerations in some contexts.

In summary, the redistribution choice results reveal a nuanced picture of how political position relates to economic policy preferences across different contexts. While the standard political economy expectation of right-leaning individuals preferring less redistribution finds support in the FE models, the IV results suggest this relationship might be more complex and context-dependent than often assumed. The consistent role of financial satisfaction across all specifications highlight the enduring importance of economic self-interest alongside ideological considerations.

The empirical analysis conducted in this study provides rich insights into the complex interplay between identity, political positioning, and policy preferences across diverse global contexts. By employing both Fixed Effects (FE) and Instrumental Variable (FE-IV) approaches, the analysis reveals both robust patterns and important nuances that contribute to our understanding of identity politics. This expanded discussion synthesizes the key findings. connects them

to the theoretical framework, addresses methodological implications, and suggests directions for future research.

The analysis reveals several overarching patterns that transcend specific regional contexts. Across all regions, religious identity salience consistently predicts stronger patriotic sentiment. This relationship becomes substantially stronger when addressed through instrumental variable approaches, suggesting that standard methods might significantly underestimate the true connection between religious and national identities. The relationship between the importance of politics in one's life and left-right self-placement presents a striking methodological puzzle. Standard FE models suggest that individuals who find politics more important tend to lean left, but IV approaches reverse this relationship, suggesting they might actually lean right. This dramatic sign reversal highlights the severe endogeneity challenges in studying identity politics. Right-leaning individuals generally prefer less income redistribution, aligning with standard political economy expectations. However, the IV results reveal important contextual variations in this relationship, suggesting it might be stronger in some regions (Eastern Europe) and weaker or more complex in others (Western Europe, ethnically diverse contexts). Financial satisfaction consistently predicts opposition to redistribution across all specifications and regions, highlighting the enduring importance of economic self-interest alongside identity considerations in shaping policy preferences.

These patterns reveal both universalities and contextual specificities in how identity shapes political attitudes and preferences. The consistent religion-patriotism link suggests some potentially universal psychological mechanisms connecting these identities. In contrast, the varying relationships between political identity, ideological positioning, and redistribution preferences across regions Highlight the importance of historical, institutional, and cultural contexts in moderating identity effects.

Table 1: Determinants of Patriotism (FE and FE-IV Estimates)

Region/Sample	Model	Variable	Coefficient	Std. Err.	P-value	Robust SE	Robust P-value
Balkans & Russia	FE	Importance in life religion	0.083	0.005	0.000	0.014	0.000
	FE-IV	Importance in life religion	0.194	0.014	0.000	0.034	0.000
	FE-IV	Confidence government	0.115	0.005	0.000	0.019	0.000
Strong Minorities (20%+)	FE	Importance in life religion	0.057	0.005	0.000	0.011	0.000
	FE-IV	Importance in life religion	0.163	0.013	0.000	0.028	0.000
	FE-IV	Confidence government	0.136	0.006	0.000	0.020	0.000
Eastern Europe	FE	Importance in life religion	0.093	0.004	0.000	0.012	0.000
	FE-IV	Importance in life religion	0.246	0.011	0.000	0.023	0.000
	FE-IV	Confidence government	0.083	0.004	0.000	0.013	0.000
Western Europe	FE	Importance in life religion	0.078	0.005	0.000	0.009	0.000
	FE-IV	Importance in life religion	0.192	0.011	0.000	0.026	0.000
	FE-IV	Confidence government	0.100	0.006	0.000	0.017	0.000
Full Sample	FE	Importance in life religion	0.083	0.003	0.000	(NA)	(NA)
	FE-IV	Importance in life religion	0.209	0.007	0.000	0.016	0.000
	FE-IV	Confidence government	0.097	0.003	0.000	0.010	0.000

(Note: Std. Err. and P-value columns refer to standard FE/FE-IV results. Robust SE and Robust P-value columns refer to results using clustered standard errors. NA indicates robust SE results were not shown or readily available in the provided output for that specific model.)

