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 racial and ethnic tensions, lead to pronounced changes in trade policy. We analyze the nature of these policy changes.

Keywords: social identity, political economy, tariff formation, protectionism, populism

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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 attitudes and 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 the recent events. In special interest politics, lobbyists seek preferential treatment for some 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.

In this paper, we explore the idea that voters' preferences over trade policy reflect not only their 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 others, 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 described 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]

We begin our analysis with 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 the 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 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 Shayo (2009) 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 average 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 prototypical or average member of the group, reflecting the assumption that identifying

[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-categorizatoin 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" and "universal" moral values; see, especially, Enke (2018).

[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 cross-identification would be too severe in the light of the underlying differences between the groups to deliver such outcome 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 indentifying 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.

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 imagine in the background 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 the back of our minds, we seek to identify the tariff that achieves the utilitarian optimum subject to the self-identification constraint. 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 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. In keeping with recent political history, we focus specifically on "populism." In his well-regarded book, Müller (2016) defines populism succinctly as a specific form of identity politics in which a group of voters rejects the elite members of society's claims to moral legitimacy. By his description, "populists do not just criticize elites; they also claim that

[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.

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 dramatic 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. 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 "the nation" that included 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 a change in identification regime 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 jump in the equilibrium tariff rate.

The rise in populism is not the only important trend in western politics. Commentators agree that race (in the United States) and ethnicity (in Europe) became notably more salient in recent political discourse.[6] To study this change and to consider whether it might have played any role in a shift in trade policy preferences, we extend our simple model to include more dimensions of identification and more factors of production. In Section 7, we allow for three types of labor, with low, middle, and high skill levels. The middle-skilled and high-skilled workers produce two traded goods, as before, with the import-competing good again making intensive use of the lesser-skilled labor. Low-skilled labor, on the other hand, is the unique input for nontraded services. This trichotomy captures the apparent reality that the least skilled in society typically do not produce the manufactured goods that compete with imports, but rather are employed predominantly in the service sector. Meanwhile, we distinguish two racial or ethnic groups, which we designate as the "majority" and the "minority." These categories have no direct economic relevance, inasmuch as a worker with majority race or ethnicity is assumed to be a perfect substitute for a worker with minority race or ethnicity of the same skill level.

In Section 7, we allow for a wide variety of identification regimes. Individuals are characterized by their race or ethnicity and by their skill level. Each voter may identify with her own social class independent of race or ethnicity, with her own racial or ethnic group, independent of income level, and with a narrower group that includes only those of the same race or ethnicity and the same social class. In addition, anyone can identify with the nation, the broadest group that includes all denizens of the country. We model an increase in the salience of race and ethnicity in political deliberations as an increase in the parameter that measures the psychological cost that an individual bears when identifying with others of the opposite race or ethnicity. We show that such changes in the salience of race and ethnicity have no effect on trade policy when the identification regime remains the same. But we find circumstances in which increases in racial and ethnic sensitivity

[6] See, for example, Fukuyama (2018), among many others.

generate discretely higher tariffs when segments of the population identify more narrowly than before.

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. Such shifts, after all, are not well established. 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.

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 maximizes a utilitarian social-welfare function 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 changes in the political maximand, in particular substituting the welfare of the median voter for that of the average voter. Finally, in Section 7, we extend the model to include additional categories in society that enable a richer pattern of social identification. Specifically, we introduce a distinction between an ethnic majority and an ethnic minority and allow individuals to identify with their social class and their ethnic group. Here we study the trade-policy implications of an intensification of ethnic divisions that leads some individuals to identify more narrowly than before. Section 8 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," ℓ. (Later we will introduce a third type of labor that earns even less than type ℓ; these workers will be employed in a sector that produces nontraded services.) The less-skilled workers comprise a majority of the population, so that $\lambda_\ell > \lambda_h$, where λ_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 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 $v\left(\cdot\right)$ 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 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 average member of a group with whom she identifies. Since the social groups that we will consider in this section 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. 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

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

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 α_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.[7]

[7] 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 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 is she required 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.[8]

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

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

$\mathbb{I}_i^g = 1$ 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 section, 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 ε 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 ω 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

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

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 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 pursue this possibility in footnote xx of 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.

[8] 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, nor (in Section 7) that identifying with others in one's own racial or ethnic group impinges upon more economically-based identity choices.

To avoid a taxonomy that includes unrealistic cases, we introduce parameter restrictions that rule out certain identification patterns. First, we shall assume throughout that $A_h^\varepsilon > 0$ and $A_\ell^\omega > 0$; each individual takes 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 β_h^ω and β_ℓ^ε 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.[9] 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.[10]

We turn next to the political environment. As we mentioned in the introduction, we have in mind a political setting such as that described in Lindbeck and Weibull (1987), Dixit and Londregan (1996), and Grossman and Helpman (1996, 2001). 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. Rather than describe this game in detail, we apply what we know from the earlier papers. In particular, all of these authors have shown that if voters' ideological preferences are drawn from a common distribution, then the parties' positions on the pliable policy issues converge on those that maximize the sum of voters' utilities.[11]

[9] Equivalently, we could assume that A_h^ω and A_ℓ^ε 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.

