# Identity Politics and Trade Policy*

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**Abstract**

We characterize trade policies that result from political competition when assessments of well-being include both material and psychosocial components. The material component reflects, as usual, satisfaction from consumption. Borrowing from social identity theory, we take the psychosocial component as combining the pride and self-esteem an individual draws from the status of groups with which she identifies and a dissonance cost she bears from identifying with those that are different from herself. In this framework, changes in social identification patterns that may result, for example, from increased income inequality or heightened class or ethnic tensions, lead to pronounced changes in trade policy. We analyze the nature of these policy changes.

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# 1 Introduction

Gradual trade liberalization proceeded steadily throughout most of the post-war period. But recent years have witnessed a dramatic reversal of trade policies in some countries. What accounts for this sudden shift in the political winds?

Many theories of the political economy of trade policy point to the role that special interest groups play in scoring protection for their members; see, for example, Grossman and Helpman (2001, 2002). But interest groups do not seem to have played a central part in recent events. In special interest politics, lobbyists seek preferential treatment for some specific industry or factor of production at the expense of others. The rhetoric of the recent policy reversals seems to be addressed to broader segments of the voting population, having as its apparent goal a repudiation of globalization and an across-the-board reduction in imports. Efforts to understand the political economy of this about-face might fruitfully focus on factors that led to changes in (some) voters' preferences rather than on changes in the behavior of interest groups. Indeed Pavcnik (2017) reports—using data from the Pew Global Attitudes Survey—a decline of about ten percentage points between 2002 and 2014 in the fraction of U.S. respondents that view globalization favorably, as indicated by a reply of "good" or "very good" to the question, "What do you think about the growing trade and business ties between the United Sates and other countries, do you think it is a very good thing, somewhat good, somewhat bad, or a very bad thing for our country?"

In this paper, we explore the idea that voters' preferences over trade policy reflect not only their own material self-interests, but also concerns for members of those groups in society with whom they identify. As Shayo (2009) argues, voters often consider the interests of others when formulating their attitudes about redistributive policies, but such altruism typically is *particular* rather than *universal*. Individuals predominantly care about the well-being of those they perceive to be similar to themselves. In such a setting, discrete shifts in patterns of social identification can result in precipitous changes in policy outcomes.

Social psychologists define social identity as "the individual's knowledge that he belongs to certain social groups together with some emotional and value significance to him of the group membership" (Tajfel, 1974, p.31). Social identity theory builds on the assumption that society encompasses a variety of social categories that stand in power and status relation to one another (Hogg and Abrams, 1982, p.14). The pertinent categories are history and context dependent and, to some extent, fluid (Hogg et al., 1995; Huddy, 2001). They may include divisions along lines of nationality, race, ethnicity, class, occupation, gender, religion, and so on, with different categorizations acquiring salience in different political, economic, and cultural environments.

A key tenet of the social identity theory developed by Tajfel (1981) and Tajfel and Turner (1979)—and its close cousin, self-categorization theory as put forth by Turner et al. (1987)—is that individuals choose the categorical groups with which they associate based on the positive self-esteem they can derive from such a self-image and their sense of belonging to the group. Individuals need not be "accepted" into the groups with which they identify, nor need the other imagined members of an individual's identity group see themselves similarly. Rather, individuals

compare themselves to a prototypical group member and derive satisfaction from the status that a group of others with similar social characteristics (along some dimension) enjoys in society.

Akerlof and Kranton (2000, 2010) introduced identity into economics. They posited a utility function that includes not only the consumption of goods and services but also a psychosocial component of self-image. Self-esteem, they assumed, is enhanced when an individual conforms to the behavioral norms prescribed for their self-imagined social groups. Our approach builds on theirs, and especially on Shayo's (2009) formulation that incorporates a perceived utility gain when an individual identifies with a group that enjoys high status, but a loss from identifying with a group whose prototypical member is very different from that person along relevant dimensions. In his paper on redistributive taxation, Shayo advances the notion of a "social identity equilibrium," in which individuals self-categorize among a set of salient identity groups as a function of the behaviors and outcomes of others, where behavior and outcomes are induced by policies and the policy environment in turn reflects the identity choices made by the individuals together with their political and economic actions. We will adopt a conceptually similar notion of equilibrium when thinking about the formation of trade policies, even if our model differs from his in various details.[1]

The hypothesis that self categorization might affect attitudes toward trade aligns well with evidence presented by political scientists. For example, Jardina (2019) reports that those who adopt a "white identity"—a group that disproportionately includes working class men with modest education—are more likely to espouse protectionist and anti-immigration positions than those who express less solidarity with their race. Moreover, she finds that these opinions are not primarily related to economic self-interest. The appeal of protectionism among those who identity in this way seems more deeply rooted in concerns about the standing of their peer group in local society and in the global economy. That is, identity predicts attitudes toward trade even after accounting for a host of other, individual-specific, economic variables.

We conduct our analysis in a simple economic environment that is familiar from the Heckscher-Ohlin trade model. There are two factors of production in a small country, more-skilled labor and less-skilled labor, and two goods, an export good and an import-competing good. The country imports the good that uses less-skilled labor relatively intensively at a given world prices. The more-skilled individuals constitute the upper echelon in society and account for a minority of the population. They may self-identify as "elite" or "upper-class," or whatever term aptly describes a group of highly-educated and well-paid individuals. The less-skilled majority comprises the "working class" and these individuals too may identify with the fellow members of their social class, deeming themselves to be, for example, "Main Streeters" or "middle class."[2] In addition, and

[1] Ansolabehere and Puy (2016) develop a spatial voting model with "positional" and "identity" issues in which parties and voters have exogenous identities and each voter prefers the party that shares her identity, all else the same. See also Karakas and Mitra (2018), who similarly take patterns of identification among voters and candidates as exogenously given, while assuming that voters over-reward or under-punish candidates for their policy positions based on an alignment of cultural identity. Following Shayo (2009), our work is different in allowing self-categorization of identities. Our model shares an affinity with recent work on the role of "moral values" in politics, in which voters are endowed with either "individualizing" or "universal" moral values; see, especially, Enke (2019).

[2] In the spirit of self-categorization, we should also allow the skilled individuals to self-identify as working class and the unskilled to self-identify as elite. However, it is reasonable to assume that the dissonance costs of such

non-exclusively, individuals of either skill group may choose to identify with a broader category that comprises the nation as a whole. We will refer to this group as "the broad nation," or just "the nation" for short; in the U.S. context, for example, this would mean seeing oneself as an "American."[3] We follow the social-identity theorists in assuming that the psychological benefit to an individual from identifying with a group is increasing in the perceived status of the group, which we take to be the material well-being of the prototypical group member.[4] The psychological cost of identification is increasing in the difference between an individual's own economic and cultural characteristics and that of the average individual in the category, reflecting the assumption that identifying with others who are different from oneself creates cognitive dissonance (see Turner et al., 1987; Hogg, 1996; Hogg and Hains, 1996; and McGarty et al., 1992).

The polity chooses an *ad valorem* tariff on the import good. We invoke a political environment such as the one described by Lindbeck and Weibull (1987), Dixit and Londregan (1996), and Grossman and Helpman (1996, 2001). In this setting, there are two political parties that differ in their fixed ideological stances. Voters are heterogeneous in their preferences for the two parties. The parties use their trade-policy positions to compete for votes. An individual votes for a party if and only if her preference for its trade platform outweighs her preference for the ideological position of the rival party. The equilibrium in this political game features convergence for instrumental policies such as tariffs. Moreover, if the parties view all groups of voters as having ideological preferences drawn from a common distribution, then the equilibrium policy is the one that maximizes a utilitarian social welfare function. With this model in mind, we seek to identify the tariff that achieves the utilitarian optimum subject to the self-identification constraints. When we sum voters' utilities across the polity to form the utilitarian objective, we incorporate not only the components of welfare that measure individuals' material well-being, but also those that measure the psychological satisfaction they derive from their chosen social identifications.[5]

Our goal is to characterize how trade policy outcomes reflect the economic, political and cultural environment. To that end, we define an *identification regime* to be a complete description of the pattern of social identification; i.e., a list of all of the groups with which each individual identifies. In our simple model with two types of individuals distinguished only by their skill levels, there are a limited number of possible regimes. More-skilled individuals might identify or not as members of the society's elite social group and they might identify or not more broadly with the nation as a whole. Similarly, the less-skilled individuals might see themselves as members of the working class, or as nationals, or neither, or both. Typically, a small change in some parameter will not

cross-identification would be too severe in the light of the underlying differences between the groups to deliver such outcomes in equilibrium.

[3] In political discourse, what it means to be "a real American" may differ across individuals; see, for example, Huddy (2001, p.130). For our purposes, we will take identifying with "the nation" to mean identifying with a prototypical denizen whose characteristics are average in the country's population.

[4] Shayo takes status to be a relative measure that compares the well-being of "in-group" members to that of the "out-group"; we will discuss this possibility further below and argue that it makes little difference to our qualitative conclusions.

[5] As a robustness check, we also consider briefly in the text—and more fully in an appendix—the tariff policy that maximizes the welfare, economic and psychological, of the median voter.

induce a change in identification regime. Nonetheless, it may generate a change in the equilibrium policy, unlike what happens when the psychosocial components of utility are absent. For example, we find that when every individual identifies with her own social class and the members of at least one skill group also identify more broadly, then neutral technological progress that does not alter the identification regime results in an increase in the rate of protection. This result runs counter to what happens when social identification is absent, in which case the utilitarian optimum for a small country always manifests free trade.

But we are especially interested in situations when a change in the political or economic environment alters the identification regime.[6] In keeping with recent political history, we focus specifically on "populism." In his well-regarded book, Müller (2016) defines populism as a specific form of identity politics in which a group of voters rejects all claims by the elite members of society to moral legitimacy. By his description, "populists do not just criticize elites; they also claim that they and only they represent the true people"(Müller, 2016, p.40). Populists advocate policies that (in their minds) rightfully neglect the interests of the "corrupt" segments of society while serving instead the interests of "real" people. Many commentators see the rise in populism as one of the critical developments in recent European and American political history.

To capture a rise in populism in the context of our model, we posit an initial identification regime in which less-skilled workers identify not only as "working class," but also more inclusively as members of a group that includes all denizens of the country. Such initial conditions are consistent with the findings reported by Mansfield and Mutz (2009) that Americans' attitudes toward trade—as reflected in 2004 survey responses—were based as much or more on respondents' perceptions of how trade would affect the U.S. economy as a whole as on their assessments of how trade would affect their own personal incomes. Following a *populist revolution*, the identification regime changes. In the event, the less-skilled cease to identify with the nation, or at least with their former understanding of a broad nation that includes the elites. Instead, they come to see the nation as synonymous with their own class and type. We describe the parameter changes in the model that can give rise to such an (endogenous) narrowing of identification and study the implications for the equilibrium trade policy. Interestingly, we find that if the elite comprise a sufficiently small fraction of the nation's population, a populist revolution of this sort induces a discrete rise in the equilibrium tariff rate.[7]

Our theoretical finding resonates with evidence provided in a recent paper by Rogowski and Flaherty (n.d.). They point out that recent anti-globalization movements in Europe "often excoriate not just globalization or immigration, but allegedly nefarious elites (p.2)." Using both cross-country and regional-level voting data for Europe, they find that anti-globalization parties fare best where

[6] Atkin et al. (2019) provide evidence that social identities are fungible and respond to changes in the economic environment.

[7] Our explanation for a sharp increase in protectionism resulting from a discrete change in social preferences is complementary to the explanation offered by Gennaioli and Tabellini (2019). They too focus on shifts in social identity, but in an environment where identification causes voters to slant their beliefs toward the distinctive opinions of those with whom they identify. In such a setting, economic shocks that induce changes in the identification regime also generate adjustments in beliefs about the efficacy of different policies.

income inequality is highest, and that trade shocks have little or no affect on voting behavior where inequality is low. If high inequality goes hand in hand with narrow identification—as our model would predict—then we might indeed expect a stronger backlash against trade in regions and countries with a wider distribution of income.

Our goal in the paper is not to prove that certain changes in identity have been responsible for recent shifts in trade attitudes and trade policies. Rather, we aim to show that aspects of social identity can readily be incorporated in models of the political economy of trade policy. When this is done, changes in patterns of social identification can alter preferences about trade policy, both among particular groups in society and in the aggregate. Moreover, inasmuch as identity politics builds on a dichotomous distinction between "in-groups" and "out-groups," the policy response to changes in social identification can be sudden and dramatic.[8]

The remainder of the paper is organized as follows. In the next section, we introduce social identity as a component in individuals' utility that influences their voting behavior. In Section 3, we identify the tariff that would emerge from electoral competition in a Lindbeck-Weibull-style political model and argue that protectionist outcomes can emerge in situations in which free trade would prevail absent the psychosocial components of individual utility. Section 4 addresses how small changes in the economic, political and cultural environment affect trade policy when the patterns of social identification remain fixed. In Section 5, we consider the policy effects of shifts in the identification regime and, in particular, those of a populist revolution in which the working class repudiates its identification with a broad national group that includes the elites. A brief Section 6 examines the robustness of our results to the choice of political maximand; there we assume that parties cater to the *median* voter. Section 7 concludes.

## 2 A Model of Social Identity in Trade Politics

We consider a simple and familiar trading environment. A small country produces and trades two goods at fixed world prices. The goods are produced competitively, with constant returns to scale, by two types of individuals: the "more-skilled," $h$, and the "less-skilled," $\ell$. The less-skilled workers comprise a majority of the population, so that $\lambda_\ell > \lambda_h$, where $\lambda_i$ is the fraction of individuals of type $i$. The export good, $X$, makes relatively intensive use of the more-skilled labor, while the import-competing good, $Z$, makes relatively intensive use of the less-skilled labor. We normalize the size of the population to one.

All individuals irrespective of skill level share the same, quasi-linear materialistic utility function, whereby

$$\nu_i = c_{Xi} + v\left(c_{Zi}\right) \tag{1}$$

is the material utility enjoyed by a representative individual with skill level $i$ who consumes quantity

[8] As noted above, Gennaioli and Tabellini (2019) offer a complementary explanation for dramatic shifts in policy preferences based on changes in beliefs. See also Besley and Persson (2019), who propose a model of identity politics in which identification evolves over time and the political parties strategically propose policies to influence the political salience of different dimensions of identity.

$c_{Xi}$ of the export good and quantity $c_{Zi}$ of the import-competing good. The quasi-linear form allows us to ignore income effects, which are not particularly germane to the analysis, but are analytically cumbersome. We assume that $v(\cdot)$ is increasing and concave.

An individual's overall fulfillment comprises the sum of her material utility, as just described, and a psychosocial component that comes from self-identifying with those groups in society that have emotional significance to her. Psychosocial utility has two subcomponents, one positive and one negative. On the one hand, an individual takes pride in seeing herself as a member of a group, the more so the greater is the "status" of that group in its social context. According to Tajfel's (1974) social identity theory, identifying with a group of others confers dignity and self-respect. On the other hand, there is cognitive dissonance that ensues from identifying with others who are very different from oneself. Self-assurance derives from seeing oneself as fundamentally similar in relevant ways to those others whom one respects. In contrast, seeing oneself as a member of a group whose others are very different may undermine an individual's confidence in her attributes and behavior.

We take the benefit to any individual from identifying with some group to be a linearly increasing function of the status of the average member of that group, where status is measured by material well-being. The dissonance cost is an increasing, quadratic function of the distance in some conceptual space between an individual's own attributes and those of the prototypical member of a group with whom she identifies. Since the social groups that we will consider in this paper are defined in socioeconomic terms, we measure distance also in units of material well-being; that is, an individual bears a greater cost from identifying with a group of others who are, on average, much wealthier or much poorer than she.[9] Combining these two components, we have that a representative individual with skill level $i$ who chooses to self-identify with a socioeconomic group $g$ gains a net benefit from that identification of

$$\mathfrak{u}_i = A_i^g + \alpha_i^g \bar{\nu}^g - \beta_i^g \left(\nu_i - \bar{\nu}^g\right)^2, \quad \alpha_i^g > 0, \beta_i^g > 0, \tag{2}$$

where $A_i^g$ is a constant reflecting the baseline level of pride that comes from identifying with group $g$ for an individual of type $i$ and $\bar{\nu}^g$ is the average material utility of all those who are considered by society as having the characteristics that define group $g$. In principle, $A_i^g$ could be negative, if individuals perceive a stigma from identifying with a group of sufficiently low status. The parameter $\alpha_i^g$ can be thought to represent the intensity of identification with group $g$ among those with skill level $i$; Huddy (2001, p. 137), for example, has emphasized variation in the degree to which different types of individuals identify with different salient groups and the importance of this consideration for political outcomes.[10]

[9] Our use of the Euclidean metric for income differences follows a common practice in the psychology of identification and categorization; see, for example, Nosofsky (1986) or Ashby (1992). An alternative would be to assume that dissonance depends on *relative* well-being, i.e., $v_i/\bar{v}^g$. We find little in the experimental literature that would allow us to distinguish between these alternative hypotheses and adopt the Euclidean measure of distance for illustrative purposes only.

[10] Some experimental evidence suggests the existence of a third, psychosocial subcomponent of utility associated

Two comments are in order. First, as stressed in the self-categorization theory developed by Turner et al. (1987), identification is voluntary and unregulated; it is a personal choice made by the individual and its psychological significance resides only in that person's own mind. An individual need not secure anyone's permission to identify in any particular way, nor can she be coerced to identify with groups that share her salient characteristics.

Second, the set of groups with whom an individual may identify and the attributes of the prototypical members of those groups are given at a moment in time by the cultural and historical context. That is, we take the defining characteristics of group $g$ as exogenous (although they may change over time in response to political and historical events) when we calculate the average characteristic in the group, $\bar{\nu}^g$ in equation (2); in particular, $\bar{\nu}^g$ does not depend on the set of individuals that choose to identify with group $g$. While it would be interesting to consider how the set of social groups that are salient in a society evolves over time, as well as the determinants of a group's defining characteristics, that is beyond the scope of the present paper.[11]

To summarize, a representative individual in skill-group $i$ has preferences that are summarized by the utility function $u_i$, where

$$u_i = c_{Xi} + v\left(c_{Zi}\right) + \sum_{g \in G} \mathbb{I}_i^g \left[ A_i^g + \alpha_i^g \bar{\nu}^g - \beta_i^g \left(\nu_i - \bar{\nu}^g\right)^2 \right] \ , \tag{3}$$

$\mathbb{I}_i^g = 1$ if the individual self-identifies with group $g$ and $\mathbb{I}_i^g = 0$ if not, and where $G$ is the set of social groups that is salient in society at that historical juncture. In this paper, we take the set of salient social identity groups to have three elements: (i) a socioeconomic group that we term "the elite" and designate by $\varepsilon$ that has as its archetype one of the higher-earning individuals in society, so that $\bar{\nu}^{\varepsilon} = \nu_h$, i.e., the material utility of the representative more-skilled individual; (ii) a socioeconomic group that we term "the working-class" and designate by $\omega$ that has as its archetype one of the lower-earning individuals in society, so that $\bar{\nu}^{\omega} = \nu_\ell$, i.e., the material utility of the representative less-skilled individual; and (iii) a social group that we term "the broad nation" and designate by $b$ that has as its archetype the average citizen in the country, so that $\bar{\nu}^b = \lambda_\ell \nu_\ell + \lambda_h \nu_h$. It follows that

$$\mathbb{I}_i^g = \begin{cases} 1 & \text{if } A_i^g + \alpha_i^g \bar{\nu}^g - \beta_i^g \left(\nu_i - \bar{\nu}^g\right)^2 \geq 0 \\ 0 & \text{if } A_i^g + \alpha_i^g \bar{\nu}^g - \beta_i^g \left(\nu_i - \bar{\nu}^g\right)^2 < 0 \end{cases} \ , \ i \in \{h, \ell\}, g \in \{\varepsilon, \omega, b\} \ .$$

To avoid a taxonomy that includes unrealistic cases, we introduce parameter restrictions that

with identity, namely *envy* of members of out-groups who enjoy greater material well-being than oneself; see, for example, Chen and Li (2009) and Kranton et al. (2018). We could readliy include such an element by subtracting from $\mathsf{u}_i$ a term that represents the psychological cost that a lesser–skilled individual bears from jealousy of each high-skilled individual who earns a higher wage than she, in circumstances where the individual does not identify with the broad nation and thus considers more-skilled workers to be members of the "out-group." We will consider this possibility briefly in Section 5 below, where we will argue that envy of out-group members broadens the set of parameters for which a populist revolution induces a jump in trade protectionism.