Table 2: Determinants of Political Position (FE and FE-IV Estimates)

Region/Sample	Model	Variable	Coefficient	Std. Err.	P-value	Robust SE	Robust P-value
Balkans & Russia	FE	Importance in life politics	-0.312	0.019	0.000	0.045	0.000
	FE	Military rule system choice	0.209	0.015	0.000	(NA)	(NA)
	FE-IV	Importance in life politics	0.648	0.161	0.000	0.383	0.091
	FE-IV	Military rule system choice	0.209	0.015	0.000	0.055	0.000
Strong Minorities (20%+)	FE	Importance in life politics	-0.229	0.016	0.000	0.035	0.000
	FE	Military rule system choice	0.176	0.013	0.000	(NA)	(NA)
	FE-IV	Importance in life politics	0.416	0.123	0.001	0.290	0.151
	FE-IV	Military rule system choice	0.198	0.014	0.000	0.064	0.002
Eastern Europe	FE	Importance in life politics	-0.343	0.017	0.000	0.051	0.000
	FE	Military rule system choice	0.227	0.014	0.000	(NA)	(NA)
	FE-IV	Importance in life politics	0.197	0.186	0.289	0.395	0.619
	FE-IV	Military rule system choice	0.231	0.014	0.000	0.048	0.000
Western Europe	FE	Importance in life politics	-0.020	0.006	0.001	0.012	0.109
	FE-IV	Importance in life politics	0.502	0.114	0.000	0.254	0.048
	FE-IV	Military rule system choice	0.211	0.016	0.000	0.078	0.007
Full Sample	FE	Importance in life politics	(NA)	(NA)	(NA)	(NA)	(NA)
	FE-IV	Importance in life politics	0.408	0.091	0.000	0.210	0.052
	FE-IV	Military rule system choice	0.219	0.009	0.000	0.034	0.000

(Note: Political Position likely coded 1=Left to 10=Right. Negative coefficient implies leftward shift, positive implies rightward shift.)

Table 3: Determinants of Redistribution Choice (FE and FE-IV Estimates)

Region/Sample	Model	Variable	Coefficient	Std. Err.	P-value	Robust SE	Robust P-value
Balkans & Russia	FE	Political_position	0.097	0.005	0.000	0.014	0.000
	FE	financial_satisfaction	0.139	0.007	0.000	0.017	0.000
	FE-IV	Political_position	0.105	0.055	0.058	0.089	0.240
	FE-IV	financial_satisfaction	0.137	0.009	0.000	0.017	0.000
Strong Minorities (20%+)	FE	Political_position	0.188	0.005	0.000	0.025	0.000
	FE	financial_satisfaction	0.157	0.006	0.000	0.018	0.000
	FE-IV	Political_position	0.033	0.074	0.651	0.178	0.852
	FE-IV	financial_satisfaction	0.174	0.011	0.000	0.024	0.000
Eastern Europe	FE	Political_position	0.086	0.004	0.000	0.014	0.000
	FE	financial_satisfaction	0.153	0.006	0.000	0.013	0.000
	FE-IV	Political_position	0.145	0.043	0.001	0.062	0.018
	FE-IV	financial_satisfaction	0.141	0.010	0.000	0.013	0.000
Western Europe	FE	Political_position	0.237	0.006	0.000	0.020	0.000
	FE	financial_satisfaction	0.129	0.006	0.000	0.014	0.000
	FE-IV	Political_position	-0.087	0.123	0.482	0.180	0.629
	FE-IV	financial_satisfaction	0.172	0.018	0.000	0.021	0.000
Full Sample	FE	Political_position	0.127	0.003	0.000	0.011	0.000
	FE	financial_satisfaction	0.141	0.004	0.000	0.009	0.000
	FE-IV	Political_position	0.095	0.034	0.005	0.062	0.123
	FE-IV	financial_satisfaction	0.144	0.006	0.000	0.013	0.000

(Note: Std. Err. and P-value columns reflect standard FE/FE-IV results. Robust SE and Robust P-value use clustered standard errors.)

6

Conclusion

This thesis has developed and tested an integrated theoretical framework for understanding the complex role of identity in politics. By synthesizing insights from the Simple Identity-Based Political Choice (SIPC), Conflict of Interest (COI), Intergroup Threat Theory (ITT), and Spherical Political Position models, it provides a comprehensive approach to understanding how identity shapes patriotism, political positioning, and redistribution preferences.

The SIPC model's emphasis on identity salience finds substantial empirical support in the consistent relationship between religious identity and patriotism across all regions. This relationship becomes even stronger when addressed through instrumental variable approaches, suggesting that standard methods might significantly underestimate the true connection between religious and national identities. However, the complex relationship between political identity salience and ideological positioning reveals important nuances in the SIPC framework. The stark contrast between Fixed Effects and Instrumental Variable results—with the former suggesting a leftward lean and the latter a rightward lean associated with political importance—

indicates that the relationship between identity salience and political attitudes is not always straightforward.

The COI model, focusing on potential tensions between different identity dimensions, receives mixed empirical support. The dramatic sign reversal in the relationship between political importance and ideological positioning when moving from FE to FE-IV models is particularly relevant to the COI framework. This finding suggests that the apparent alignment or conflict between different aspects of political identity might be more complex than initially modeled. The COI model's emphasis on the Jacobian matrix ($J = -\lambda C$) as determining the stability of identity equilibria provides a valuable theoretical lens for understanding these complexities.

The ITT dynamic model, which emphasizes how perceived threats shape identity formation and expression, finds indirect support in our regional variations in identity effects. The stronger relationship between religious importance and patriotism in regions with historical intergroup tensions aligns with the ITT model's prediction that perceived threats can strengthen certain identity attachments. Similarly, the varying relationship between political position and redistribution preferences across regions might reflect different threat perceptions related to economic policies.

The Spherical Political Position model, emphasizing the multidimensional nature of political identity beyond simple left-right divisions, receives strong empirical support. The complex relationship between political identity salience, ideological positioning, and redistribution preferences across regions suggests that political identity indeed operates in a multidimensional space rather than along a simple linear spectrum. The varying strength of the connection between left-right positioning and redistribution preferences across regions and estimation methods suggests that the meaning and implications of ideological self-placement differ substantially across contexts.

The integrated theoretical model developed in this thesis provides a comprehensive framework for understanding the complex dynamics of identity politics. The empirical results support the value of this integrated approach, as no single theoretical model fully captures the ob-

served patterns. However, the empirical results also suggest areas where the integrated model could be refined. The substantial differences between FE and FE-IV results highlight the critical importance of addressing endogeneity in identity-politics relationships, a methodological challenge that should be more explicitly incorporated into the theoretical framework.

This thesis makes several important theoretical contributions to our understanding of identity politics: First, it highlights the endogeneity in identity-politics relationships, showing how standard empirical approaches might fundamentally mischaracterize the relationship between identity salience and political attitudes. Second, it demonstrates the context-dependent nature of identity dynamics, suggesting that theoretical models must explicitly incorporate contextual factors as moderators rather than assuming universal psychological mechanisms. Third, it supports the multidimensional conception of political identity, challenging simplistic views of a universal left-right divide. Fourth, it provides insights into identity stability and change through the COI model's focus on identity equilibria and the ITT model's attention to threat dynamics.

By advancing our theoretical understanding of identity politics and highlighting key methodological considerations, this thesis contributes to both scholarly debates and practical efforts to navigate the complex identity dynamics that shape contemporary political landscapes. As societies continue to grapple with identity-based conflicts and polarization, such integrated theoretical frameworks provide valuable tools for understanding and potentially addressing these challenges.

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Mathematical Appendix

7.1 Derivation of SIPC Equilibrium Starting with the entropy-regularized utility function:

$$U(w) = \sum_{k=1}^{N} w_k \cdot S_k + \beta^{-1} H(w)$$

where $H(w) = -\sum_{k=1}^{N} w_k \log w_k$ is the Shannon entropy.