[11] It is possible that individuals bear a "psychological fixed cost" that depends upon the number of groups with which they choose to identify, which might limit self-identification on the extensive margin. We do not pursue this idea here, because we consider only a few large and highly-salient identity groups. That is, we do not believe that identifying with one's social class impinges upon identifying more broadly with other nationals.

rule out certain identification patterns. First, we assume throughout that $A_h^\varepsilon > 0$ and $A_\ell^\omega > 0$; all individuals take some pride from identifying with others in their own social class. Then, since $\nu_h = \bar{\nu}^\varepsilon$ and $\nu_\ell = \bar{\nu}^\omega$, every individual chooses to identify with her own socioeconomic group, because such identification confers a psychological benefit but imposes no dissonance cost. Second, we assume that $\beta_h^\omega$ and $\beta_\ell^\varepsilon$ are large enough that no cross-class identification occurs; i.e., no more-skilled individual identifies as working class and no less-skilled individual identifies as an elite.[12] We are left with two possible outcomes for each skill type: in addition to self-identifying as elite, the more-skilled individuals might opt to identify with the broad nation or not ($\mathbb{I}_h^b = 1$ or $\mathbb{I}_h^b = 0$); and similarly, in addition to self-identifying as working class, the less-skilled individuals might choose to identify broadly or not ($\mathbb{I}_\ell^b = 1$ or $\mathbb{I}_\ell^b = 0$). In total, there are four possible identification regimes, $R = \{(0,0),(0,1),(1,0),(1,1)\}$, where an *identification regime* $r \in R$ is an ordered pair in which the first element describes whether or not the more-skilled individuals identify broadly with the nation and the second element describes whether or not the less-skilled individuals do so.

We also introduce a symmetry assumption that sharpens some of our results. In particular, we invoke

**Assumption 1** *(i)* $\alpha_h^\varepsilon = \alpha_\ell^\omega = \alpha$ *and (ii)* $\alpha_h^b = \alpha_\ell^b = \alpha^b$.

With this assumption of *symmetric benefits from status*, those that are more skilled take the same pride from a marginal increase in the status of the elites as those that are less skilled take from a marginal increase in the status of the working class. Moreover, if the two skill groups both identify as nationals, then those in each group take similar pleasure from a marginal increase in the status of the nation.[13]

We turn next to the political environment. As we mentioned in the introduction, we invoke a political setting such as that described in Lindbeck and Weibull (1987), Dixit and Londregan (1996), and Grossman and Helpman (1996, 2001).[14] In these papers, two political parties distinguished by their ideological stances compete for votes by announcing their intentions for a set of pliable policies. The parties adopt policy platforms to maximize their expected vote counts, anticipating that individuals will cast their votes for whichever party offers a more agreeable combination of ideological and pliable policies. We assume that the parties are the leaders in this political game; i.e., they announce their positions in the first stage, before individuals have self-categorized. In the second stage, individuals make their personal identity choices, anticipating the economic and

[12] Equivalently, we could assume that $A_h^\omega$ and $A_\ell^\varepsilon$ are zero or even negative, so that the more-skilled individuals take little or no pride in identifying as working class and the less-skilled individuals take no pride in pretending to be elites.

[13] We allow for the possibility that $\beta_h^b \neq \beta_\ell^b$, because experimental research has found that individuals are more bothered by "disadvantageous inequality" than by "advantageous inequality"; see, for example, Fehr and Schmidt (1999) and Charness and Rabin (2002). These findings would suggest that $\beta_h^b < \beta_\ell^b$, i.e., that less-skilled workers suffer a greater psychological cost from having income below the national average than the more-skilled workers suffer from having income above that average.

[14] The mechanisms by which social identity affects trade policy are present for a wide set of political environments that imply different mappings from voter preferences to policy outcome. We show in Section 6, for example, that the effects of a populist revolution are qualitatively similar no matter whether the policy outcome maximizes utilitarian welfare or the welfare of the median voter.

psychosocial outcomes that will result if a given policy is implemented. Finally, each individual votes for the party that offers higher utility, including an ideological component, a material component, and the two psychosocial subcomponents.[15]

To focus on endogenous rates of protection, we take the pliable policy instrument to be an *ad valorem* tariff at rate $t$.[16] The small country faces a fixed relative price, $q$, of imports in terms of exports. Then the domestic relative price of the import-competing good is the product of the world price and one plus the tariff rate, or

$$p = q\,(1+t)\,. \tag{4}$$

The political parties vie for votes with their tariff positions. On the one hand, a positive tariff may appeal to less-skilled workers, because it raises their wage $w_\ell$ via the Stolper-Samuelson channel, it raises the status of the working-class group with whom they identify, and because it narrows the wage gap and thus the psychic cost to the less-skilled workers of identifying with the broad nation, if they happen to do so (albeit at the cost of a reduction of the average wage and thus the status benefits of identifying broadly). By offering a higher tariff than its rival, a party can attract the votes of less-skilled workers that mildly prefer the rival on ideological grounds. On the other hand, the offer of a higher tariff stands to cost a party support among the highly skilled, because it reduces the skilled wage $w_h$, reduces the pride the skilled feel from identifying as elite, and reduces the psychic benefit from identifying broadly, if they happen to do so (while, meanwhile, reducing the dissonance cost of identifying thusly).

The parties trade-off these considerations, internalizing as well the anticipated response of identity choices. Within an identification regime, the electoral competition leads to convergence of positions to the tariff that maximizes the sum of individual utilities. We will find that, when the parties move first, the (generically) unique political equilibrium occurs at the tariff that delivers a *global* maximum of the utilitarian social welfare function across identification regimes. Note, however, that in this setting of identity politics, the utility level that influences an individual's voting behavior includes not only the material component of well-being, but also the psychological

[15] We adopt this order of moves in part for the convenience of describing a unique equillibrium. If individuals commit to their identities before parties make their platform choices, the outcome we describe below continues to be an equilibrium but additional equilibria are possible whereby the identity choices justify the policy positions, which in turn are rationally anticipted by the voters. Clearly, the existence of multiple equilibria could also explain discrete jumps in policy, if "sunspots" cause the outcome to shift from one equilibrium to another. Our assumed ordering of moves makes most sense if self-identification can change relatively rapidly in response to political rhetoric and economic events. Evidence of rapid changes in self-identification can be seen in a different context in Hong Kong residents' reported identification as "Hong Konger" or "Chinese"; see *The Economist* (2019). Moreover, Atkins et al. (2019) show that identification as Hindu or Moslem in India responded reasonably quickly to price changes associated with the 1991 economic reforms.

[16] A long-standing but unresolved issue in the political economy of trade policy concerns the choice of policy instrument: Why does the govennment opt for trade policy as the tool to redistribute income? Social identity theory hints at a possible answer to this puzzle. Perhaps trade policy aligns well with the concerns that define socioeconomic cleavages, such that opportuntistic politicians sometimes can induce a narrowing of identification by the working class by touting protectionist policies. Other policy instruments might have less clearcut and salient effects on the status of the two skill groups, so might be less useful for promoting populism.

We note, as well, that if the policy makers have access to an income tax-cum-transfer, our results about the use and nature of a tariff in political equilibrium will be little changed, provided that the income tax imposes an excess burden.

component associated with self-identification. Therefore, the utilitarian welfare function of interest here is $\sum_i \lambda_i u_i$, not the more usual and limited version, $\sum \lambda_i \nu_i$; compare (6) and (3) to see the difference between $u_i$ and $\nu_i$.

Let us consider first the tariff that maximizes utilitarian social welfare in a given identification regime, $r$. By (4), the tariff determines the domestic relative price $p$. This price determines in turn, the domestic output levels, $Y_X(p)$ and $Y_Z(p)$, as well as factor prices, $w_h(p)$ and $w_\ell(p)$, as in any model with a Heckscher-Ohlin production structure. Specifically, factor prices in units of the numeraire good $X$ are such that the domestic price in each sector equals the unit cost of production. Higher prices $p$ generate a higher less-skilled wage $w_\ell$ and a lower more-skilled wage $w_h$, per the Stolper-Samuelson theorem. Given factor prices, which dictate the cost minimizing production techniques, output levels are such as to clear the two labor markets.

The income of an individual in skill group $i$ includes not only her wage income $w_i(p)$, but also her per-capita share of the rebated tariff revenues,

$$T(p,q) = (p-q)\,\Omega(p), \tag{5}$$

where $\Omega(p) \equiv C_Z(p) - Y_Z(p)$ is the import-demand function and $C_Z(p) \equiv \arg\max_{c_Z} v(c_Z) - pc_Z$ is aggregate consumption of good $Z$. Therefore, the representative individual in skill group $i$ achieves material welfare

$$\nu_i(p,q) = w_i(p) + T(p,q) + \Gamma(p), \tag{6}$$

where $\Gamma(p) = \max_{c_Z}[v(c_Z) - pc_Z]$ is the common per capita surplus from consumption of good $Z$. The psychosocial component of utility for an individual in skill group $\ell$ is

$$u_\ell(p,q) = A_\ell^\omega + \alpha_\ell^\omega \nu_\ell(p,q) + \mathbb{I}_\ell^b(p)\left\{A_\ell^b + \alpha_\ell^b \bar{\nu}^b(p,q) - \beta_\ell^b\left[\nu_\ell(p,q) - \bar{\nu}^b(p,q)\right]^2\right\}, \tag{7a}$$

which is the sum of the self-worth she reaps by identifying with other members of the working class and the net benefit she gains from identifying broadly with all other nationals, if in fact she elects to do so. We write $\mathbb{I}_\ell^b(p)$ to emphasize the fact that an individual's decision whether to identify broadly depends on the domestic relative price, since that price determines her own income and that of the national average.

Similarly, the pyschosocial component of utility for an individual in skill group $h$ is

$$u_h(p,q) = A_h^\varepsilon + \alpha_h^\varepsilon \nu_h(p,q) + \mathbb{I}_h^b(p)\left\{A_h^b + \alpha_h^b \bar{\nu}^b(p,q) - \beta_h^b\left[\nu_h(p,q) - \bar{\nu}^b(p,q)\right]^2\right\}, \tag{7b}$$

the sum of the satisfaction she gains from identifying with fellow members of the elite and possibly from identifying with the nation. Note that (7b) implies that, if a member of the elite identifies broadly with the nation, she benefits psychologically from an improvement in the material well-being of the working class, inasmuch as a rise in $\nu_\ell$ narrows the gap between herself and the national average. The expression for $u_h(p,q)$ does not, however, imply that a members of the elite would be

happy to sacrifice their own well-being in order to improve the lot of the less fortunate; transfers from the more-skilled to the less-skilled alleviate any cognitive dissonance from broad identification, but they also reduce the status from being a member of the elite, not to mention the materialistic component of a skilled-worker's utility.[17]

In a competitive economy,

$$\lambda_h w_h(p) + \lambda_\ell w_\ell(p) = Y(p) \ ,$$

where $Y(p) \equiv Y_X(p) + pY_Z(p)$ is aggregate GDP at domestic prices. Also, average material utility is a population-weighted average of the material utility of individuals in each skill group; i.e., $\bar{\nu}^b(p,q) = \lambda_h w_h(p) + \lambda_\ell w_\ell(p) + T(p,q) + \Gamma(p)$. Using these observations, and summing across all voters, we have under Assumption 1 that aggregate utility in identification regime $r$ is

$$\begin{aligned} U^r(p,q) \quad = \quad & \lambda_h A_h^{\varepsilon} + \lambda_\ell A_\ell^{\omega} + (1+\alpha)\left[Y(p) + T(p,q) + \Gamma(p)\right] \\ & + \lambda_h \mathbb{I}_h^{b,r}\left\{A_h^b + \alpha^b\left[Y(p) + T(p,q) + \Gamma(p)\right] - \beta_h^b(1-\lambda_h)^2\left[\delta(p)\right]^2\right\} \\ & + \lambda_\ell \mathbb{I}_\ell^{b,r}\left\{A_\ell^b + \alpha^b\left[Y(p) + T(p,q) + \Gamma(p)\right] - \beta_\ell^b(1-\lambda_\ell)^2\left[\delta(p)\right]^2\right\} \ , \end{aligned} \tag{8}$$

where $\delta(p) \equiv w_h(p) - w_\ell(p) > 0$ is the earnings gap between more-skilled and less-skilled workers and the $I_i^{b,r}$ in (8) indicates the broad identification or narrow identification by skill group $i$ in regime $r$. The first line on the right-hand side of (8) is aggregate welfare from all material utilities and from individuals' identification with their own social class. The following two lines give the aggregate psychological gain to the more-skilled and less-skilled individuals, respectively, from identifying as nationals, if regime $r$ is such that members of those skill groups choose to do so.

We offer two observations about the political maximand, $U^r(p,q)$. First, when all individuals identify with their own social class, this introduces an additional element of class warfare to the political struggle over trade policies. Not only does a less-skilled worker favor an import tariff to boost her own wage, but she also favors protection to benefit others like herself. Similarly, a more-skilled individual opposes protection not only to preserve her own pay, but also to safeguard the incomes of other elites with whom she identifies. However, under the symmetry assumption, these selfish motives for trade policy just offset one another in the calculus of utilitarian maximization. The selfish aims of the less-skilled individuals who identify with the working class add $\lambda_\ell \alpha\left[w_\ell(p) + T(p,q) + \Gamma(p)\right]$ to the political objective, whereas those of the more skilled individuals who identify with the elite add $\lambda_h \alpha\left[w_h(p) + T(p,q) + \Gamma(p)\right]$ to the objective. Together these sum to $\alpha\left[Y(p) + T(p,q) + \Gamma(p)\right]$, which is proportional to aggregate material welfare. So, this extra component of policy preferences does not tilt the trade politics in one direction or the other.[18]

[17] One might question whether individuals actually feel any discomfort from identifying with others who are less fortunate than themselves. Our assumption is consistent with survey evidence of a sample of American millionaires that 72 percent of those with assets in excess of $5 million describe themselves as "middle class" or "upper middle class"; see Frank (2015). This finding points to discomfort from seeing oneself as different from others, even if that difference is positive. Moreover, our assumption is consistent with experimental evidence provided by Chen and Li (2009). They reported that individuals exhibit significantly more charity to those with lower payoffs than themselves when those others are members of their same identity group.

[18] In contrast, when the political competition maximizes the welfare of the median voter, identification with own

Second, when either skill group identifies broadly with the nation as a whole, this introduces a source of inequality aversion into the trade politics. Here, such a distaste for inequality does not reflect a sense of fairness or altruism on the part of any voter. Rather, inasmuch as everyone pays a psychological toll from identifying with others that are different from themselves, those that identify with the nation selfishly lean to policies that narrow the gap between themselves and the average, all else the same. In the present context, a tariff has such an effect, because the Stolper-Samuelson theorem ties the wage gap to the price of the import-competing good. Of course, the extent of the "leanings" may differ between those with above-average versus below-average incomes (as they will if $\beta_\ell^b \neq \beta_h^b$) and the elites are likely to continue to oppose protection once all components of their utility are taken into account.

# 3 Equilibrium Protection with Social Identification

In this section, we characterize the equilibrium tariff. We describe the conditions under which the trade politics with social identification give rise to protectionist outcomes, In Section 4, we will discuss how the equilibrium tariff rate responds to changes in social attitudes, technology, and the terms of trade for a given identification regime. Then, in Section 5, we will consider changes in patterns of identification.

Consider Figure 1. The figure depicts $U^r(p,q)$ as a function of $p$ for each of the four possible identification regimes, $r$. The curve labeled $r_0$ corresponds to the identification regime $r=(0,0)$ in which no voter identifies broadly with the nation; i.e., $\mathbb{I}_h^b = 0$ and $\mathbb{I}_\ell^b = 0$. The curves labeled $r_\ell$ and $r_h$ correspond, respectively, to identification regimes in which only the lesser-skilled individuals and only the higher-skilled individuals identify broadly with their fellow nationals, while those in the remaining skill group identify narrowly only with others in their own social class. Finally, the curve labeled $r_{h,\ell}$ corresponds to the regime $r=(1,1)$ in which all citizens identify not only with their own social class, but also with the nation as a whole. We have drawn the figure under the assumption that all four of these curves are single-peaked as a function of $p$. We maintain this assumption henceforth.

We will argue now that the equilibrium tariff is the one that generates the domestic price $p$ that achieves the *global maximum* in Figure 1. This is so, because the parties anticipate the identity choices induced by different policy options. As we shall see, when a party chooses the tariff that attracts the largest number of voters, it need not worry separately about the the individual-rationality constraints associated with identity choice, because these constraints are always satisfied at $p^\circ \equiv \arg\max_p U(p,q)$, where $U(p,q) \equiv \max_r U^r(p,q)$. The figure depicts a global maximum at $p_{h,\ell}$, but maxima at $p_h$, $p_\ell$, or $p_0$ are also possible, depending upon the perceived benefits from broad identification that are reflected in the parameters $A_h^b$ and $A_\ell^b$, as well as the other parameters that characterize the economic and cultural environment.

social class favors the working class, because the less-skilled individuals are more numerous and so the median voter is one of them; see Section 6.

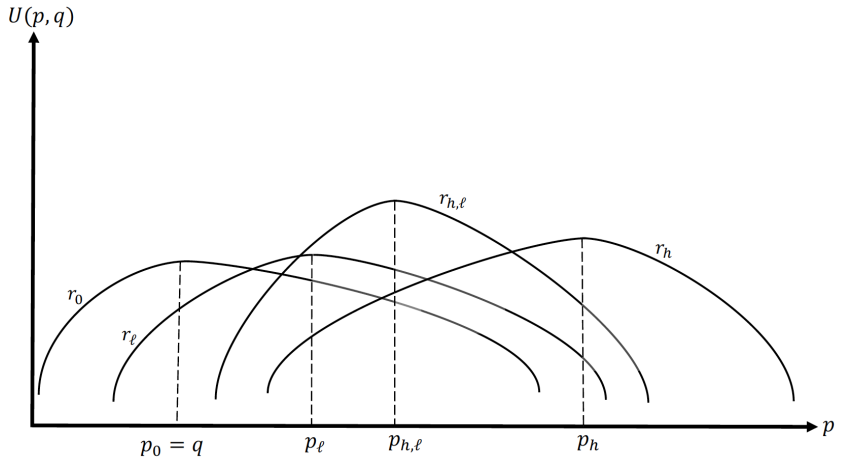

Figure 1: Equilibrium protection

To see that the self-identification constraints always are satisfied at $p^{\circ}$, suppose first that the global maximum is achieved for $p = p_{h,\ell}$, as drawn in Figure 1, where $p_{h,\ell}$ is the domestic price that maximizes $U^{r}(p,q)$ for $r = (1,1)$. Then, $U^{(1,0)}(p_{h,\ell},q) < U^{(1,1)}(p_{h,\ell},q)$ and $U^{(0,1)}(p_{h,\ell},q) < U^{(1,1)}(p_{h,\ell},q)$; i.e., the curves $r_h$ and $r_\ell$ pass below $r_{h,\ell}$ at $p = p_{h,\ell}$. But the difference between $U^{(1,1)}(p,q)$ and $U^{(1,0)}(p,q)$ at a given price $p$ is the net (positive) psychosocial benefit to more-skilled workers from identifying broadly with the nation. Since $r_{h,\ell}$ is above $r_h$ at $p_{h,\ell}$, the more-skilled will choose to identify broadly at this price. Similarly, $r_{h,\ell}$ above $r_\ell$ at $p_{h,\ell}$ implies that the less-skilled workers also prefer to see themselves as part of the broad nation. In short, when the parties set the trade policy to achieve a utilitarian maximum at $p_{h,\ell}$, the identity choices that underlie these positions are fulfilled.