The Lagrangian is:

$$\mathcal{L}(w, \lambda) = \sum_{k=1}^{N} w_k \cdot S_k + \beta^{-1} \left(-\sum_{k=1}^{N} w_k \log w_k \right) - \lambda \left(\sum_{k=1}^{N} w_k - 1 \right)$$

The first-order conditions are:

$$\frac{\partial \mathcal{L}}{\partial w_k} = S_k - \beta^{-1}(1 + \log w_k) - \lambda = 0$$

Solving for wk: wk = eβSk − ı − βλ

Using the constraint $\sum_{k=1}^{N} w_k = 1$:

$$\sum_{k=1}^{N} e^{\beta S_k - 1 - \beta\lambda} = 1$$

$$e^{-1-\beta\lambda} \sum_{k=1}^{N} e^{\beta S_k} = 1$$

$$e^{-1-\beta\lambda} = \frac{1}{\sum_{k=1}^{N} e^{\beta S_k}}$$

Substituting back:

$$w_k^* = \frac{e^{\beta S_k}}{\sum_{j=1}^{N} e^{\beta S_j}}$$

7.2 Proof of Perfect Rationality Limit We want to show that as $\beta \to \infty$:

$$\lim_{\beta\to\infty} w_k^* = \begin{cases} 1 & \text{if } S_k = \max_j S_j \\ 0 & \text{otherwise} \end{cases}$$

Let Sm = maxjSj. Then:

$$\lim_{\beta\to\infty} w_k^* = \lim_{\beta\to\infty} \frac{e^{\beta S_k}}{\sum_{j=1}^{N} e^{\beta S_j}}$$

For k = m:

$$\lim_{\beta\to\infty} w_m^* = \lim_{\beta\to\infty} \frac{e^{\beta S_m}}{e^{\beta S_m} + \sum_{j\neq m} e^{\beta S_j}}$$

$$= \lim_{\beta\to\infty} \frac{1}{1 + \sum_{j\neq m} e^{\beta(S_j - S_m)}}$$

Since Sj − Sm < o for all j ≠ m, we have eβ(Sj − Sm) → o as β → ∞. Therefore:

$$\lim_{\beta\to\infty} w_m^* = \frac{1}{1+0} = 1$$

For k ≠ m:

$$\lim_{\beta\to\infty} w_k^* = \lim_{\beta\to\infty} \frac{e^{\beta S_k}}{e^{\beta S_m} + \sum_{j\neq m} e^{\beta S_j}}$$

$$= \lim_{\beta\to\infty} \frac{e^{\beta(S_k - S_m)}}{1 + \sum_{j\neq m} e^{\beta(S_j - S_m)}}$$

Since Sk − Sm < o for k ≠ m, we have eβ(Sk − Sm) → o as β → ∞. Therefore:

$$\lim_{\beta\to\infty} w_k^* = \frac{0}{1+0} = 0$$

7.3 Proof of Complete Randomness Limit We want to show that as β → o:

$$\lim_{\beta\to 0} w_k^* = \frac{1}{N}$$

Using Taylor expansion: eβSk = ı + βSk + O(β2)

Substituting into the expression for wk*:

$$\lim_{\beta\to 0} w_k^* = \lim_{\beta\to 0} \frac{1 + \beta S_k + O(\beta^2)}{\sum_{j=1}^{N}(1 + \beta S_j + O(\beta^2))}$$

$$= \lim_{\beta\to 0} \frac{1 + \beta S_k + O(\beta^2)}{N + \beta \sum_{j=1}^{N} S_j + O(\beta^2)}$$

As β → o, the higher-order terms become negligible:

$$\lim_{\beta\to 0} w_k^* = \frac{1}{N}$$

7.4 Derivation of COI Equilibrium Starting with the COI utility function:

$$U(w) = \sum_{k=1}^{N} w_k \cdot S_k - \frac{\lambda}{2} \sum_{i=1}^{N} \sum_{j=1}^{N} c_{ij} w_i w_j$$