Now suppose instead that the global maximum is achieved at $p = p_h$, which is the price that generates the peak of the curve $r_h$. In such circumstances, the fact that $U^{(0,0)}(p_h,q) < U^{(1,0)}(p_h,q)$ implies that the more-skilled workers enjoy a net benefit from identifying broadly, whereas the fact that $U^{(1,1)}(p_h,q) < U^{(0,1)}(p_h,q)$ implies that the less-skilled workers would suffer a net loss from doing so. Again, the welfare-maximizing tariff induces an identification pattern that justifies the policy choice. An analogous argument applies to the case in which the global maximum occurs at $p = p_\ell$.

Finally, suppose that the global maximum is attained for $p = p_0$, which achieves the peak of the curve $r_0$. Then $U^{(1,0)}(p_0,q) < U^{(0,0)}(p_0,q)$ and $U^{(0,1)}(p_0,q) < U^{(0,0)}(p_0,q)$. No workers would choose to identify broadly under such conditions. In short, no matter which identification regime $r = r^{\circ}$ gives rise to the global maximum of $U(p,q)$, the associated domestic price $p^{\circ} = \arg\max_p U(p,q)$ induces self-categorization that justifies the parties' vote-maximizing policy choices.

We examine now the nature of the trade policy that underlies each of the possible choices of the domestic price, $p^{\circ}$. Suppose first that the global utilitarian maximum is achieved at $p_0$, so that each worker identifies narrowly only with her own social class. In this case, $U^{(0,0)}(p,q) = \lambda_h A_h^{\varepsilon} + \lambda_\ell A_\ell^{\omega} + (1+\alpha)[Y(p) + T(p,q) + \Gamma(p)]$, and the equilibrium trade policy is the same as the

one that maximizes aggregate material welfare, $Y(p) + T(p,q) + \Gamma(p)$. For a small country, the implied equilibrium tariff is $t^\circ = 0$; i.e., the political equilibrium involves free trade. Whereas the less-skilled workers favor tariffs (up to a point), both for their own real-income gains and in order to advance the status of the working class with whom they identify, the more-skilled workers take the opposite position. Indeed, all voters feel more strongly about the issue than they would in the absence of identity concerns. Still, the balancing of these opposing forces based on self-interest and concern for the status of one's own social group results in a neutral policy with respect to trade.

Now suppose that the highest peak occurs for $p = p_\ell$, at which the less-skilled workers identify broadly with the nation, while the more-skilled workers do not; i.e., $r = (0,1)$. Then the political maximand comprises the first and third rows in (8), with $\mathbb{I}_\ell^{b,r}(p) = 1$. In addition to constants, the maximand includes a component that is proportional to aggregate material welfare and a component that is decreasing in the wage gap, $\delta(p)$. The latter reflects the psychological cost to the less-skilled workers from identifying with other nationals who are different from themselves in terms of material well-being. As we noted before, the dissonance costs induce an aversion to inequality on the part of the working class, who suffer from seeing themselves as very different from the average in a cohort with which they identify. Since a marginal change in the tariff has a negligible effect on aggregate material welfare at $t = 0$, and since a tariff reduces the wage gap via the Stolper-Samuelson mechanism, the maximization of $U^{(0,1)}(p,q)$ generates a positive tariff in this case, as long as $\beta_\ell^b > 0$.

To understand the source of the protectionist outcome, let us compare the policy preferences under $r = (0,1)$ to those for the case of $r = (0,0)$ in which neither group identifies broadly. In both situations, the less-skilled workers see a personal, material benefit from a positive tariff whereas the more-skilled workers frown upon such a policy for personal, materialistic reasons. As we have noted, these offsetting preferences just balance in the political calculus of the competing parties. Similarly, a tariff enhances the self-esteem of the less-skilled workers that derives from their identifying with the working class, whereas a tariff harms the psyches of the more-skilled workers, who suffer from the reduced status of elites. Again, these effects offset one another with respect to the parties' electoral incentives to support protection. What distinguishes the two regimes is the pride that the less-skilled enjoy from identifying broadly and the cost they bear from doing so, which affects policy preferences in $r = (0,1)$ but not in $r = (0,0)$. In $r = (0,1)$, a small positive tariff generates a second-order loss in the average wage, but a first-order reduction in dissonance cost. It follows that a (small) positive tariff will attract more votes from the less skilled when they identify broadly than when they do not. This tilts the political calculus in favor of protection.

Surprisingly, perhaps, the political equilibrium involves positive protection also in the identification regime in which only the more-skilled workers identify broadly. With $r = (1,0)$, the political maximand comprises the first two rows in (8), with $\mathbb{I}_h^{b,r}(p) = 1$. Again, the maximand combines a term that is proportional to aggregate material welfare and a term that is decreasing in the wage gap. The former is maximized by free trade, but a small positive tariff shrinks the dissonance cost for the elites while generating only a second-order loss in aggregate welfare. It follows that the

competing parties will be pushed to a positive tariff in this case as well.

The dissonance costs borne by the elites induce an aversion to inequality when these workers identify broadly with their fellow nationals. This aversion to inequality does not reflect any sense of "fairness" or generosity on the part of these elites, but a selfish desire to be "more like the others." To be clear, broad identification by the high-skilled workers does not make them favor protection; their personal, material interests and their pride of membership in an elite social class makes them more inclined to vote for the party that proposes the smaller tariff (or bigger import subsidy). However, the alleviation of dissonance costs generated by a tariff makes each of them a little less opposed to protection than when they identify narrowly, and so any given tariff loses fewer votes among the swing voters in this group. Inasmuch as the more-skilled workers opposition to protection just balances the less-skilled workers support for tariffs when all groups identify narrowly, the outcome tips in favor of protection when the skilled workers identify with the nation and so become slightly less opposed.

Finally, if broad identification is widespread among both skill groups (i.e., $r = (1,1)$), the aggregate aversion to inequality is all the greater. Members of both classes can mitigate their dissonance cost by narrowing the income gap between themselves and the average. This does not mean that both groups favor tariffs; in fact, the more-skilled individuals would prefer to see the tariff reduced from its equilibrium level, to further their own material interests and to boost the status of the other elites with whom they identify. But the material interests of the more-skilled voters balance those of the low-skilled voters at $t = 0$ as do the psychosocial interests from identifying with own social class, whereas the aggregate marginal effect of broad identification by the two skill groups tilts toward protection. We recap these findings in[19]

**Proposition 1** *Suppose that $\beta_h^b > 0$ and $\beta_\ell^b > 0$. If neither skill group identifies broadly with the nation, the equilibrium tariff is zero. Otherwise, it is positive.*

## 4 Comparative Statics in a Fixed Identification Regime

We ask next how small changes in the economic and political environment affect the equilibrium policy when the identification pattern does not change. That is, we begin from an equilibrium in which the equilibrium policy is some $t^o$ and the identification regime is some $r^\circ \in R$. We then change one of the parameters of the model by a small amount, such that the equilibrium identification regime continues to be $r^\circ$, and examine the response of $t^\circ$. We consider in turn changes in the psychological cost of identification, $\beta_i^g$, changes in the production technologies (as described further below), and changes in the terms of trade, $q$. In each case, we employ the usual

[19] Technically, we have made only a local argument that $U^r(p,q)$ is increasing in $p$ at $p = q$. But it is easy to see from (9) below that $U_p^r(p,q) > 0$ for all $p < q$. So a global maximum of $U^r(p,q)$ cannot be achieved with any $t < 0$. We know that a global maximum exists, because for $p$ large enough, either the economy remains incompletely specialized and $\delta(p) = 0$ or the economy specializes in producing good $Z$ and $\delta(p) > 0$. If the economy remains incompletely specialized, the optimal domestic price must be smaller than the one that delivers $\delta(p) = 0$. If the economy becomes completely specialized for large $p$, wages are proportional to $p$ and so $\delta'(p)$ is a positive constant. Then the optimal $p$ is below the lowest price that leads to complete specialization.

method of comparative statics: we calculate the shift in the marginal benefit from a tariff, evaluated at $t = t^o$, and rely on the second-order condition for an optimum to tell us in which direction the equilibrium tariff must adjust. From (4) we have that the marginal political benefit from an increase in the tariff rate, $t$, is equal to $qU_p^r(p,q)$, and then from (5) and (8),

$$U_p^r(p,q) = \left(1 + \alpha + \alpha^b \sum_{i=h,\ell} \lambda_i \mathbb{I}_i^{b,r}\right)(p-q)\,\Omega'(p) - 2\sum_{i=h,\ell} \beta_i^b \mathbb{I}_i^{b,r} \lambda_i (1-\lambda_i)^2\,\delta(p)\,\delta'(p) \ . \qquad (9)$$

The utility function $U^r(p,q)$ is maximized, of course, at $p^r$, where $U_p^r(p^r,q) = 0$. Considering the second-order condition that requires $U_{pp}^r(p^r,q) < 0$ at the maximum, the equilibrium tariff rises in response to a small increase in the parameter $\xi$ if and only if $dU_p^r(p^r,q)/d\xi > 0$.

Note that we need only consider initial regimes in which at least one of the skill groups identifies broadly with the nation, because if neither do so, the equilibrium tariff remains unchanged at its initial level of zero.

### 4.1 Changes in the Psychological Cost of Identification

First note that a change in the cost of identifying with one's own social class has no effect on the equilibrium policy. In our model with homogeneous skill groups, individuals bear no dissonance cost from identifying with the others just like them, no matter how large is $\beta_h^\varepsilon$ or $\beta_\ell^\omega$. So, we need only consider changes in $\beta_h^b$ and $\beta_\ell^b$.

Suppose, then, that $\mathbb{I}_i^{b,r^\circ} = 1$ for $i = h$ or $i = \ell$ in an equilibrium identification regime $r^\circ$, and that $\beta_i^b$ grows. That is, it becomes psychologically more costly for the members of skill group $i$ to identify with others in their country that have a different standard of living from their own. At the initial equilibrium, this raises the marginal political value of a tariff, because a tariff reduces the income gap, $\delta(p)$, via the Stolper-Samuelson effect. Therefore, we have

**Proposition 2** *Suppose that skill group $i$ identifies broadly with the nation in some initial political equilibrium ($\mathbb{I}_i^{b,r^\circ} = 1$) and that a change in the cost of identification does not induce a change in the identification regime $r^\circ$. Then an increase in $\beta_i^b$ generates an increase in the equilibrium tariff rate, for $i = h$ or $i = \ell$.*

### 4.2 Changes in Technology

We model technological change that is factor-augmenting. That is, we take the productivity of one unit of "raw" labor of type $i$ to be $\pi_i$ in all uses, and consider changes in $\pi_i$. If $d\pi_h/\pi_h^o = d\pi_\ell/\pi_\ell^o > 0$, where $\pi_i^o$ is the initial productivity level for skill group $i$, then we have Hicks-neutral technological progress throughout the economy.[20] If $d\pi_h/\pi_h^o > d\pi_\ell/\pi_\ell^o \geq 0$, then the productivity gains are biased toward the more-skilled labor. Without further loss of generality, we can set the initial

[20] Factor-augmenting technological progress that raises the productivity of every factor by the same proportion is equilivalent to technological progress that raises the total factor productivity in every industry by that same proportion.

productivity levels equal to one; i.e., $\pi_h^o = \pi_\ell^o = 1$. We can also define $\rho$ such that $d\pi_h = \rho d\pi_\ell$; then technological progress is skill-biased if $\rho > 1$ and Hicks-neutral if $\rho = 1$.

Hicks-neutral or skill-biased technological progress can have offsetting effects on the marginal political desirability of a tariff. On the one hand, technological progress of this sort widens the wage gap, and inasmuch as the psychological cost of distance is a convex function of the gap, it increases the marginal desirability of a tariff to alleviate dissonance. But technological progress often will increase the marginal cost of a tariff in terms of aggregate material welfare and the status benefits of identification that derive therefrom. This tends to reduce the desirability of a given rate of protection. Despite this apparent ambiguity, we find that $dU_p^r(p,q) / d\pi_\ell|_{d\pi_h = \rho d\pi_\ell} > 0$ when $\rho = 1$; i.e., when productivity gains are Hicks-neutral, the upward pressure on the tariff from the increased marginal dissonance cost always outweighs any downward pressure on the tariff from a possible increase in the marginal efficiency cost. We state

**Proposition 3** *Suppose that skill group $i$ identifies broadly with the nation in some initial political equilibrium ($\mathbb{I}_i^{b,r^\circ} = 1$). Then Hicks-neutral technological gain that does not induce a change in identification regime $r^\circ$ generates an increase in the equilibrium tariff rate, for $i = h$ or $i = \ell$.*

The proof in the appendix relies on the fact that the initial tariff rate is not arbitrary, but involves an optimal weighting of the effects of protection on national income versus the cost of dissonance. Using the first-order condition for maximizing $U^{r^\circ}(p,q)$ at $\pi_h^o = \pi_\ell^o = 1$, we can sign $dU_p^{r^\circ}(p^\circ,q) / d\pi_\ell|_{d\pi_h = d\pi_\ell}$ and thereby determine the direction of change in the rate of protection.[21]

When $\rho > 1$, the political outcome is, in principle, ambiguous. In the appendix we derive sufficient conditions for the tariff rate to increase in response to skill-biased technical progress. First, the tariff necessarily rises if $w_h''(p^\circ) \leq 0$. This condition, is satisfied, for example, if the production technologies in both sectors are Leontief, in which case $w_h(p)$ is linear and $w_h''(p^\circ) = 0$. Second, the tariff rises if both $w_h''(p^\circ) > 0$ and $w_\ell''(p^\circ) > 0$. This condition is satisfied, for example, if both sectors produce with Cobb-Douglas technologies. We emphasize that these conditions are sufficient for a tariff hike, but not necessary; skill-biased technical progress induces an increase in trade protection in many other cases as well.

### 4.3 Changes in the Terms of Trade

We now consider changes in the terms of trade. Of course, improvements in the terms of trade stemming from the "China Shock" and from growth in other emerging economies have been a prominent feature of the recent European and American economic experiences (see, for example, Autor et al., 2013).

Suppose the terms of trade improve, i.e., $dq < 0$. From (9), it is clear that

[21] Admittedly, Proposition 3 relies on our use of the Euclidean metric to measure income differences when assessing cognitive dissonance from group membership. If we were to use instead a relative measure of income differences, Hicks-neutral technological progress would instead reduce equilibrium protection. However, skill-biased technological progress would still increase protection in some circumstances inasmuch as such technical change increases the relative wage of the higher-skilled group.

$$\frac{\partial U_p^r(p,q)}{\partial q} = -\left(1+\alpha+\alpha^b\sum_{i=h,\ell}\lambda_i \mathbb{I}_i^{b,r}(p)\right)\Omega'(p) > 0\ .$$

For a given domestic price, an improved terms of trade means more tariff revenue per unit of imports and so a domestic price hike that chokes off imports has a greater adverse effect on national income. Meanwhile, at a given domestic price, an improvement in the terms of trade has no impact on the wage gap and thus on the aggregate dissonance costs. It follows that an improvement in the terms of trade unambiguously reduces the marginal political gain from increasing the domestic price at $p = p^\circ$. At least part of any fall in the world price of imports will be passed through to domestic prices after the optimal tariff response.

But this does not tell us what happens to the tariff rate. The domestic price might fall by proportionately less than the terms of trade, which would imply an increase in the rate of protection. Or the price might fall by proportionately more than the terms of trade, which would imply a cut in the tariff rate. To determine which of these outcomes obtains, we must examine the extent of the decline in the price that maximizes the political objective, $U^{r^\circ}(p^\circ, q)$, in response to a change in $q$. We undertake this calculation in the appendix.

We find that there are two, potentially-offsetting forces at play that guide the political response to an improvement in the terms of trade. First, the decline in the domestic price of the importable good might alter the elasticity of the import-demand curve, $\varepsilon_\Omega(p^\circ) \equiv p^\circ\Omega'(p^\circ)/\Omega(p^\circ)$. If the curve becomes more elastic as the price of the import-good falls, the marginal efficiency cost of a tariff grows, which would tend to moderate the political demands for a tariff. If, alternatively, the import-demand curve becomes less elastic as $p$ falls, the marginal deadweight loss from a tariff would shrink, and political resistance to the tariff from this source would abate. Second, the fall in the domestic price of the import good might alter the marginal dissonance cost arising from the wage gap. We know from the Stolper-Samuelson theorem that a fall in $p$ widens the wage gap $\delta(p)$ and thereby increases the dissonance any voters feel if they happen to identify broadly with their fellow nationals. But a decline in $p$ might make the wage gap more or less responsive to tariffs. If $\delta''(p^\circ) > 0$, the usefulness of a tariff to combat inequality grows as the price falls, which encourages a higher tariff rate. If $\delta''(p^\circ) < 0$, the efficacy of a tariff for reducing inequality falls after an improvement in the terms of trade, and so voters see less benefit from high tariffs from this source. If the two forces reinforce one another, then the outcome will be clear. For example, when $\Omega''(p^\circ) \leq 0$ and $\delta''(p^\circ) \geq 0$, the marginal efficiency cost falls while the efficacy of protection in reducing inequality increases, in which case an improvement in the terms of trade results in an unambiguous increase in the rate of protection. In the appendix, we show that a necessary and sufficient condition for the tariff rate to rise in response to a decline in the world price of the import good is

$$-\frac{p^\circ\Omega''(p^\circ)}{\Omega'(p^\circ)(p^\circ)} + \frac{\delta'(p^\circ)p^\circ}{\delta(p^\circ)} + \frac{\delta''(p^\circ)p^\circ}{\delta'(p^\circ)} < 1.$$

# 5 Populist Revolution and Trade Policy

In the last section, we described the effects of small changes in the economic and political environment that do not alter the identification regime. We found that changes in the psychological costs of identification, changes in technology, and changes in the terms of trade all generate political adjustments in the equilibrium tariff rate whenever the members of at least one skill group identify broadly with the nation. Naturally, such political responses are proportionate to the magnitude of the shifts in the underlying parameters, so they typically imply a smooth and gradual evolution of trade policy.

In this section, we consider shifts in the underlying environment that induce a change in the identification regime. Prompted by recent political events, we focus on a particular switch in the pattern of self-identification, namely one that we term a *populist revolution*.[22] Populism has been defined by Müller (2016) as a political situation in which a group of voters rejects the legitimacy of the political and economic elite and designates themselves as the only "true" citizens worthy of consideration. Müller describes populism as "always a form of identity politics," but observes that "not all versions of identity politics are populist" (p.3). As in all expressions of self-identity, populists distinguish an "in-group" and an "out-group," but populism is defined by the composition of these groups; the in-group comprises the working man whereas the out-group is made up of allegedly corrupt elites.

To capture the phenomenon of populist revolution, we begin with an initial identification regime in which voters at all income levels see themselves as part of the broad nation, alongside their more narrow association with their own social class. The "revolution" entails a repudiation of the elites by the working class. When the working class rejects the legitimacy of the elites, they cease to embrace a broad notion of "the nation." Instead, they reconceptualize the prototypical "national" as being a fellow member of the working class.

In terms of Figure 2, we imagine an initial equilibrium with $r = (1, 1)$ that generates an equilibrium domestic price at $p_{h,\ell}$. Suppose that the resulting aggregate utilitarian welfare $U^{(1,1)}(p_{h,\ell}, q)$ exceeds $U^{(1,0)}(p_h, q)$ by only a small amount. Then, if the economic conditions change such that $U^{(1,0)}(p_h, q)$ rises by more than $U^{(1,1)}(p_{h,\ell}, q)$ or that $U^{(1,1)}(p_{h,\ell}, q)$ falls by more than $U^{(1,0)}(p_h, q)$, the lesser-skilled workers will switch their identification from broad (working class and national) to narrow (working class only). As a result, the equilibrium price will jump from $p_{h,\ell}$ to $p_h$, which implies a discrete change in trade policy.

What could cause such a switch in the identification regime? The simplest story involves an increase in $\beta_\ell^b$, the discomfort that the less-skilled workers feel from identifying with a broad group that includes others who are different from themselves. Populist rhetoric spewed by opportunistic politicians might, for example, heighten such sensitivities. An increase in $\beta_\ell^b$ causes the peak of the $r_{h,\ell}$ curve to shift downward and to the right, as illustrated in Figure 2.[23] Then the equilibrium

[22] On the role of the populist revolution in the 2016 U.S. presidential election, see for example, Sides et al. (2016), Mutz (2018), and Oliver and Rahn (2016). On the rise of populism in the United Kingdom and its influence on the Brexit referendum, see Freeden (2016) and Goodhart (2017)

[23] The $r_\ell$ curve also shifts down and its peak shifts to the right, but this shift is not relevant to the case under

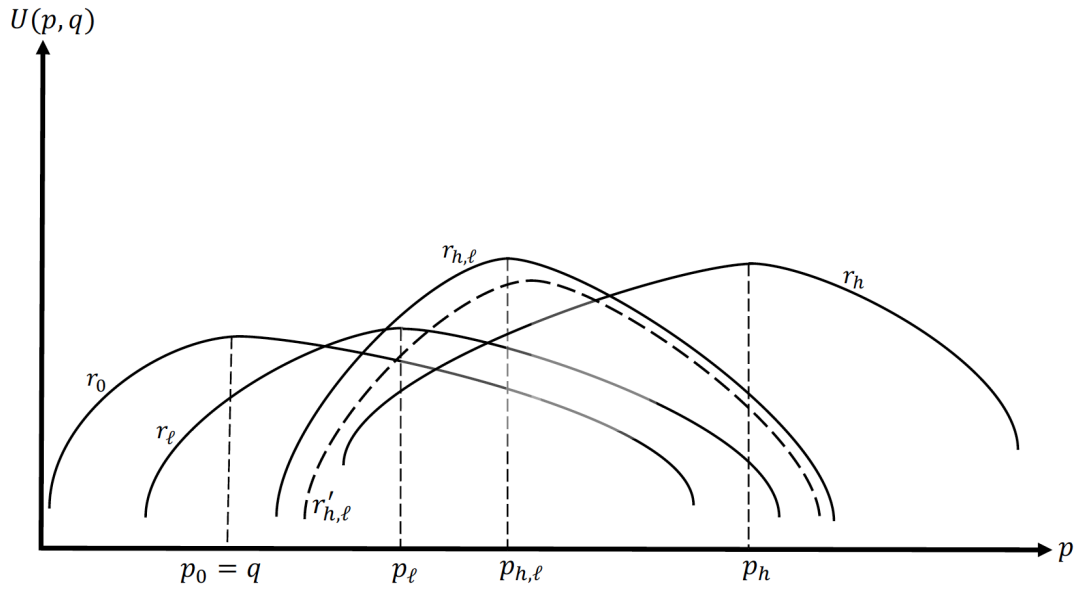

Figure 2: Populist Revolution when $\beta_\ell^b$ Rises

price jumps from $p_{h,\ell}$ to $p_h$; more on this in a moment.

Next consider technical progress, which might be Hicks-neutral or skill-biased. Such productivity gains generate an increase in aggregate material well-being, in aggregate psychosocial benefit from identifying with one's own social class, and in the psychosocial benefit that comes from identifying with the broad nation for those that do so. At the same time, it widens the wage gap, the more so the greater is the skill bias. So technical progress increases the dissonance costs for all those that identify broadly with the nation. Depending on the sizes of these offsetting effects, the $r_{h,\ell}$ and $r_h$ curves might both shift upward, both downward, or one in each direction.[24] In the appendix we establish sufficient conditions under which technical progress reduces $U^{(1,1)}(p_{h,\ell}, q)$ relative to $U^{(1,0)}(p_h, q)$; for example, if $p_h > p_{h,\ell}$, as drawn in the Figure 2, and if the production function between more-skilled and less-skilled labor admits little or no substitution, then skill-biased technical progress will cause both the $r_{h,\ell}$ and $r_h$ curves to shift downward and the former by more than the latter.

Finally, consider a change in the terms of trade. At given $p_{h,\ell}$, , if the world price rises by $dq$, the $r_{h,\ell}$ curve shifts downward by $\left(1+\alpha+\alpha^b\right)\Omega(p_{h,\ell})\,dq$; this is just the loss in tariff revenue, along with the psychosocial benefits that derive therefrom. Meanwhile, at given $p_h$, the $r_h$ curve shifts downward by $\left(1+\alpha+\lambda_h\alpha^b\right)\Omega(p_h)\,dq$. If $p_h > p_{h,\ell}$ as drawn in the figure, the former must exceed the latter, since the import-demand curve $\Omega(p)$ is downward sloping. It follows that a deterioration in the terms of trade can cause a populist revolution when $p_h > p_{h,\ell}$; a terms-of-trade improvement can do so only when $p_h < p_{h,\ell}$.

discussion. We do not show the shift of $r_\ell$ in Figure 2, to avoid cluttering the figure.

[24] We need only examine the direct effect of the technical progress on $U^{(1,1)}$ versus $U^{(0,1)}$, because the envelope theorem implies that any adjustment in the policies $p_{h,\ell}$ and $p_h$ will generate only a negligible increase in aggregate welfare.

No matter what the underlying cause, a populist revolution induces a discrete change in the domestic price. Such a price jump reflects a discrete change in trade policy, as the political parties seek to woo more of the less-skilled voters, whose policy preferences have changed along with their social identities. We are interested in the conditions under which the equilibrium tariff rate *increases* following a populist revolution; evidently this occurs whenever $p_h > p_{h,\ell}$.

In an initial equilibrium with broad identification by both skill groups, the equilibrium policy $p_{h,\ell}$ is determined by the first-order condition

$$U_p^{(1,1)}(p_{h,\ell}, q) = \left(1 + \alpha + \alpha^b\right)(p_{h,\ell} - q)\,\Omega'(p_{h,\ell}) - 2\sum_{i=h,\ell}\beta_i^b\lambda_i(1-\lambda_i)^2\,\delta(p_{h,\ell})\,\delta'(p_{h,\ell}) = 0. \quad (10)$$

After the narrowing of identification by the less-skilled workers, the new equilibrium policy $p_h$ is determined by

$$U_p^{(1,0)}(p_h, q) = \left(1 + \alpha + \alpha^b\lambda_h\right)(p_h - q)\,\Omega'(p_h) - 2\beta_h^b\lambda_h(1-\lambda_h)^2\,\delta(p_h)\,\delta'(p_h) = 0. \quad (11)$$

Evidently, $p_h > p_{h,\ell}$ if $U_p^{(1,0)}(p_{h,\ell}, q) > 0$ and $p_h < p_{h,\ell}$ if the inequality runs in the opposite direction.

Equations (10) and (11) imply that $U_p^{(1,0)}(p_{h,\ell}, q) > 0$ if and only if

$$\beta_h^b\alpha^b(1-\lambda_h)^2 > \beta_\ell^b\left(1 + \alpha + \alpha^b\lambda_h\right)\lambda_h. \quad (12)$$

Notice that (12) is satisfied for $\lambda_h = 0$ and that is violated for $\lambda_h = 1$. Notice too that the left-hand side is decreasing in $\lambda_h$ and the right-hand side is increasing in $\lambda_h$ for all $\lambda_h < 1$. This implies the existence of a $\lambda_h^* \in (0,1)$ such that a populist revolution induces an upward jump in protection for all $\lambda_h < \lambda_h^*$.

To understand this result, we note the offsetting influences on the policy preferences of the working class. On the one hand, when the working class ceases to identify with a broad group that includes the elites, they no longer feel pride from the status associated with national material welfare, part of which accrues to skilled labor. This effect alone strengthens their demand for protection (because tariffs generate deadweight loss that reduces material welfare). On the other hand, they no longer see a psychological gain from reducing income inequality *per se*, because their narrow identities mean that they bear no dissonance costs from the wage gap. This effect alone diminishes their taste for protection. If the former effect is stronger—as it will be if the fraction of elites is small, because then the dissonance costs from broad identification are small for the working class and the consumer surplus losses from protection fall mostly on them—then tariffs will rise following a populist revolution. In other words, broad identification by the working class tempers their demand for protection when the fraction of elites is small. When their identification narrows, this moderation abates.

Note that if $\beta_h^b = \beta_\ell^b$, $\lambda_h^*$ can be expressed quite simply as $\lambda_h^* = \alpha^b/\left(2\alpha^b + 1 + \alpha\right)$. Then, if

$\alpha = \alpha^b = 0.1$, the tariff rate jumps when the elite comprise less than $1/13 \approx 7.7\%$ of the population.

We summarize our findings in

**Proposition 4** *There exists a* $\lambda_h^* \in (0,1)$ *such that a populist revolution induces a discrete upward jump in the tariff rate for all* $\lambda_h < \lambda_h^*$ *and a discrete downward jump in the tariff rate for all* $\lambda_h > \lambda_h^*$. *If* $\beta_h^b = \beta_\ell^b = \beta^b$, $\lambda_h^* = \alpha^b / \left(2\alpha^b + 1 + \alpha\right)$.

In footnote 9, we noted that psychosocial utility might include a third component representing envy of out-group members who enjoy greater material well-being than oneself. Suppose that, when the working class envies the elites, each less-skilled worker suffers disutility of $\lambda_h \gamma \left(v_h - v_\ell\right)^2$, which is proportional to the number of elites that inspire jealousy and to the square of the difference in material well-being, where $\gamma > 0$. In the appendix we show that, in this case, the analog to condition (12) becomes

$$\alpha^b \beta_h^b \left(1 - \lambda_h\right)^2 + \gamma \left(1 + \alpha + \alpha^b\right) > \beta_\ell^b \left(1 + \alpha + \alpha^b \lambda_h\right) \lambda_h \ ,$$

which is satisfied for a wider range of values of $\lambda_h$. In this sense, feelings of envy on the part of a working class make a protectionist response to a populist revolution more likely. Moreover, for $\gamma > \beta_\ell^b$, there is a protectionist response *irrespective* of the size of the elite.

## 6 The Median Voter

In this section, we discuss briefly an alternative political environment. Until now, we have assumed that protectionist policies reflect the preferences of the *average* voter, as suggested by the aforementioned models of probabilistic voting. In this section, we revisit our conclusions in a setting in which tariffs maximize instead the welfare of the *median* voter.

Inasmuch as the less-skilled individuals constitute a majority of the voting population, the median voter is a member of the working class. The new political objective becomes

$$\begin{aligned} U^\mu \left(p, q\right) \quad = \quad & A_\ell^\omega + \left(1 + \alpha\right) \left[w_\ell \left(p\right) + T \left(p, q\right) + \Gamma \left(p\right)\right] \\ & + \mathbb{I}_\ell^{b,\mu} \left\{ A_\ell^b + \alpha^b \left[Y \left(p\right) + T \left(p, q\right) + \Gamma \left(p\right)\right] - \beta_\ell^b \left(1 - \lambda_\ell\right)^2 \left[\delta \left(p\right)\right]^2 \right\} \ , \end{aligned} \tag{13}$$

which combines the median voter's own material welfare, the self-esteem she gains from identifying with her socioeconomic class, and a net psychological benefit she may reap from identifying broadly with the nation. The marginal political benefit from a tariff hike in this setting is $qU_p^\mu \left(p, q\right)$, where

$$U_p^\mu \left(p, q\right) = \left(1 + \alpha + \alpha^b \mathbb{I}_\ell^{b,\mu}\right) \left(p - q\right) \Omega' \left(p\right) - \left[\left(1 + \alpha\right) \lambda_h + 2\beta_\ell^b \mathbb{I}_\ell^{b,\mu} \lambda_h^2 \delta \left(p\right)\right] \delta' \left(p\right) \ . \tag{14}$$

Here, social identification by the more-skilled workers makes no difference for policy; only the identity choices made by the median voter matter. Since the less-skilled individuals always identify with the working class, there are only two possible identification regimes to consider:

either $\mathbb{I}_\ell^{b,\mu}(p) = 1$ or $\mathbb{I}_\ell^{b,\mu}(p) = 0$. In either case, $U_p^\mu(q,q) > 0$; i.e., the median voter's welfare rises when the tariff rate is increased from zero.[25] A small tariff has negligible cost in terms of aggregate national income, but it increases the wages of the less-skilled individuals and narrows the wage gap. Whether the less-skilled workers identify with the nation or not, the median voter prefers some protection for the import-competing sector. The political equilibrium always entails a positive tariff, which we denote by $t^\mu > 0$.[26]

Now suppose that $\beta_\ell^b$ rises; i.e., the less-skilled individuals become more sensitive to identifying with others who have achieved greater economic status than themselves. Clearly, if the less-skilled individuals do not identify with the nation, this has no effect on the equilibrium policy. If they do identify with the nation both beforehand and afterward, the marginal benefit of a tariff increases, because a tariff serves to narrow the wage gap and thereby reduce dissonance costs. It follows that $\partial t^\mu / \partial \beta_\ell^b = 0$ if $\mathbb{I}_\ell^{b,\mu} = 0$ and $\partial t^\mu / \partial \beta_\ell^b > 0$ if $\mathbb{I}_\ell^{b,\mu} = 1$.

Turning to the effects of technical progress, we find that the tariff preferred by the median voter—like that preferred by the average voter—rises in response to Hicks-neutral productivity gains that do not alter the identification regime. Moreover, $t^\mu$ rises in response to skill-biased technological progress whenever $w_h''(p) \leq 0$. However, as with the utilitarian objective function that we considered in Section 4.2, the tariff that maximizes the welfare of the median voter may rise or fall in response to skill-biased technological progress when $w_h''(p) > 0$.[27]

If the terms of trade improve, the tariff preferred by the median voter will likely change, for two reasons. First, the marginal efficiency cost of the tariff will grow or shrink according to whether the import demand curve becomes flatter or steeper. The median voter shares in this marginal cost or benefit of protection as a claimant on rebated tariff revenues, and from the status that derives therefrom. Second, the marginal redistribution brought about by a tariff will change, inasmuch as the Stolper-Samuelson derivatives adjust. This affects the median voter directly, as a recipient of less-skilled wages, and may also alter any dissonance cost she bears from achieving a lesser socioeconomic status than the average national.

In the appendix we provide a necessary and sufficient condition for the tariff to rise in response to an improvement in the terms of trade. The form of the inequality is strikingly similar to the one that applies when the trade policy achieves a utilitarian optimum. In particular, the tariff that maximizes welfare for the median voter certainly rises when $\Omega''(p) \leq 0$ and $\delta''(p) \geq 0$; i.e. when an improvement in the terms of trade reduces the marginal efficiency cost of protection while also boosting the responsiveness of the wage gap to the domestic price.

Finally, we reconsider the effects of a populist revolution, this time in a median-voter setting. First note that the equilibrium tariff under either $\mathbb{I}_\ell^{b,\mu}(p) = 1$ or $\mathbb{I}_\ell^{b,\mu}(p) = 0$ might be prohibitive. An increase in the rate of protection from any given level always raises the real income of the less-

[25] Also note that $U_p^\mu(p,q) \leq 0$ for all $p \leq q$.

[26] This finding mimics that of Mayer (1984), who showed that positive protection emerges in a median-voter framework when households differ in their endowments of capital and labor and the median household has relatively less capital than the average.

[27] For proof of these claims, see the appendix.

skilled workers via the Stolper-Samuelson mechanism, it always raises the status of the less-skilled workers, and it always narrows the wage gap. The only adverse effect comes from a reduction in tariff revenue, and this can happen only for tariffs on the downward-sloping portion of the Laffer curve (which can emerge in the political equilibrium).

We suppose, nonetheless, that the equilibrium tariffs before and after the populist revolution are interior; i.e., they do not eliminate imports. Then these tariffs are determined by a pair of first-order conditions of the form $U_p^\mu(p,q)=0$, one with $\mathbb{I}_\ell^{b,\mu}=1$ and the other with $\mathbb{I}_\ell^{b,\mu}=0$. As before, we calculate the difference in the marginal benefit of a tariff in the two regimes, evaluated at $p=p^\mu$, the equilibrium tariff before the less-skilled individuals repudiate their identification with the broad group that includes the elite. We find

$$U_p^\mu(p^\mu,q)\big|_{\mathbb{I}_\ell^{b,\mu}=0}-U_p^\mu(p^\mu,q)\big|_{\mathbb{I}_\ell^{b,\mu}=1}=-\frac{1+\alpha}{1+\alpha+\alpha^b}\lambda_h\left[\alpha^b-2\beta_\ell^b\lambda_h\delta(p^\mu)\right]\delta'(p^\mu)\ .$$

The rate of protection jumps upward in this case if $\alpha^b>2\beta_\ell^b\lambda_h\delta(p^\mu)$, and it jumps downward if the inequality runs in the opposite direction. Once again, a populist revolution generates a discrete rise in protection when the elite comprises a small enough fraction of the voting population.

# 7 Conclusion

It has become commonplace to cite the frequent failure of some groups in society to vote their economic self-interests.[28] Many commentators take this observation as evidence of irrational voting behavior. To us, it suggests instead the application of an overly narrow notion of self-interest. The considerations that guide rational voting should include not only the material aspects of well-being, but also psychological elements such as pride, social acceptance, and self-esteem. A rational voter supports policies that will make her most content, which are not necessarily the same as those that will make her most rich.

Social psychologists teach us that contentment and self-esteem come in part from seeing ourselves as members of groups in society. Humans are social creatures. We seek approval from others and covet a sense of belonging. We like to associate ourselves with others whom we respect, taking delight in their successes and sharing discomfort from their failures. It is natural for us to consider the well-being of these others with whom we identify to be a component of our own utility and to support policies that serve them as well as ourselves. Identity politics is the logical result of such thinking.