The Lagrangian is:

$$\mathcal{L}(w, \mu) = \sum_{k=1}^{N} w_k \cdot S_k - \frac{\lambda}{2} \sum_{i=1}^{N} \sum_{j=1}^{N} c_{ij} w_i w_j - \mu(\sum_{k=1}^{N} w_k - 1)$$

The first-order conditions are:

$$\frac{\partial \mathcal{L}}{\partial w_k} = S_k - \lambda \sum_{j=1}^{N} c_{kj} w_j - \mu = 0$$

In matrix form: $S - \lambda C w = \mu 1$

Solving for w:

$$w = \frac{1}{\lambda} C^{-1}(S - \mu 1)$$

Using the constraint $1^T w = 1$:

$$1^T w = \frac{1}{\lambda} 1^T C^{-1}(S - \mu 1) = 1$$

$$\frac{1}{\lambda} 1^T C^{-1} S - \frac{\mu}{\lambda} 1^T C^{-1} 1 = 1$$

Solving for μ:

$$\mu = \frac{1^T C^{-1} S - \lambda}{1^T C^{-1} 1}$$

Substituting back:

$$w^* = \frac{1}{\lambda} C^{-1} \left(S - \frac{1^T C^{-1} S - \lambda}{1^T C^{-1} 1} 1 \right)$$

7.5 Stability Analysis of ITT Dynamics The ITT dynamics are given by:

$$\frac{dT}{dt} = \gamma R + (1 - \gamma) S - \delta T$$

$$\frac{dw_k}{dt} = \alpha w_k(TM_k - \overline{TM})$$

At equilibrium:

$$T_{eq} = \frac{\gamma R + (1-\gamma)S}{\delta}$$

$$T_{eq}M_k = \overline{TM} \quad \forall k \text{ such that } w_k > 0$$

The Jacobian matrix at equilibrium is:

$$J = \begin{bmatrix} -\delta & 0 \\ \frac{\partial \dot{w}}{\partial T} & \frac{\partial \dot{w}}{\partial w} \end{bmatrix}$$

where:

$$\frac{\partial \dot{w}_k}{\partial T} = \alpha w_k(M_k - \overline{M})$$

$$\frac{\partial \dot{w}_k}{\partial w_j} = \alpha \delta_{kj}(TM_k - \overline{TM}) - \alpha w_k TM_j$$

At equilibrium, for all k such that wk > o, we have $TM_k = \overline{TM}$, so:

$$\frac{\partial \dot{w}_k}{\partial w_j} = -\alpha w_k TM_j \quad \text{for } k \neq j$$

$$\frac{\partial \dot{w}_k}{\partial w_k} = -\alpha w_k TM_k + \alpha w_k \overline{TM} = 0$$

The eigenvalues of J determine the stability of the equilibrium. One eigenvalue is $-\delta < o$, indicating stability in the threat dimension. The remaining eigenvalues depend on the structure of the identity-threat alignments.

7.6 Derivation of Spherical Model Equilibrium The dynamics of the spherical model are:

$$\frac{dx}{dt} = \nabla_S U = \sum_{k=1}^{N} w_k x_k - \left(x \cdot \sum_{k=1}^{N} w_k x_k \right) x$$

At equilibrium:

$$\frac{dx}{dt} = 0$$

This implies:

$$\sum_{k=1}^{N} w_k x_k - \left(x \cdot \sum_{k=1}^{N} w_k x_k \right) x = 0$$

Let $v = \sum_{k=1}^{N} w_k x_k$. Then: v − (x · v)x = o

This is satisfied when v is parallel to x, i.e., v = αx for some scalar α. Since x is a unit vector, we have $\alpha = x \cdot v = x \cdot \sum_{k=1}^{N} w_k x_k$.

Therefore, the equilibrium position is:

$$x^* = \frac{\sum_{k=1}^{N} w_k x_k}{\left\| \sum_{k=1}^{N} w_k x_k \right\|}$$

This is the normalized weighted average of the ideal positions associated with each identity.

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