In this paper, we have adopted the perspective of social identity theory to revisit the political economy of trade policy. We sought to characterize policies that maximize average (or median-voter) welfare in a setting where an individual's assessment of her well-being includes both material and

[28] Following the U.S. presidential election in 2016, articles with this theme appeared in *Forbes* (11/17/16). *Politico* (12/31/17), *Pscyhology Today* (12/12/17), *The Atlantic* (5/9/17), *The Nation* (11/17/16), *The Economist* (6/5/18), *The Huffington Post* (7/17/17), *The New York Times* (4/12/17, 7/19/18), *The Washington Post* (12/12/16, 3/13/18), and *Vox* (5/9/17), among others.

psychosocial components. The material component reflects, as usual, satisfaction from consuming goods and services. Borrowing from social identity theory, we took the psychosocial component as combining two subcomponents, positive feelings derived from pride in the status of groups with which an individual identifies and a dissonance cost borne from identifying with others that are different from oneself.

In a familiar trade setting with two goods and two factors, identity politics can give rise to positive tariffs. Protection need not result from the distributional benefits that the less-skilled workers derive from limiting imports to a skill-abundant country. This preference for protection is offset in the utilitarian calculus by the opposite predilection on the part of the skilled workers for trade promotion. Rather, a bias against trade emerges in political equilibrium when individuals of any skill level identify with an expansive group in society that we have termed "the broad nation." Such individuals may display inequality aversion in their political behavior, not out of a sense of social justice, but selfishly, because they feel better about themselves when they are not too different from the others around them. Although the inequality aversion typically will not be enough to induce skilled labor to support protection, it may mitigate their opposition to such policies, tilting the equilibrium toward the outcomes preferred by the less skilled.

A defining feature of social identity theory is the element of choice; individuals may choose to identify with certain salient groups in society or not. Other people with similar characteristics cannot coerce identification, nor can they exclude it. Inasmuch as identity reflects self-categorization, it can respond to economic and cultural experience. Since identity influences policy preferences, changes in identification patterns can affect policy outcomes. Moreover, choices of social identity approximate discrete choices; it is more common to think of oneself as being in the in-group or the out-group, rather than being somewhat a part of a group. If identity choices by those with shared characteristics are positively correlated, discrete changes in self-identification at the individual level can go hand in hand with precipitous changes in policy preferences at the aggregate level.

With this possibility in mind, we studied a recent trend in western politics, namely the rise in populism. We interpret populism as a form of identity politics whereby the everyman ceases to identify with a broad group of fellow nationals that includes the elites and opts instead to identify more narrowly, i.e., only with others in the same socioeconomic class. In a populist revolution, the elites are seen as corrupt by the working class and no longer a legitimate source of national pride. In our model, such an event is well captured by a shift in identification by the working class from broad to narrow. If the elite comprise a small enough minority in the population, a populist revolution of this sort will result in an increased demand for protectionism by unskilled workers and a discrete rise in equilibrium tariff rates. It is interesting to note that protectionist sentiments can emerge even if trade is not the primary source of a spread in wages.

In this paper, we have focused on a political environment in which there are only two groups in society, a group of high-income elites and a group of lesser-income workers. Clearly, most societies have other cleavages that offer a wider menu of identity choices. Moreover, one of these sociocultural distinctions has become increasingly salient in recent elections in the United States and Europe,

namely that perceived along ethnic and racial lines. In the appendix, we extend our model to reflect a population that varies not only in skill level and earnings potential, but also in ethnic or racial background. Here, we describe this extension briefly and note what it tells us about whether an increase in the perceived cost of identifying with those of a different race or ethnicity has any bearing on the equilibrium rate of trade protection.

In the appendix, we distinguish two ethnicities in the population, an ethnic majority and an ethnic minority. Although every individual bears one ethnicity or the other, individuals may or may not choose to identify with their ethnic group, depending on the composition of the group in socioeconomic terms. At the same time, we introduce a third skill level to our model of Section 2 and designate the three skills as high, medium and low. Having a third skill level gives us greater flexibility in aligning ethnicities and socioeconomic standing with interests in protectionist policies. The economy described in the appendix produces three goods, two that are tradable and one nontraded service. The traded goods are produced with constant returns to scale by the high and middle skill groups, and exports use high-skilled labor relatively intensively. The service is provided by low-skilled workers, with one unit of output per unit of labor.

We allow for a rich pattern of potential social identities. Individuals with ethnicity $j$ and skill level $i$ may identify with others of their same ethnicity ($\mathbb{I}_i^{j,j} = 1$) or not ($\mathbb{I}_i^{j,j} = 0$). These same individuals may identify with others in their same social class ($\mathbb{I}_{i,i}^{j} = 1$) or not ($\mathbb{I}_{i,i}^{j} = 0$). And they may identify with a broad group of nationals ($\mathbb{I}_i^{j,b} = 1$) or not ($\mathbb{I}_i^{j,b} = 0$).[29] The psychological benefit to an individual from identifying with any group is a linearly increasing function of the material well-being of the prototypical member of the group, where the prototype is the average among individuals with the specified characteristics. That is, the benefit from identifying with ethnic group $j$ is $\alpha^e \left( \sum_i \lambda_i^j \nu_i \right) / \lambda^j$, where $\alpha^e$ is a constant that is common across ethnicities, $\lambda_i^j$ is the fraction of individuals with skill level $i$ and ethnicity $j$, and $\lambda^j$ is the fraction of individuals with ethnicity $j$ in the total population.[30] Similarly, the benefit from identifying with social class $i$ is $\alpha \nu_i$, where $\alpha$ is another constant, possibly different from $\alpha^e$. Finally, the benefit from identifying broadly with the nation is $\alpha^b \sum_i \lambda_i \nu_i$. Dissonance costs arise from both differences in material well-being, as before, and differences in race or ethnicity. We take the latter to be proportional to the squared difference in "ethnic space" between an individual's "ethnic value" and the average ethnicity in a group with whom she identifies, where we normalize the ethnic value of the majority to be one and of the minority to be zero. We denote the constant of proportionality by $\beta^e$.

We study how the political equilibrium responds to a heightened sensitivity to racial and ethnic differences. An increase in $\beta^e$ has no effect on any individual's trade policy preferences given

[29] It is also possible that the sociocultural environment affords as well the opportunity for individuals to identify with a narrow group defined by both class *and* ethnicity. For example, in the U.S. context, much has been made of late about political trends driven by the "white working class." In our model, the group of individuals with skill level $i$ and ethnicity $j$ is homogeneous, so if social identity groups defined by a given combination of class and ethnicity exist and if the status associated with each of them is positive, then everyone would choose to identify with theirs. This would affect the level of trade protection in the initial equilibrium, but would not affect the predicted response to any narrowing of self-identification due to growing ethnic or racial sensitivies.

[30] Note that all individuals with skill level $i$ achieve the same level of material well-being, independent of their ethnicity. Thus, $\nu_i$ is common to both ethnic groups for $i = h, \ell, k$.

his or her identity choices. Therefore, for a fixed identification regime $r$, there is no interaction between the tariff rate and the parameter $\beta^e$ in the expressions for utilitarian (economic-plus-psychosocial) welfare. It follows that a change in $\beta^e$ does not affect the equilibrium tariff rate when the identification regime remains unchanged. However, if heightened ethnic sensitivity leads to a narrowing of identification, then trade policy preferences will change for those that are affected. In the event, the political calculus for protectionism will change as well. We show, for example, that if the import good and nontraded services are complements in demand and if the least-skilled workers cease to identify with the broad nation or with their own socioeconomic class, then the tariff rate will jump upward. Also, if the middle-skilled workers of any ethnicity have a wage that is at least as great as the national average and if an increase in $\beta^e$ leads them to cease their identification with the broad nation with its mixed ethnic makeup, then again the equilibrium rate of protection in political equilibrium will rise.

We recognize that any attempt to incorporate social identity into political-economic analysis requires specific assumptions. The results from psychological experiments performed to date give us some guidance, but they do not fully resolve all of the relevant questions. The experimental evidence indicates, for example, that individuals gain self-esteem and satisfaction from the status and achievements of the groups with which they identify, but it remains unclear exactly how status and achievement ought to be measured in this context, or how these psychological components compare in magnitude to the direct, materialistic components of utility. Similarly, it is well accepted by now that divergence between one's own attributes and those of fellow group members causes psychological discomfort, but the existing literature does not tell us which differences are most pertinent, how they should be measured, and how powerful are these concerns compared to the benefits from identification. In view of the state of our knowledge, we have proposed a flexible framework that can be readily refined as more evidence of this sort becomes available. To make progress, we have no choice but to take a stand on both reasonable measures of status and of dissonance costs, and our model includes parameters that represent the strength of these respective elements. By doing so, we are able to conduct political-economic analysis of trade policy formation and to identify circumstances under which changes in economic, political and cultural conditions might generate a protectionist backlash. Although the links we describe between social identity and trade policy are hardly definitive, it will be misleading if the study of economic policy continues to focus exclusively on aggregate preferences derived only from individuals' own, material interests.

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# Appendix

## Properties of Wage Functions

The wage functions $w_h(p)$ and $w_\ell(p)$ are solved from the pricing equations

$$\begin{aligned} p &= c_Z(w_h, w_\ell), \\ 1 &= c_X(w_h, w_\ell), \end{aligned}$$

where $c_j(w_h, w_\ell)$ is the unit cost in sector $j$. Logarithmic differentiation of these pricing equations yields (see Jones, 1965):

$$\begin{aligned} \frac{w_h'(p)\,p}{w_h(p)} &= -\frac{1-\theta_{hX}(p)}{\theta_{hX}(p)-\theta_{hZ}(p)} < 0, \\ \frac{w_\ell'(p)\,p}{w_\ell(p)} &= \frac{\theta_{hX}(p)}{\theta_{hX}(p)-\theta_{hZ}(p)} > 1, \end{aligned}$$

where $\theta_{ij}(p)$ is the share of input $i$ in the cost of sector $j$ and $\theta_{hX}(p) > \theta_{hZ}(p)$ when the export sector is intensive in more-skilled workers. In the Cobb-Douglas case, these cost shares are constant. In the Leontief case $\theta_{ij}(p) = w_i(p)\,a_{ij}/\sum_{k=h,\ell} w_k(p)\,a_{kj}$, where $a_{ij}$ are constant input-output coefficients; that is, $a_{ij}$ is the input of workers of type $i$, $i = h, \ell$, needed to produce one unit of good $j$, $j = Z, X$. In the Leontief case, $w_i$ is a linear function of $p$ for $i = h, \ell$, and therefore $w_i''(p) = 0$ for $i = h, \ell$. In the Cobb-Douglas case, these equations imply

$$\begin{aligned} 0 &= \frac{w_h''(p)\,p}{w_h'(p)} - \frac{w_h'(p)\,p}{w_h(p)} + 1 = \frac{w_h''(p)\,p}{w_h'(p)} + \frac{1-\theta_{hM}}{\theta_{hX}-\theta_{hM}}, \\ 0 &= \frac{w_\ell''(p)\,p}{w_\ell'(p)} - \frac{w_\ell'(p)\,p}{w_\ell(p)} + 1 = \frac{w_\ell''(p)\,p}{w_\ell'(p)} - \frac{\theta_{hM}}{\theta_{hX}-\theta_{hM}}. \end{aligned}$$

Evidently, in this case, $w_i''(p) > 0$ for $i = h, \ell$, because our factor intensity assumption implies $w_h'(p) < 0$ and $w_\ell'(p) > 0$.

Note, however, that the sign of $w_h''(p)$ can differ from the sign of $w_\ell''(p)$. To illustrate, suppose that in sector $j$ the technology is Leontief while in the other sector it is Cobb-Douglas. Then twice differentiating the pricing equation for sector $j$ yields $\sum_{i=h,\ell} w_i''(p)\,a_{ij} = 0$. Since in this case the wage functions are not linear in $p$, this equation implies that $w_h''(p)$ has the opposite sign from $w_\ell''(p)$.

## Section 4.2

Let $\pi_i$ be the productivity of labor of type $i$, $i = h, \ell$, the same in the exportable and import-competing sectors. If, say, $\pi_h$ rises from its initial value of one to $\pi_h = 2$, this means that with the new technology a firm can use half the amount of more-skilled labor to produce the same output

as it did with the old technology. Now, the wage rates can be written as the solution to

$$\begin{aligned} p &= c_Z\left(\frac{w_h}{\pi_h}, \frac{w_\ell}{\pi_\ell}\right), \\ 1 &= c_X\left(\frac{w_h}{\pi_h}, \frac{w_\ell}{\pi_\ell}\right). \end{aligned}$$

Let these solutions be $\tilde{w}_h(p;\pi_h)$ and $\tilde{w}_\ell(p;\pi_\ell)$. Then, using the functions $w_h(p)$ and $w_\ell(p)$ from the previous section of the Appendix, which describe the solution of this system when $\pi_h = \pi_\ell = 1$, we obtain

$$\tilde{w}_i(p;\pi_i) = \pi_i w_i(p) \quad \text{for } i = h, \ell. \tag{15}$$

In other words, an increase in $\pi_i$ raises proportionately the wage rate of labor of type $i$, given the domestic price of imports. These equations imply

$$Y(p;\pi_h,\pi_\ell) \equiv Y_X(p;\pi_h,\pi_\ell) + pY_Z(p;\pi_h,\pi_\ell) \equiv \sum_{i=h,\ell} \lambda_i \pi_i w_i(p). \tag{16}$$

In this case, we can express the aggregate utility level in regime $r$ as (see (8))

$$\begin{aligned} U^r(p,q;\pi_h,\pi_\ell) &= \lambda_h A_h^\varepsilon + \lambda_\ell A_\ell^\omega + \lambda_h \mathbb{I}_h^{b,r} A_h^b + \lambda_\ell \mathbb{I}_\ell^{b,r} A_\ell^b \\ &\quad + \left(1 + \alpha + \alpha^b \sum_{i=h,\ell} \lambda_i \mathbb{I}_i^{b,r}\right)\left[Y(p;\pi_h,\pi_\ell) + (p-q)\,\Omega(p;\pi_h,\pi_\ell) + \Gamma(p)\right] \\ &\quad - \sum_{i=h,\ell} \mathbb{I}_i^b \beta_i^{b,r} \lambda_i (1-\lambda_i)^2 \left[\delta(p;\pi)\right]^2, \end{aligned} \tag{17}$$

where $\Omega(p;\pi_h,\pi_\ell) = C(p) - Y_Z(p;\pi_h,\pi_\ell)$. The first-order condition that characterizes the initial equilibrium value of $p$ in regime $r$, $p^r$, is given by

$$U_p^r(p^r,q;\pi_h,\pi_\ell)\big|_{\pi_h=\pi_\ell=1} = 0. \tag{18}$$

Now, starting with $\pi_h = \pi_\ell = 1$, consider changes in $\pi_i$ of the form

$$\begin{aligned} d\pi_h &= \rho d\pi, \\ d\pi_\ell &= d\pi > 0. \end{aligned}$$

For $0 \leq \rho < 1$ this represents less-skilled labor biased technical change, for $\rho = 1$ it represents Hicks-neutral technical change, and for $\rho > 1$ it represents more-skilled labor biased technical change.

We are interested in the impact of these forms of technical change on the equilibrium domestic

price, and hence the tariff rate. Then

$$\begin{aligned}\texttt{sign}\frac{\partial p^r}{\partial \pi} &= \texttt{sign}\left[\frac{\partial}{\partial \pi_\ell}U_p^r\left(p^r,q;\pi_h,\pi_\ell\right)+\rho\frac{\partial}{\partial \pi_h}U_p^r\left(p^r,q;\pi_h,\pi_\ell\right)\right]_{\pi_h=\pi_\ell=1} \\ &= \texttt{sign}\left[\sum_{i=h,\ell}\frac{\partial}{\partial \pi_i}U_p^r\left(p^r,q;\pi_h,\pi_\ell\right)+\left(\rho-1\right)\frac{\partial}{\partial \pi_h}U_p^r\left(p^r,q;\pi_h,\pi_\ell\right)\right]_{\pi_h=\pi_\ell=1}.\end{aligned} \tag{19}$$

To evaluate the expression in the second line of (19), note that the first-order condition for the equilibrium policy together with (9) yields

$$\begin{aligned}&U_p^r\left(p^r,q;\pi_h,\pi_\ell\right)\big|_{\pi_h=\pi_\ell=1} \\ &= \left(1+\alpha+\alpha^b\sum_{i=h,\ell}\mathbb{I}_i^{b,r}\lambda_i\right)\left(p^r-q\right)\Omega'\left(p^r;\pi_h,\pi_\ell\right)\big|_{\pi_h=\pi_\ell=1} \\ &-2\left[\sum_{i=h,\ell}\beta_i^b\mathbb{I}_i^{b,r}\lambda_i\left(1-\lambda_i\right)^2\right]\delta\left(p^r;\pi_h,\pi_\ell\right)|_{\pi_h=\pi_\ell=1}\,\delta'\left(p^r;\pi_h,\pi_\ell\right)\big|_{\pi_h=\pi_\ell=1} \\ &= 0.\end{aligned} \tag{20}$$

Also note from (16) that

$$Y'\left(p;\pi_h,\pi_\ell\right)=Y_Z\left(p;\pi_h,\pi_\ell\right)=\sum_{i=h,\ell}\lambda_i\pi_i w_i'\left(p\right). \tag{21}$$

Using $\Omega\left(p;\pi_h,\pi_\ell\right)=C_Z\left(p\right)-Y_Z\left(p;\pi_h,\pi_\ell\right)$ and (21), we obtain

$$\begin{aligned}&\frac{\partial}{\partial \pi_i}U_p^r\left(p^r,q;\pi_h,\pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1} \\ =\;& -\left(1+\alpha+\alpha^b\sum_{i=h,\ell}\mathbb{I}_i^{b,r}\lambda_i\right)\left(p^r-q\right)\frac{\partial}{\partial \pi_i}Y_Z'\left(p^r;\pi_h,\pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1} \\ &-2\left[\sum_{i=h,\ell}\beta_i^b\mathbb{I}_i^{b,r}\lambda_i\left(1-\lambda_i\right)^2\right]\delta\left(p^r;1,1\right)\frac{\partial}{\partial \pi_i}\delta'\left(p^r;\pi_h,\pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1} \\ &-2\left[\sum_{i=h,\ell}\beta_i^b\mathbb{I}_i^{b,r}\lambda_i\left(1-\lambda_i\right)^2\right]\frac{\partial}{\partial \pi_i}\delta\left(p^r;\pi_h,\pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1}\delta'\left(p^r;1,1\right).\end{aligned} \tag{22}$$

But

$$\begin{aligned}\delta\left(p;\pi_h,\pi_\ell\right)&=\pi_h w_h\left(p\right)-\pi_\ell w_\ell\left(p\right),\\ \delta'\left(p;\pi_h,\pi_\ell\right)&=\pi_h w_h'\left(p\right)-\pi_\ell w_\ell'\left(p\right),\end{aligned}$$

which imply

$$\left.\frac{\partial}{\partial \pi_h} U_p^r\left(p^r, q; \pi_h, \pi_\ell\right)\right|_{\pi_s=\pi_u=1} =$$

$$-\left(1+\alpha+\alpha^b \sum_{i=h,\ell} \mathbb{I}_i^{b,r} \lambda_i\right)\left(p^r-q\right) \left.\frac{\partial}{\partial \pi_h} Y_Z'\left(p^r; \pi_h, \pi_\ell\right)\right|_{\pi_h=\pi_\ell=1}$$

$$-2\left[\sum_{i=h,\ell} \beta_i^b \mathbb{I}_i^{b,r} \lambda_i \left(1-\lambda_i\right)^2\right]\left[\delta\left(p^r\right) w_h'\left(p^r\right)+w_h\left(p^r\right) \delta'\left(p^r\right)\right],$$

$$\left.\frac{\partial}{\partial \pi_\ell} U_p^r\left(p^r, q; \pi_h, \pi_\ell\right)\right|_{\pi_h=\pi_\ell=1} = -\left(1+\alpha+\alpha^b \sum_{i=h,\ell} \mathbb{I}_i^{b,r} \lambda_i\right)\left(p^r-q\right) \left.\frac{\partial}{\partial \pi_\ell} Y_Z'\left(p^r; \pi_h, \pi_\ell\right)\right|_{\pi_h=\pi_\ell=1}$$

$$+2\left[\sum_{i=h,\ell} \beta_i^b \mathbb{I}_i^{b,r} \lambda_i \left(1-\lambda_i\right)^2\right]\left[\delta\left(p^r\right) w_\ell'\left(p^r\right)+w_\ell\left(p^r\right) \delta'\left(p^r\right)\right].$$

It follows that

$$\left.\sum_{i=h,\ell} \frac{\partial}{\partial \pi_i} U_p\left(p^r, q; \pi_h, \pi_\ell\right)\right|_{\pi_h=\pi_\ell=1} = -\left(1+\alpha+\alpha^b \sum_{i=h,\ell} \mathbb{I}_i^{b,r} \lambda_i\right)\left(p^r-q\right) \left.\sum_{i=h,\ell} \frac{\partial}{\partial \pi_i} Y_Z'\left(p^r; \pi_h, \pi_\ell\right)\right|_{\pi_h=\pi_\ell=1}$$

$$-4\left[\sum_{i=h,\ell} \beta_i^b \mathbb{I}_i^{b,r} \lambda_i \left(1-\lambda_i\right)^2\right] \delta\left(p^r\right) \delta'\left(p^r\right).$$

But (21) implies

$$\left.\sum_{i=h,\ell} \frac{\partial}{\partial \pi_i} Y'_Z\left(p^r; \pi_h, \pi_\ell\right)\right|_{\pi_h=\pi_\ell=1} = Y_Z'\left(p^r; 1, 1\right) > 0.$$

Using this result and the first-order condition (20) we obtain

$$\begin{aligned} \frac{\left.\sum_{i=h,\ell} \frac{\partial}{\partial \pi_i} U_p\left(p^r, q; \pi_h, \pi_\ell\right)\right|_{\pi_h=\pi_\ell=1}}{\left(1+\alpha+\alpha^b \sum_{i=h,\ell} \mathbb{I}_i^{b,r} \lambda_i\right)\left(p^r-q\right)} &= -Y_Z'\left(p^r; 1, 1\right)-2\Omega'\left(p^r; 1, 1\right) \qquad (23) \\ &= -2C_Z'\left(p^r\right)+Y_Z'\left(p^r; 1, 1\right) > 0 . \end{aligned}$$

This proves that Hicks-neutral technical change ($\rho = 1$) raises the rate of protection.

We turn now to (pure) skilled-biased technical change, which requires that we evaluate

$\frac{\partial}{\partial \pi_h} U_p^r\left(p^r, q; \pi_h, \pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1}$. Equations (20) and (21) imply

$$\frac{\partial}{\partial \pi_h} U_p^r\left(p^r, q; \pi_h, \pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1} = -\left(1+\alpha+\alpha^b \sum_{i=h,\ell} \mathbb{I}_i^{b,r}\lambda_i\right)\left(p^r-q\right) w_h''\left(p^r\right)\lambda_h$$
$$-2\left[\sum_{i=h,\ell} \beta_i^b \mathbb{I}_i^{b,r}\lambda_i\left(1-\lambda_i\right)^2\right]\left[\delta\left(p^r\right) w_h'\left(p^r\right) + w_h\left(p^r\right)\delta'\left(p^r\right)\right].$$

Evidently, $\frac{\partial}{\partial \pi_h} U_p^r\left(p^r, q; \pi_h, \pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1} > 0$ if $w_h''\left(p^r\right) \leq 0$, which is satisfied when both sectors produce with Leontief technologies. In this case, skill-augmenting technical change raises the rate of protection. We next consider the case when $w_h''\left(p^r\right) > 0$. Substituting the first-order condition (20) into the former equation yields

$$\frac{\frac{\partial}{\partial \pi_h} U_p^r\left(p^r, q; \pi_h, \pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1}}{-\left(1+\alpha+\alpha^b \sum_{i=h,\ell} \mathbb{I}_i^{b,r}\lambda_i\right)\left(p^r-q\right)\Omega'\left(p^r;1,1\right)} =$$
$$-\frac{\lambda_h w_h''\left(p^r\right)}{Y_Z'\left(p^r;1,1\right) - C_Z'\left(p^r\right)} + \frac{w_h'\left(p^r\right)}{\delta'\left(p^r\right)} + \frac{w_h\left(p^r\right)}{\delta\left(p^r\right)}.$$

Now note that

$$0 < \frac{w_h'\left(p^r\right)}{\delta'\left(p^r\right)} < 1 \quad \text{and} \quad \frac{w_h\left(p^r\right)}{\delta\left(p^r\right)} > 1,$$

so that the sum of the last two terms exceeds one. Moreover,

$$\frac{\lambda_h w_h''\left(p^r\right)}{Y_Z'\left(p^r;1,1\right) - C_Z'\left(p^r\right)} = \frac{\lambda_h w_h''\left(p^r\right)}{\sum_{i=h,\ell}\lambda_i w_i''\left(p^r\right) - C_Z'\left(p^r\right)}.$$

When this expressions is smaller than one, we have $\frac{\partial}{\partial \pi_h} U_p^r\left(p^r, q; \pi_h, \pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1} > 0$, and skill-augmenting technical change raises the rate of protection. This condition is satisfied when $w_h''\left(p^r\right) > 0$ and $w_\ell''\left(p^r\right) \geq 0$, which happens when the production functions in both sectors are Cobb-Douglas in form. Note, however, that even if this condition fails, the tariff rate may still increase in response to skill-biased technical change, because $\frac{w_h'(p^r)}{\delta'(p^r)} + \frac{w_h(p^r)}{\delta(p^r)} > 1$.

SECTION 4.3

For an interior equilibrium in regime $r$, (9) implies that $p^r$ satisfies

$$U_p^r\left(p^r, q\right) = \left(1+\alpha+\alpha^b \sum_{i=h,\ell} \mathbb{I}_i^{b,r}\lambda_i\right)\left(p^r-q\right)\Omega'\left(p^r\right) \tag{24}$$
$$-2\left[\sum_{i=h,\ell} \beta_i^b \mathbb{I}_i^{b,r}\lambda_i\left(1-\lambda_i\right)^2\right]\delta\left(p^r\right)\delta'\left(p^r\right) = 0.$$

We assume that either $\mathbb{I}_h^{b,r} = 1$ or $\mathbb{I}_\ell^{b,r} = 1$ in this equilibrium (that is, some individuals identify with the broad nation). Under these circumstances, the first-order condition implies $p^r > q$; that is, $t^r > 0$. We are interested in the response of $t^r$ to an improvement in the terms of trade, i.e., to $dq < 0$.

We can write the first-order condition for the optimal tariff as

$$U_p^r\left[\left(1+t^r\right)q, q\right] = 0, \tag{25}$$

where $U_p^r\left[\left(1+t^r\right)q, q\right]$ is the derivative of $U^r\left[\left(1+t^r\right)q, q\right]$ with respect to the first argument (i.e., with respect to $p$), evaluated at $t = t^r$. The second-order condition requires $U_{pp}^r\left[\left(1+t^r\right)q, q\right]q < 0$.

In this case

$$\frac{\partial t^r}{\partial q} \times \frac{q}{1+t^r} = -\frac{1}{U_{pp}^r\left[\left(1+t^r\right)q, q\right]}\left\{U_{pp}^r\left[\left(1+t^r\right)q, q\right] + \frac{U_{pq}^r\left[\left(1+t^r\right)q, q\right]}{1+t^r}\right\},$$

where $U_{pq}^r\left[\left(1+t^r\right)q, q\right]$ is the derivative of $U_p^r\left[\left(1+t^r\right)q, q\right]$ with respect to the second argument. Note, however, from (9) that

$$U_{pq}^r\left[\left(1+t^r\right)q, q\right] = -\left(1+\alpha+\alpha^b\sum_{i=h,\ell}\mathbb{I}_i^{b,r}\lambda_i\right)\Omega'\left[\left(1+t^r\right)q\right],$$

which implies

$$\frac{\partial t^r}{\partial q} \times \frac{q}{1+t^r} = -1 + \frac{1+\alpha+\alpha^b\sum_{i=h,\ell}\mathbb{I}_i^{b,r}\lambda_i}{p^r U_{pp}^r\left(p^r, q\right)}q\Omega'\left(p^r\right). \tag{26}$$

Since $U_{pq}^r\left[\left(1+t^r\right)q, q\right] > 0$, the domestic price $p^r$ is increasing in $q$. That is, an improvement in the terms of trade leads to a lower domestic price. But we are also interested in whether the tariff rate rises in response to an improvement in the terms of trade, which it does if and only if the expression in (26) is negative.

Since $\Omega'\left(p^r\right) < 0$ and $U_{pp}^r\left(p^r, q\right) < 0$, the expression in (26) is negative if and only if

$$1+\alpha+\alpha^b\sum_{i=h,\ell}\mathbb{I}_i^{b,r}\lambda_i < \frac{p^r U_{pp}^r\left(p^r, q\right)}{q\Omega'\left(p^r\right)}.$$

Using (9) to compute $U_{pp}^r(\cdot)$, this is equivalent to

$$\begin{aligned} -q\Omega'\left(p^r\right) \;<\; & -p^r\left[\Omega'\left(p^r\right) + \left(p^r - q\right)\Omega''\left(p^r\right)\right] \\ & +2p^r\frac{\sum_{i=h,\ell}\beta_i^b\mathbb{I}_i^{b,r}\lambda_i\left(1-\lambda_i\right)^2}{1+\alpha+\alpha^b\sum_{i=h,\ell}\mathbb{I}_i^{b,r}\left(p^r\right)\lambda_i}\left\{\delta\left(p^r\right)\delta''\left(p^r\right) + \left[\delta'\left(p^r\right)\right]^2\right\}. \end{aligned}$$

But the first-order condition (24) implies

$$2\frac{\sum_{i=h,\ell}\beta_i^b\mathbb{I}_i^{b,r}\lambda_i\left(1-\lambda_i\right)^2}{1+\alpha+\alpha\sum_{i=h,\ell}\mathbb{I}_i^{b,r}\left(p^r\right)\lambda_i}=\frac{\left(p^r-q\right)\Omega'\left(p^r\right)}{\delta\left(p^r\right)\delta'\left(p^r\right)}\ .$$

Substituting this result into the previous inequality yields

$$\left(p^r-q\right)\Omega'\left(p^r\right)<-p^r\left(p^r-q\right)\Omega''\left(p^r\right)+\left(p^r-q\right)\Omega'\left(p^r\right)\left[\frac{\delta''\left(p^r\right)p^r}{\delta'\left(p^r\right)}+\frac{\delta'\left(p^r\right)p^r}{\delta\left(p^r\right)}\right].$$

Dividing by $\left(p^r-q\right)\Omega'\left(p^r\right)<0$ yields

$$-\frac{p^r\Omega''\left(p^r\right)}{\Omega'\left(p^r\right)\left(p^r\right)}+\frac{\delta'\left(p^r\right)p^r}{\delta\left(p^r\right)}+\frac{\delta''\left(p^r\right)p^r}{\delta'\left(p^r\right)}<1. \tag{27}$$

The second term on the left-hand side of the inequality is negative, and the third term is negative when $\delta''\left(p^r\right)\geq 0$ (the latter holds, for example, when the production functions are Leontief in both sectors, because in this case the wage functions are linear in $p$). In these circumstances, $\Omega''\left(p^r\right)\leq 0$ is a sufficient condition for this inequality to be satisfied. But of course, this inequality can also be satisfied in many other cases.[31]

## Section 5

We first discuss how technical change and changes in the terms of trade can bring about a populist revolution. Begin with technical change. Note that, when computing the impact of $\pi_i$ on $U^r\left(\cdot\right)$, we can ignore the welfare effects of the induced change in $p^r$ thanks to the Envelope Theorem. For Hicks-neutral technical change we obtain

$$\left.\frac{\partial U^r\left(p^r,q;\pi,\pi\right)}{\partial\pi}\right|_{\pi=1}=\left(1+\alpha+\alpha^b\sum_{i=h,\ell}\lambda_i\mathbb{I}_i^{b,r}\right)\left[Y_X\left(p^r\right)+qY_Z\left(p^r\right)\right]-2\sum_{i=h,\ell}\mathbb{I}_i^{b,r}\beta_i^b\lambda_i\left(1-\lambda_i\right)^2\delta\left(p^r\right)^2.$$

When all individuals identify with the nation, i.e., $r=(1,1)$, this yields

$$\left.\frac{\partial U^{(1,1)}\left(p_{h,\ell},q;\pi,\pi\right)}{\partial\pi}\right|_{\pi=1}=\left(1+\alpha+\alpha^b\right)\left[Y_X\left(p_{h,\ell}\right)+qY_Z\left(p_{h,\ell}\right)\right]-2\sum_{i=h,\ell}\beta_i^b\lambda_i\left(1-\lambda_i\right)^2\delta\left(p_{h,\ell}\right)^2,$$

[31] Note that in the Leontief case $\delta''\left(p^r\right)=0$ and $\Omega'\left(p^r\right)=C_Z'\left(p^r\right)$, because $Y_Z$ does not vary with $p$. Under these circumstances

$$-\frac{p^r\Omega''\left(p^r\right)}{\Omega'\left(p^r\right)}=-\frac{p^rC_Z''\left(p^r\right)}{C_Z'\left(p^r\right)},$$

which is the elasticity of the *slope* of the demand function. If the demand function is concave, then $C_Z''\left(p^r\right)<0$ and this expression is negative.

and when only the more-skilled workers identify with the nation, i.e., $r = (1, 0)$, we obtain

$$\left.\frac{\partial U^{(1,0)}(p_h, q; \pi, \pi)}{\partial \pi}\right|_{\pi=1} = \left(1 + \alpha + \alpha^b \lambda_h\right)\left[Y_X(p_h) + qY_Z(p_h)\right] - 2\beta_h^b \lambda_h (1 - \lambda_h)^2 \delta(p_h)^2 .$$

Evidently, technical change raises aggregate income, which contributes to welfare, but it increases the cognitive dissonance arising due to differences in material well-being. The change in national income is given by

$$\left[Y_X(p) + qY_Z(p)\right]' = Y_X'(p) + qY_Z'(p) = -(p - q) Y_Z'(p),$$

because $Y_X'(p) + pY_Z'(p) = 0$. Therefore $\left[Y_X(p) + qY_Z(p)\right]'$ is decreasing in $p$ for $p > q$. It follows that, for the case of $p_h > p_{h,\ell}$

$$Y_X(p_h) + qY_Z(p_h) < Y_X(p_{h,\ell}) + qY_Z(p_{h,\ell}),$$

and since $\delta(p)$ is declining in $p$,

$$\delta(p_h) < \delta(p_{h,\ell}).$$

In these circumstances,

$$\left(1 + \alpha + \alpha^b\right)\left[Y_X(p_{h,\ell}) + qY_Z(p_{h,\ell})\right] - 2\sum_{i=h,\ell} \beta_i^b \lambda_i (1 - \lambda_i)^2 \delta(p_{h,\ell})^2$$

can be larger or smaller than

$$\left(1 + \alpha + \alpha^b \lambda_h\right)\left[Y_X(p_h) + qY_Z(p_h)\right] - 2\beta_h^b \lambda_h (1 - \lambda_h)^2 \delta(p_h)^2 .$$

In situations in which it is smaller and $U^{(1,1)}(p_{h,\ell}, q; 1, 1) \simeq U^{(1,0)}(p_h, q; 1, 1)$, Hicks-neutral technical change will reduce the advantage of the $r = (1, 1)$ regime and thereby generate a populist revolution. In other words, a necessary and sufficient condition for Hicks-neutral technical change to lead to a populist revolutions is for $U^{(1,1)}(p_{h,\ell}, q; 1, 1)$ to be slightly greater than $U^{(1,0)}(p_h, q; 1, 1)$ and for the following inequality to be satisfied:

$$\begin{aligned}\left(1 + \alpha + \alpha^b\right)\left[Y_X(p_{h,\ell}) + qY_Z(p_{h,\ell})\right] - 2\sum_{i=h,\ell} \beta_i^b \lambda_i (1 - \lambda_i)^2 \delta(p_{h,\ell})^2 \\ < \left(1 + \alpha + \alpha^b \lambda_h\right)\left[Y_X(p_h) + qY_Z(p_h)\right] - 2\beta_h^b \lambda_h (1 - \lambda_h)^2 \delta(p_h)^2 .\end{aligned}$$

In general, we do not know whether aggregate (material-cum-psychosocial) welfare rises or falls with $\pi$.

Next consider the case of skill-augmenting technical change. In this case,

$$\delta(p; \pi, 1) = \pi w_h(p) - w_\ell(p).$$

Also, $Y_X(p;\pi,1)$ is increasing in $\pi$ and $Y_Z(p;\pi,1)$ is declining in $\pi$, due to the Rybczynski effect (an increase in $\pi$ acts like an increase in the endowment of more-skilled workers). Moreover, we have

$$\begin{aligned} Y(p;\pi,1) &= \lambda_h \pi w_h(p) + \lambda_\ell w_\ell(p), \\ Y'(p;\pi,1) &= Y_Z(p;\pi,1) = \lambda_h \pi w_h'(p) + \lambda_\ell w_\ell'(p), \\ Y_{Z,\pi}(p;\pi,1) &= \lambda_h w_h'(p). \end{aligned}$$

Then, (17) implies

$$\left.\frac{\partial U^r(p^r,q;\pi,1)}{\partial \pi}\right|_{\pi=1} = \lambda_h \left(1+\alpha+\alpha^b \sum_{i=h,\ell} \lambda_i \mathbb{I}_i^{b,r}\right)\left[w_h(p^r) - (p^r-q) w_h'(p^r)\right] - 2\sum_{i=h,\ell} \mathbb{I}_i^{b,r} \beta_i^b \lambda_i (1-\lambda_i)^2 \delta(p^r) w_h(p^r).$$

Next note that

$$\left[w_h(p) - (p-q) w_h'(p)\right]' = -(p-q) w_h''(p).$$

This is negative when the production functions are Cobb-Douglas case and zero when both sectors have Leontief technologies. Meanwhile, $\delta(p) w_h(p)$ is declining in $p$. Now consider the case with Leontief technologies. If $p_h > p_{h,\ell}$, then

$$\sum_{i=h,\ell} \mathbb{I}_i^{b,r} \beta_i^b \lambda_i (1-\lambda_i)^2 \delta(p_{h,\ell}) w_h(p_{h,\ell}) > \beta_h^{b,r} \lambda_h (1-\lambda_h)^2 \delta(p_h) w_h(p_h).$$

In this case, aggregate material-cum-psychosocial welfare declines with $\pi$ in both regimes $r = (1,1)$ and $r = (1,0)$, but it declines more in the former, leading to a populist revolution when $U^{(1,1)}(p_{h,\ell},q;1,1)$ is only slightly larger than $U^{(1,0)}(p_h,q;1,1)$.

Finally consider changes in the terms of trade. From (17), we have

$$\frac{\partial U^r(p^r,q;1,1)}{\partial q} = -\left(1+\alpha+\alpha^b \sum_{i=h,\ell} \lambda_i \mathbb{I}_i^{b,r}\right) \Omega(p^r).$$

Due to the Envelope Theorem, this represents the full impact of $q$ on aggregate welfare in regime $r$. Evidently, a deterioration of the terms of trade reduces aggregate material-cum-psychosocial welfare. When all individuals identify with the nation, welfare declines by $\left(1+\alpha+\alpha^b\right)\Omega(p_{h,\ell})$ whereas when only the more-skilled workers identify broadly, it declines by $\left(1+\alpha+\alpha^b\lambda_h\right)\Omega(p_h)$. If $p_h > p_{h,\ell}$, the former must larger, because imports decline with $p$. It follows that, when when $U^{(1,1)}(p_{h,\ell},q;1,1)$ is only slightly larger than $U^{(1,0)}(p_h,q;1,1)$, a deterioration of the terms of trade leads to a populist revolution .

It remains to derive the conditions under which $p_h > p_{h,\ell}$. To this end, consider the first-order

condition (18) in regimes $r = (1, 1)$,

$$U_p^{(1,1)}(p_{h,\ell}, q) = \left(1 + \alpha + \alpha^b\right)(p_{h,\ell} - q)\,\Omega'(p_{h,\ell}) - 2\sum_{i=h,\ell}\beta_i^b\lambda_i(1-\lambda_i)^2\,\delta(p_{h,\ell})\,\delta'(p_{h,\ell}) = 0, \quad (28)$$

and the value of $U_p^{(1,0)}(p, q)$ evaluated at $p_{h,\ell}$,

$$U_p^{(1,0)}(p_{h,\ell}, q) = \left(1 + \alpha + \alpha^b\lambda_h\right)(p_{h,\ell} - q)\,\Omega'(p_{h,\ell}) - 2\beta_h^b\lambda_h(1-\lambda_h)^2\,\delta(p_{h,\ell})\,\delta'(p_{h,\ell}). \quad (29)$$

Substituting (28) into (29) implies that $U_p^{(1,0)}(p_{h,\ell}, q) > 0$ if and only if

$$\beta_h^b\alpha^b(1-\lambda_h)^2 > \beta_\ell^b\left(1 + \alpha + \alpha^b\lambda_h\right)\lambda_h, \quad (30)$$

which is condition (12) in the text. This condition is necessary and sufficient for the peak of the $r_{h,\ell}$ curve in Figure 2 to be to the left of the peak of $r_h$.

Note that (29) also implies that the peak of the $r_{h,\ell}$ curve is to the right of the peak of the $r_\ell$ curve. To see why, suppose that the peak of the $r_{h,\ell}$ curve were to the left of the peak of the $r_\ell$ curve and therefore $U_p^{(0,1)}(p_{h,\ell}, q) > 0$. Then (28) together with

$$U_p^{(0,1)}(p_{h,\ell}, q) = \left(1 + \alpha + \alpha^b\lambda_\ell\right)(p_{h,\ell} - q)\,\Omega'(p_{h,\ell}) - 2\beta_\ell^b\lambda_\ell(1-\lambda_\ell)^2\,\delta(p_{h,\ell})\,\delta'(p_{h,\ell})$$

would imply that $U_p^{(0,1)}(p_{h,\ell}, q) > 0$ if and only if

$$\beta_\ell^b\alpha^b(1-\lambda_\ell)^2 > \beta_h^b\left(1 + \alpha + \alpha^b\lambda_\ell\right)\lambda_\ell.$$

Together with (30) this inequality would imply

$$\frac{\alpha^b(1-\lambda_\ell)^2}{\left(1 + \alpha + \alpha^b\lambda_h\right)\lambda_h} > \frac{\left(1 + \alpha + \alpha^b\lambda_\ell\right)\lambda_\ell}{\alpha^b(1-\lambda_h)^2},$$

or

$$\begin{aligned} 0 &< \alpha^b(1-\lambda_\ell)^2\,\alpha^b(1-\lambda_h)^2 - \left(1 + \alpha + \alpha^b\lambda_h\right)\lambda_h\left(1 + \alpha + \alpha^b\lambda_\ell\right)\lambda_\ell \\ &= -(1+\alpha)\,\lambda_h(1-\lambda_h)\left(1 + \alpha + \alpha^b\right), \end{aligned}$$

which is a contradiction. It follows that $U_p^{(0,1)}(p_{h,\ell}, q) < 0$ when (30) is satisfied, the peak of the $r_\ell$ curve is to the left of the peak of the $r_{h,\ell}$ curve, so tariffs are higher when both groups identify broadly than when only the less-skilled workers do so.

Now suppose that the working class bears an extra cost from *envy* when they repudiate the elite. This is consistent with research in social psychology that suggest that members of an "in-group"

feel jealousy toward those in the "out-group" who enjoy more material welfare. Suppose that when the less-skilled workers do not identify broadly with the nation (a group that includes the elites) they suffer disutility from envy of the elites of $\lambda_h \gamma \left(v_h - v_\ell\right)^2$, $\gamma > 0$, which is proportional to the number of elites that inspire jealousy and to the square of their shortfall in material well-being. In such circumstances, the marginal utility from narrow identification (29) is replaced with

$$U_p^{(1,0)}\left(p_{h,\ell}, q\right) = \left(1 + \alpha + \alpha^b \lambda_h\right)\left(p_{h,\ell} - q\right)\Omega'\left(p_{h,\ell}\right) - 2\beta_h^b \lambda_h \left(1 - \lambda_h\right)^2 \delta\left(p_{h,\ell}\right)\delta'\left(p_{h,\ell}\right) - \left(1 - \lambda_h\right)\lambda_h \gamma \delta\left(p_{h,\ell}\right)\delta'\left(p_{h,\ell}\right).$$

Substituting (28) into this formula implies that $U_p^{(1,0)}\left(p_{h,\ell}, q\right) > 0$ if and only if

$$\beta_h^b \alpha^b \left(1 - \lambda_h\right)^2 + \gamma\left(1 + \alpha + \alpha^b\right) > \beta_\ell^b \left(1 + \alpha + \alpha^b \lambda_h\right)\lambda_h.$$

For $\gamma > 0$, this inequality is satisfied for a larger range of $\lambda_h$ than (30).

SECTION 6

We turn to the case in which the parties compete for the favor of the median voter. We first consider the impact of technical change on the rate of protection. Using the factor-augmenting coefficients $\pi_h$ and $\pi_\ell$ and (13), the marginal impact of an increase in $p$ on $U^\mu(\cdot)$ can be expressed as

$$\begin{aligned} U_p^\mu\left(p, q; \pi_h, \pi_\ell\right) &= \left(1 + \alpha + \alpha^b \mathbb{I}_\ell^{b,\mu}\right)\left(p - q\right)\Omega'\left(p; \pi_h, \pi_\ell\right) \\ &\quad -\lambda_h\left[1 + \alpha + 2\beta_\ell^b \mathbb{I}_\ell^{b,\mu}\lambda_h \delta\left(p; \pi_h, \pi_\ell\right)\right]\delta'\left(p; \pi_h, \pi_\ell\right) \ . \end{aligned} \tag{31}$$

Initially, $\pi_s = \pi_u = 1$, and the equilibrium domestic price $p^\mu$ is characterized by the first-order condition,

$$\begin{aligned} U_p^\mu\left(p^\mu, q; 1, 1\right) &= \left(1 + \alpha + \alpha^b \mathbb{I}_\ell^{b,\mu}\right)\left(p^\mu - q\right)\Omega'\left(p^\mu; 1, 1\right) \\ &\quad -\lambda_h\left[1 + \alpha + 2\beta_\ell^b \mathbb{I}_\ell^{b,\mu}\lambda_h \delta\left(p^\mu; 1, 1\right)\right]\delta'\left(p^\mu; 1, 1\right) = 0 \ . \end{aligned} \tag{32}$$

For technical change of the form

$$\begin{aligned} d\pi_h &= \rho d\pi, \\ d\pi_\ell &= d\pi > 0 \ , \end{aligned}$$

(31) implies

$$\begin{aligned}\texttt{sign}\frac{\partial p^{\mu}}{\partial \pi} &= \texttt{sign}\left[\frac{\partial}{\partial \pi_{\ell}}U_{p}^{\mu}\left(p^{\mu},q;\pi_{h},\pi_{\ell}\right)+\rho\frac{\partial}{\partial \pi_{h}}U_{p}^{\mu}\left(p^{\mu},q;\pi_{h},\pi_{\ell}\right)\right]_{\pi_{h}=\pi_{\ell}=1} \\ &= \texttt{sign}\left[\sum_{i=h,\ell}\frac{\partial}{\partial \pi_{i}}U_{p}^{\mu}\left(p^{\mu},q;\pi_{h},\pi_{\ell}\right)+\left(\rho-1\right)\frac{\partial}{\partial \pi_{h}}U_{p}^{\mu}\left(p^{\mu},q;\pi_{h},\pi_{\ell}\right)\right]_{\pi_{h}=\pi_{\ell}=1}.\end{aligned} \tag{33}$$

From (31) and (15) we obtain

$$\begin{aligned}\left[\sum_{i=h,\ell}\frac{\partial}{\partial \pi_{i}}U_{p}^{\mu}\left(p^{\mu},q;\pi_{h},\pi_{\ell}\right)\right]_{\pi_{h}=\pi_{\ell}=1} &= -\left(1+\alpha+\alpha^{b}\mathbb{I}_{\ell}^{b,\mu}\right)\left(p^{\mu}-q\right)Y_{Z}'\left(p^{\mu};1,1\right) \\ &\quad -\lambda_{h}\left[1+\alpha+4\beta_{\ell}^{b}\mathbb{I}_{\ell}^{b,\mu}\lambda_{h}\delta\left(p^{\mu};1,1\right)\right]\delta'\left(p^{\mu};1,1\right).\end{aligned}$$

Subtracting (32) from this equation yields

$$\begin{aligned}&\left[\sum_{i=h,\ell}\frac{\partial}{\partial \pi_{i}}U_{p}^{\mu}\left(p^{\mu},q;\pi_{h},\pi_{\ell}\right)\right]_{\pi_{h}=\pi_{\ell}=1} \\ &\qquad = -\left(1+\alpha+\alpha^{b}\mathbb{I}_{\ell}^{b,\mu}\right)\left(p^{\mu}-q\right)C_{Z}'\left(p^{\mu}\right)-\lambda_{h}2\beta_{\ell}^{b}\mathbb{I}_{\ell}^{b,\mu}\lambda_{h}\delta\left(p^{\mu};1,1\right)\delta'\left(p^{\mu};1,1\right)>0\ .\end{aligned}$$

It follows that Hicks-neutral technical change must increase the equilibrium tariff rate. Next, use (31) and (15) to obtain

$$\begin{aligned}\frac{\partial}{\partial \pi_{h}}U_{p}^{\mu}\left(p^{\mu},q;\pi_{h},\pi_{\ell}\right)\Big|_{\pi_{h}=\pi_{\ell}=1} &= -\left(1+\alpha+\alpha^{b}\mathbb{I}_{\ell}^{b,\mu}\right)\left(p^{\mu}-q\right)w_{h}''\left(p^{\mu}\right)\lambda_{h} \\ &\quad -\lambda_{h}\left[1+\alpha+2\beta_{\ell}^{b}\mathbb{I}_{\ell}^{b,\mu}\lambda_{h}\delta\left(p^{\mu};1,1\right)\right]w_{h}'\left(p^{\mu}\right)-\lambda_{h}2\beta_{\ell}^{b}\mathbb{I}_{\ell}^{b,\mu}\lambda_{h}w_{h}\left(p^{\mu}\right)\delta'\left(p^{\mu};1,1\right).\end{aligned}$$

The right-hand side is positive for $w_{h}''\left(p^{\mu}\right)\leq 0$. In such circumstances, (purely) skilled-biased technical change raises the rate of protection. And, like in the case in which the trade policy maximizes utilitarian welfare, skill-augmenting technical change can generate an increase in the tariff rate even when $w_{h}''\left(p^{\mu}\right)>0$.

We now consider the impact of an improvement in the terms of trade, $dq<0$, on the rate of protection preferred by the median voter. The first-order condition $U_{p}^{\mu}\left(p^{\mu},q\right)=0$ implies

$$\frac{\partial t^{\mu}}{\partial q}\times\frac{q}{1+t^{\mu}}=-\frac{1}{U_{pp}^{\mu}\left[\left(1+t^{\mu}\right)q,q\right]}\left[U_{pp}^{\mu}\left[\left(1+t^{\mu}\right)q,q\right]+\frac{U_{pq}^{\mu}\left[\left(1+t^{\mu}\right)q,q\right]}{1+t^{\mu}}\right],$$

where $U_{p}^{\mu}\left[\left(1+t^{\mu}\right)q,q\right]$ is the derivative of $U_{p}^{\mu}\left[\left(1+t^{\mu}\right)q,q\right]$ with respect to the second argument. Note, from (14), that

$$U_{pq}^{\mu}\left[\left(1+t^{\mu}\right)q,q\right]=-\left(1+\alpha+\alpha^{b}\mathbb{I}_{\ell}^{b,\mu}\right)\Omega'\left(p^{\mu}\right),$$

which implies

$$\frac{\partial t^{\mu}}{\partial q} \times \frac{q}{1+t^{\mu}} = -1 + \frac{1+\alpha+\alpha^{b}\mathbb{I}_{\ell}^{b,\mu}}{p^{\mu}U_{pp}^{\mu}\left(p^{\mu},q\right)} q\Omega'\left(p^{\mu}\right) \ .$$

This expression is negative if and only if

$$\left(1+\alpha+\alpha^{b}\mathbb{I}_{\ell}^{b,\mu}\right) q\Omega'\left(p^{\mu}\right) > p^{\mu}U_{pp}^{\mu}\left(p^{\mu},q\right) \ .$$

Using (14) to compute $U_{pp}^{\mu}(\cdot)$, this inequality is equivalent to

$$\begin{aligned}\left(1+\alpha+\alpha^{b}\mathbb{I}_{\ell}^{b,\mu}\right) q\Omega'\left(p^{\mu}\right) > p^{\mu}\left(1+\alpha+\alpha^{b}\mathbb{I}_{\ell}^{b,\mu}\right)\left[\Omega'\left(p^{\mu}\right)+\left(p^{\mu}-q\right)\Omega''\left(p^{\mu}\right)\right] \\ - p^{\mu}\lambda_{h}\left[1+\alpha+2\beta_{\ell}^{b}\mathbb{I}_{\ell}^{b,\mu}\lambda_{h}\delta\left(p^{\mu}\right)\right]\delta''\left(p^{\mu}\right) - p^{\mu}\lambda_{h}2\beta_{\ell}^{b}\mathbb{I}_{\ell}^{b,\mu}\lambda_{h}\left[\delta'\left(p^{\mu}\right)\right]^{2}.\end{aligned}$$

Substituting the first-order condition $U_{p}^{\mu}\left(p^{\mu},q\right)=0$ and (14) into the inequality then yields

$$-\frac{p^{\mu}\Omega''\left(p^{\mu}\right)}{\Omega'\left(p^{\mu}\right)} + \frac{2\beta_{\ell}^{b}\mathbb{I}_{\ell}^{b,\mu}\lambda_{h}\delta\left(p^{\mu}\right)}{1+\alpha+2\beta_{\ell}^{b}\mathbb{I}_{\ell}^{b,\mu}\lambda_{h}\delta\left(p^{\mu}\right)}\frac{p^{\mu}\delta'\left(p^{\mu}\right)}{\delta\left(p^{\mu}\right)} + \frac{p^{\mu}\delta''\left(p^{\mu}\right)}{\delta'\left(p^{\mu}\right)} < 1.$$

It follows that an improvement in the terms of trade raises the tariff preferred by the median voter if and only if the last inequality is satisfied. This condition is very similar to condition (27), the difference being only the weight in front of $p^{\mu}\delta'\left(p^{\mu}\right)/\delta\left(p^{\mu}\right)$, which is smaller here. Because $p^{\mu}\delta'\left(p^{\mu}\right)/\delta\left(p^{\mu}\right) < 0$, the condition for a rise in the tariff is less likely to be satisfied when the median voter's preferences determine the policy choice.

### Ethnic Identities

We distinguish two ethnicities in the population, an ethnic majority, $M$, and an ethnic minority, $m$. Although every individual bears one ethnicity or the other, individuals may or may not choose to identify with their ethnic group, depending on the composition of their group in socioeconomic terms. We introduce a third skill level to our model of Section 2 and designate the three skills by $h$ (high), $\ell$ (medium) and $k$ (low). Having a third skill level gives us greater flexibility in aligning ethnicities and socioeconomic standing with interests in protectionist policies.

The economy now produces three goods. Two goods are tradable: an export good, $X$, and an import-competing good, $Z$, are produced with constant returns to scale by $h$ and $\ell$, much as before. The export good uses high-skilled labor relatively intensively, whereas the import-competing good uses middle-skilled labor relatively intensively. The third good, $S$, is a nontraded service. It is produced by low-skilled workers, with one unit of output per unit of labor. Let $p_S$ be the price of the service. Low-skilled workers earn the competitive wage, $w_k = p_S$.

All individuals have quasi–linear preferences and devote residual income after optimal spending on the import good and the nontraded service to the export good. We represent the material

well-being of an individual in skill group $i$ by

$$\nu_i\left(p,q,p_S\right)=w_i\left(p\right)+\tilde{T}\left(p,q,p_S\right)+\tilde{\Gamma}\left(p,p_S\right)\ \ ,\ i=h,\ell,k, \tag{34}$$

where $\tilde{\Gamma}\left(p,p_S\right)$ is consumer surplus from combined purchases of the import good and the nontraded service and where tariff revenues $\tilde{T}\left(\cdot\right)$ now depend on the price of the nontraded service, because demand for the import good $Z$ depends on this price. The consumer surplus function is given by

$$\tilde{\Gamma}\left(p,p_S\right)=\max_{c_Z,c_S}\ v\left(c_Z,c_S\right)-pc_Z-p_Sc_S\ , \tag{35}$$

where $v\left(\cdot\right)$ is the surplus from devoting spending to the import good and the nontraded service. The solution to this problem generates demand functions $\tilde{C}_Z\left(p,p_S\right)$ and $\tilde{C}_S\left(p,p_S\right)$ that do not depend on income as long as the individual consumes all three products. The demand function $\tilde{C}_Z\left(p,p_S\right)$ is decreasing in $p$, and it is also decreasing in $p_S$ if and only if $v_{ZS}\left(c_Z,c_S\right)>0$, where

$$v_{ZS}\left(c_Z,c_S\right)=\frac{\partial^2 v\left(c_Z,c_S\right)}{\partial c_Z\partial c_S}.$$

Similarly, $\tilde{C}_S\left(p,p_S\right)$ is declining in $p_S$, and it is also declining in $p$ if and only if $v_{ZS}\left(c_Z,c_S\right)>0$. The product-market clearing condition for services is $\tilde{C}_S\left(p,p_S\right)=\lambda_S$. This implies that $p_S$ is a function of $p$—which we write as $p_S\left(p\right)$—and that $p_S$ is decreasing in $p$ if and only if $v_{ZS}\left(c_Z,c_S\right)>0$; i.e., if and only if good $Z$ and service $S$ are complements in consumption. Since $w_k\left(p\right)=p_S\left(p\right)$, the wage rate of low-skilled workers also is decreasing in $p$ if and only if $v_{ZS}\left(c_Z,c_S\right)>0$.

We allow for a rich pattern of potential social identities. In regime $r$, individuals with ethnicity $j$ and skill level $i$ may identify with others of their same ethnicity ($\mathbb{I}_i^{j,j,r}=1$) or not ($\mathbb{I}_i^{j,j,r}=0$). These same individuals may identify with others in their same social class ($\mathbb{I}_{i,i}^{j,r}=1$) or not ($\mathbb{I}_{i,i}^{j,r}=0$). And they may identify with a broad group of nationals ($\mathbb{I}_i^{j,b,r}=1$) or not ($\mathbb{I}_i^{j,b,r}=0$).[32] We take the psychological benefit to an individual from identifying with any group to be a linearly increasing function of the material well-being of the prototypical member of the group, where the prototype is the average among individuals with the specified characteristics. That is, the benefit from identifying with ethnic group $j$ is $\alpha^e\left(\sum_i\lambda_i^j\nu_i\right)/\lambda^j$, where $\alpha^e$ is a constant that is common across ethnicities, $\lambda_i^j$ is the fraction of individuals with skill level $i$ and ethnicity $j$, and $\lambda^j$ is the fraction of individuals with ethnicity $j$ in the total population.[33] Similarly, the benefit from identifying with social class $i$ is $\alpha\nu_i$, where $\alpha$ is another constant, possibly different from $\alpha^e$. Finally, the benefit to

[32] It is also possible that the sociocultural environment affords as well the opportunity for individuals to identify with a narrow group defined by both class *and* ethnicity. For example, in the U.S. context, much has been made of late about political trends driven by the "white working class." In our model, the group of individuals with skill level $i$ and ethnicity $j$ is homogeneous, so if social identity groups defined by a given combination of class and ethnicity exist and if the status associated with each of them is positive, then everyone would choose to identify with theirs. This would affect the level of trade protection in the initial equilibrium, but would not affect the predicted response to any narrowing of self-identification due to growing ethnic or racial sensitivies.

[33] Note that all individuals with skill level $i$ achieve the same level of material well-being, independent of their ethnicity. Thus, $\nu_i^M=\nu_i^m=\nu_i$ for $i=h,\ell,k$.

any individual from identifying broadly with the nation is $\alpha^b \sum_i \lambda_i \nu_i$.

Dissonance costs now have two components. The first component is proportional to the squared distance in the space of material well-being, as before. For individuals with skill $i$ who identify with some group $g$, this cost is $\beta \left(\nu_i - \bar{\nu}^g\right)^2$, where $\bar{\nu}^g$ is the average material well-being among those with the characteristics associated with group $g$. The second component is proportional to the squared distance in "ethnic space." Without loss of generality, we assign individuals in the majority an ethnic value of one ($E^M = 1$) and individuals in the minority an ethnic value of zero ($E^m = 0$), so that the distance between them is one. The second component of psychological cost for individuals with ethnicity $j$ who identify with some group $g$ is $\beta^e \left(E^j - \bar{E}^g\right)^2$, where $\bar{E}^g$ is the average ethnicity among those in group $g$. Notice that this cost component is zero when an individual identifies with a group comprised only of others that share the same ethnicity as she.

We are interested in the effects of increases in $\beta^e$ on the equilibrium trade policy. Arguably, $\beta^e$ has risen in recent years due in part to the efforts by some politicians to highlight and amplify the salience of ethnic and racial differences in political discourse.

The political objective, $U^r(p, q)$, now is the sum of material and psychosocial components of utility across individuals with all possible combinations of skill level and ethnicity. Aggregate material utility equals GDP at domestic prices plus tariff revenue plus consumer surplus. The status benefits from identifying broadly with the nation are proportional to this for all individuals that opt to do so. The cost combines elements that reflect distance from the average wage in the population and distance from the average ethnicity. For those individuals that identify with their skill group there is an additional psychological gain that is proportional to the sum of that group's wage, tariff revenue and consumer surplus and a psychological cost that depends on the ethnic composition of their skill group. For those that identify with their ethnic group, the status benefit reflects the average material welfare of those with the same ethnicity and the cost reflects the distance of the individual from the ethnic group's average wage.[34]

Substituting $p_S(p)$ into $\tilde{\Gamma}(p, p_S)$ yields the consumer surplus function,

$$\Gamma(p) \equiv \tilde{\Gamma}\left[p, p_S(p)\right],$$

from which we obtain

$$\Gamma'(p) = -C_Z(p) - C_S(p)\, p_S'(p),$$

where

$$\begin{aligned} C_Z(p) &\equiv \tilde{C}_Z\left[p, p_S(p)\right], \\ C_S(p) &\equiv \tilde{C}_S\left[p, p_S(p)\right]. \end{aligned}$$

[34] If individuals can identify with others that share the same combination of skill and ethnicity as themselves, they will enjoy an additional psychological benefit that is proportional to the material well-being of their social class. Because these narrow groups are homogeneous in skill and ethnicity, there would be no offsetting dissonance cost.

Using the price function for services, we also obtain

$$T(p,q) = \tilde{T}[p,q,p_S(p)] = (p-q)\,\Omega(p),$$

where

$$\Omega(p) = C_Z(p) - Y_Z(p) \ .$$

It follows that

$$\nu_i = w_i(p) + T(p,q) + \Gamma(p) \quad \text{for } i = h,\ell,k.$$

Finally, GDP can be represented by

$$Y(p) = \sum_{i=h,\ell,k} \lambda_i w_i(p) \equiv Y_X(p) + pY_Z(p) + p_S(p)\,\lambda_k.$$

This implies

$$Y'(p) = \sum_{i=h,\ell,k} \lambda_i w_i'(p) \equiv Y_Z(p) + p_S'(p)\,\lambda_k,$$

because $Y_X'(p) + pY_Z'(p) = 0$. It follows that aggregate material well-being, $\sum_{i=h,\ell,k} \lambda_i \nu_i$, equals

$$Y(p) + T(p,q) + \Gamma(p),$$

and the partial with respect to the domestic price is

$$\begin{aligned} Y'(p) + T_p(p,q) + \Gamma'(p) &= Y_Z(p) + p_S'(p)\,\lambda_k + \Omega(p) + (p-q)\,\Omega'(p) + \Gamma'(p) \\ &= (p-q)\,\Omega'(p), \end{aligned}$$

which is similar to the case without the service sector.

The aggregate utility function $U^r(p,q)$ consists of the sum of individuals' material well-being plus the sum of the psychosocial components of individual welfare that derive from identification

choices. That is,

$$
\begin{aligned}
&U^r(p,q) = Y(p) + T(p,q) + \Gamma(p) \\
&+ \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_{i,i}^{j,r} \left\{ A_{i,i}^j + \alpha \left[ w_i(p) + T(p,q) + \Gamma(p) \right] - \beta^e \left( E^j - \sum_{\eta=M,m} \frac{\lambda_i^\eta}{\lambda_i} E^\eta \right)^2 \right\} \\
&+ \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,j,r} \left\{ A_i^{j,j} + \alpha^e \left[ \sum_{\iota=h,\ell,k} \frac{\lambda_\iota^j}{\lambda^j} w_\iota(p) + T(p,q) + \Gamma(p) \right] - \beta \left[ w_i(p) - \sum_{\iota=h,\ell,k} \frac{\lambda_\iota^j}{\lambda^j} w_\iota(p) \right]^2 \right\} \\
&+ \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,b,r} \left\{ A_i^{i,b} + \alpha^b \left[ Y(p) + T(p,q) + \Gamma(p) \right] \right\} \\
&- \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,b,r} \left\{ \beta \left[ w_i(p) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota(p) \right]^2 + \beta^e \left( E^j - \sum_{\eta=M,m} \lambda^\eta E^\eta \right)^2 \right\}.
\end{aligned}
$$

The first line on the right-hand side of this equation represents aggregate material well-being. The second line represents the contribution to aggregate welfare of the identification of various individuals with their own social class. An individual with skill level $i$ and ethnicity $j$ identifies with her social class if and only if

$$
A_{i,i}^j + \alpha \left[ w_i(p) + T(p,q) + \Gamma(p) \right] - \beta^e \left( E^j - \sum_{\eta=M,m} \frac{\lambda_i^\eta}{\lambda_i} E^\eta \right)^2 \geq 0;
$$

that is, if and only if the status provided by the social group is larger than the dissonance cost. Inasmuch as each worker has the same material well being as every other member of her social class, the dissonance cost arises solely from the fact that the groups exhibit ethnic diversity. With our normalization of $E^M = 1$ and $E^m = 0$, we obtain

$$
\beta^e \left( E^j - \sum_{\eta=M,m} \frac{\lambda_i^\eta}{\lambda_i} E^\eta \right)^2 = \beta^e \left( \frac{\lambda_i^{-j}}{\lambda_i} \right)^2,
$$

where $\lambda_i^{-j}$ is the fraction of individuals with skill $i$ who are not of ethnicity $j$. A higher value of $\beta^e$ raises the cost of identification in a group of mixed ethnicities.[35]

The third line in the expression for $U^r(p,q)$ represents the contribution to aggregate welfare of the identification of various individuals with others that share their ethnicity. An individual with skill level $i$ and ethnicity $j$ identifies with her own ethnic group if and only if

$$
A_i^{j,j} + \alpha^e \left[ \sum_{\iota=h,\ell,k} \frac{\lambda_\iota^j}{\lambda^j} w_\iota(p) + T(p,q) + \Gamma(p) \right] - \beta \left[ w_i(p) - \sum_{\iota=h,\ell,k} \frac{\lambda_\iota^j}{\lambda^j} w_\iota(p) \right]^2 \geq 0.
$$

[35] We assume as before that no individual identifies with a social class different from her own, because, the dissonance costs are too great.

Here, the cost of identification depends only on the difference between the individual's material well-being and the average for the group, because each individual shares the same ethnicity with the prototypical member of her ethnic group. We assume that no individual identifies with an ethnic group that is not her own.

The fourth line in the expression for $U^r(p,q)$ represents the positive contribution to aggregate welfare of the status that derives from identifying with the nation, while the fifth line represents the dissonance cost of such identification. An individual of ethnicity $j$ with skill level $i$ identifies with the broad nation if and only if

$$A_i^{i,b} + \alpha^b \left[ Y(p) + T(p,q) + \Gamma(p) \right] - \beta \left[ w_i(p) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota(p) \right]^2 - \beta^e \left( E^j - \sum_{\mu=M,m} \lambda^\mu E^\mu \right)^2 \geq 0.$$

Here the cost of identification depends both on the distance of the individual's material well-being from the average in the country and her distance from the average ethnicity value in the country. The latter is

$$\beta^e \left( E^j - \sum_{\eta=M,m} \lambda^\eta E^\eta \right)^2 = \beta^e \left( \lambda^{-j} \right)^2.$$

For a given identification regime $r$, the marginal contribution to aggregate welfare of an increase in $p$ is

$$\begin{aligned}
& U_p^r(p,q) \qquad (36)\\
= & \left( 1 + \alpha \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_{i,i}^{j,r} + \alpha^e \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,j,r} + \alpha^b \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,b,r} \right) (p-q)\,\Omega'(p)\\
& + \alpha \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_{i,i}^{j,r} \left[ w_i'(p) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota'(p) \right]\\
& + \alpha^e \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,j,r} \left[ \sum_{\iota=h,\ell,k} \frac{\lambda_\iota^j}{\lambda^j} w_\iota'(p) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota'(p) \right]\\
& - 2\beta \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,j,r} \left[ w_i(p) - \sum_{\iota=h,\ell,k} \frac{\lambda_\iota^j}{\lambda^j} w_\iota(p) \right] \left[ w_i'(p) - \sum_{\iota=h,\ell,k} \frac{\lambda_\iota^j}{\lambda^j} w_\iota'(p) \right]\\
& - 2\beta \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,b,r} \left[ w_i(p) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota(p) \right] \left[ w_i'(p) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota'(p) \right].
\end{aligned}$$

Evidently, $U_p^r(p,q)$ does not depend on the distance in ethnic space. Therefore, changes in $\beta^e$ that do not induce changes in identification have no effect on trade policy. This is stated in the following

**Proposition 5** *Suppose that a change in $\beta^e$ does not induce a change in identification regime. Then the equilibrium tariff rate is not affected.*

Now consider an equilibrium with some identification regime $r$ in which individuals with skill level $i$ and ethnicity $j$ identify with the nation. Let $p^r$ be the associated domestic relative price of the import good. Assuming an interior solution, this price is characterized by

$$U_p^r\left(p^r, q\right) = 0.$$

We do not restrict any of the remaining components of the identification regime. Thus, for example, other persons may or may not identify with the nation and may or may not identify with their own ethnic groups. But we do assume that $p^r > q$, i.e., that the initial equilibrium has a positive tariff.

Now suppose that a change in either $\beta^e$ or $A_i^{j,b}$ induces individuals with skill $i$ and ethnicity $j$ to stop identifying with the broad nation, but that other identification choices remain as before. Let $r = r_i^{j,-b}$ represent the new identification regime and let $p_i^{j,-b}$ represent the new domestic price of the import good. Then $p_i^{j,-b} > p^r$ if and only if

$$U_p^{r_i^{j,-b}}\left(p^r, q\right) - U_p^r\left(p^r, q\right) = U_p^{r_i^{j,-b}}\left(p^r, q\right) > 0.$$

But (36) yields

$$\begin{aligned} U_p^{r_i^{j,-b}}\left(p^r, q\right) - U_p^r\left(p^r, q\right) = & -\alpha^b \lambda_i^j \left(p^r - q\right) \Omega'\left(p^r\right) \\ & + 2\beta \lambda_i^j \left[w_i\left(p^r\right) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota\left(p^r\right)\right] \left[w_i'\left(p^r\right) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota'\left(p^r\right)\right]. \end{aligned}$$

The first term on the right-hand side of this equation is positive, implying that $p_i^{j,-b} > p^r$ if

$$\left[w_i\left(p^r\right) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota\left(p^r\right)\right] \left[w_i'\left(p^r\right) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota'\left(p^r\right)\right] \geq 0. \tag{37}$$

Note that, by assumption, $w_h\left(p^r\right) > w_\ell\left(p^r\right) > w_k\left(p^r\right)$. That is, the high-skilled workers are paid the highest wages while the low-skilled workers earn the lowest wages. Medium-skilled workers have intermediate wages between those of the other two skill groups. Then, the first term in the square bracket on the right hand side of (37) is negative for $i = k$ and positive for $i = h$. For $i = \ell$ it is positive if medium-skilled workers have a wage that is higher than the average and negative otherwise. For $i = k$, the term in the second square bracket is negative if the import-competing good and the nontraded service are gross complements in consumption. The reason is that in this case $w_k'\left(p^r\right) < 0$ and therefore

$$\begin{aligned} w_k'\left(p^r\right) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota'\left(p^r\right) &= \left(1 - \lambda_k\right) w_k'\left(p^r\right) - \sum_{\iota=h,\ell} \lambda_\iota w_\iota'\left(p^r\right) \\ &= \left(1 - \lambda_k\right) w_k'\left(p^r\right) - Y_Z'\left(p^r\right) < 0\ . \end{aligned}$$

In these circumstances, the tariff rate jumps upward when the least-skilled of either ethnicity cease to identify broadly with the nation.

If the medium-skilled individuals of either ethnicity cease to identify with the nation, the term in the second square brackets becomes

$$w'_\ell(p^r) - \sum_{\iota=h,\ell,k} \lambda_\iota w'_\iota(p^r) = (1-\lambda_\ell)\, w'_\ell(p^r) - \sum_{\iota=h,k} \lambda_\iota w'_\iota(p^r) \ .$$

This expression is positive when the import-competing good and the nontraded service are gross complements in consumption, because, in this case, $w'_k(p^r) < 0$ while the Stolper-Samuelson theorem implies that $w'_\ell(p^r) > 0$ and $w'_h(p^r) < 0$. It follows that the rate of protection jumps upward when medium-skilled workers of either ethnicity cease to identify with the broad nation, if these workers happen to earn a wage of at least the national average.

Finally, consider $i = h$. If such workers of either ethnicity end their national identification, the term in the first square bracket of (37) is positive. The term in the second square bracket can be expressed as

$$w'_h(p^r) - \sum_{\iota=h,\ell,k} \lambda_\iota w'_\iota(p^r) = w'_h(p^r) - \lambda_k w'_k(p^r) - Y_Z(p^r) \ .$$

This expression is negative if the import-competing good and the nontraded service are gross substitutes in consumption, in which case $w'_k(p^r) > 0$. But if they are gross complements in consumption, the expression cannot be signed. So, the net effect is ambiguous.

Now consider an initial equilibrium with some identification regime $r$ and equilibrium price $p^r$ in which individuals of ethnicity $j$ and skill level $i$ initially identify with their own social class; $\mathbb{I}^{j,r}_{i,i} = 1$. Suppose that an increase in $\beta^e$ leads them to end such identification, but does not affect other identity choices. This results in a new identification regime $r^j_{i,-i}$ and a new policy $p^{r^j_{i,-i}}$. The new policy entails a higher rate protection if and only if

$$U_p^{r^j_{i,-i}}(p^r, q) - U_p^r(p^r, q) > 0.$$

In the present circumstances, (36) yields

$$U_p^{r^j_{i,-i}}(p^r, q) - U_p^r(p^r, q) = -\alpha\lambda^j_i \left[ (p^r - q)\, \Omega'(p^r) + w'_i(p^r) - \sum_{\iota=h,\ell,k} \lambda_\iota w'_\iota(p^r) \right].$$

Since $(p^r - q)\, \Omega'(p^r) < 0$, the right-side of this equation is positive, implying that $p^{r^j_{i,-i}} > p^r$, if

$$w'_i(p^r)(1-\lambda_i) \leq \sum_{\iota \neq i} \lambda_\iota w'_\iota(p^r). \tag{38}$$

For $i = k$, the expression on the left-hand side of (38) is negative if the import-competing good and the nontraded service are gross substitutes in consumption, and the expression on the right-

hand side of (38) is positive in this case, because it equals $Y_Z(p^r)$. Under these conditions, the inequality is satisfied, which implies that the tariff rate jumps upward if the low-skilled workers of either ethnicity cease to identify with others in their social class. For $i = \ell$, the expression on the left-hand side is positive while the expression on the right-hand side is negative when the import-competing good and the nontraded service are gross complements, in which case the inequality is violated. So, in this case, we cannot predict whether the tariff rate jumps upward or downward. Finally, for $i = h$, the left-hand side is negative while the right-hand side has one positive term, $\lambda_\ell w'_\ell(p^{r\circ})$, and one negative term (in the case of gross complementarity), $\lambda_k w'_k(p^r)$. It follows that we cannot predict the direction of change in the equilibrium tariff.

We conclude that changes in self-identification that result from heightened sensitivity to ethnic differences can destabilize trade policy, but the nature of the policy response will vary with the economic and political circumstances. The following proposition records our sharpest predictions:

**Proposition 6** *Suppose that $\beta^e$ rises and that the import good $Z$ and the nontraded service $S$ are gross complements in demand. If the least-skilled workers of any ethnicity cease to identify with the broad nation or with their social class, the rate of protection jump upwards. If the middle-skilled workers of any ethnicity cease to identify with the broad nation and if their wage is at least as great as the economy-wide average, then the rate of protection jumps upward.*

We have shown in this appendix how the deepening of racial or ethnic divisions in society can lead to changes in trade policies in certain circumstances. If interracial or interethnic tensions intensify, individuals may cease to identify with groups of others that share common socioeconomic attributes but are heterogeneous along these other dimensions. When individuals narrow the purview of their social identification, they may no longer consider the economic standing of the broader group to be a source of pride, nor the income inequality within the group as a source of dissonance. The change in their material-plus-psychosocial utility evaluation alters their policy preferences. Thus, switches in social identity that have entirely non-economic roots can generate protectionist political responses when individuals' altruistic preferences extend only so far as the limits of their self-identification.