[10] 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.

[11] The mechanisms by which social identity affects trade policy are present for a wide set of political environments

To focus on endogenous rates of protection, we take the pliable policy instrument to be an *ad valorem* tariff at rate t. 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

$$p = q\,(1+t)\,. \tag{3}$$

We seek to characterize the tariff rate t that maximizes the sum of voters' utilities. Importantly, in a 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 component associated with self-identification. In other words, the utilitarian welfare function of interest here is $\sum_i \lambda_i u_i$, not the more usual and limited version, $\sum \lambda_i \nu_i$. Moreover, when thinking about the utilitarian maximum as being an outcome of a political competition between parties, we also need to be wary of the "self-identification constraints" that reflect individually-rational decisions about identity. In the spirit of Shayo's notion of a social identity equilibrium, we recognize that the parties would not propose policies that pre-suppose an identification regime different from the one that would, in fact, be induced by those policies.[12]

Turning to the economic equilibrium, the domestic price determines 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. And given factor prices, which dictate the cost minimizing production techniques, output levels are such as to clear the two labor markets. Recall, as well, the Stolper-Samuelson theorem that applies in this environment; an increase in the relative price p boosts the wage of less-skilled workers more than proportionately, while depressing the real wage of the more-skilled workers. These distributional implications of tariff-induced price changes will figure prominently in the analysis below.

We develop now the political maximand, U. An individual in skill group i earns a wage $w_i(p)$ and receives a share of the rebated tariff revenues,

$$T(p,q) = (p-q)\,\Omega(p)\,, \tag{4}$$

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. The representative individual in skill group i achieves material welfare

$$\nu_i(p,q) = w_i(p) + T(p,q) + \Gamma(p)\,, \tag{5}$$

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.

[12] In other words, we imagine a two-stage game in which the parties first announce their positions on trade policy, then voters cast their ballot for whichever party offers them higher total utility, including material, psychosocial, and ideological components. In evaluating the psychosocial component of utility, a voter recognizes the identity choices it will induce her to take. We require the equilibrium in this two-stage game to be subgame perfect; see the discussion in the next section.

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 h is

$$u_h(p,q) = A_h^{\varepsilon} + \alpha_h^{\varepsilon}\nu_h(p,q) + \mathbb{I}_h^b(p)\left\{A_h^b + \alpha_h^b\bar{\nu}^b(p,q) - \beta_h^b\left[\nu_h(p,q) - \bar{\nu}^b(p,q)\right]^2\right\}, \tag{6a}$$

which is the sum of the self-worth she reaps by identifying with other elites and the net benefit from identifying broadly with all other nationals, if in fact she elects to do so. Notice that we write $\mathbb{I}_h^b(p)$ to emphasize the fact that a more-skilled individual's decision whether to identify broadly depends on the domestic relative price which in turn determines her own income level and that of the national average. Similarly, the psychosocial component of utility for an individual in skill group ℓ is

$$u_\ell(p,q) = A_\ell^{\omega} + \alpha_\ell^{\omega}\nu_\ell(p,q) + \mathbb{I}_\ell^b(p)\left\{A_\ell^b + \alpha_\ell^b\bar{\nu}^b(p,q) - \beta_\ell^b\left[\nu_\ell(p,q) - \bar{\nu}^b(p,q)\right]^2\right\}; \tag{6b}$$

she reaps psychological satisfaction from identifying with her fellow members of the working class and possibly by identifying with the nation.

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

$$\begin{aligned} U(p,q) \;=\; & \lambda_h A_h^{\varepsilon} + \lambda_\ell A_\ell^{\omega} + (1+\alpha)\left[Y(p) + T(p,q) + \Gamma(p)\right] \\ & + \lambda_h \mathbb{I}_h^b(p)\left\{A_h^b + \alpha^b\left[Y(p) + T(p,q) + \Gamma(p)\right] - \beta_h^b(1-\lambda_h)^2\left[\delta(p)\right]^2\right\} \\ & + \lambda_\ell \mathbb{I}_\ell^b(p)\left\{A_\ell^b + \alpha^b\left[Y(p) + T(p,q) + \Gamma(p)\right] - \beta_\ell^b(1-\lambda_\ell)^2\left[\delta(p)\right]^2\right\}, \end{aligned} \tag{7}$$

where $\delta(p) \equiv w_h(p) - w_\ell(p) > 0$ is the earnings gap between more- and less-skilled workers. The first line on the right-hand side of (7) 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- and less-skilled individuals, respectively, from identifying as nationals, if members of those skill groups choose to do so. The equilibrium tariff maximizes $U(p,q)$ subject to the the constraint that all identity choices are individually rational.

We offer two observations about the political maximand, $U(p,q)$. 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. Similar, 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 $\lambda_\ell \alpha [w_\ell (p) + T (p, q) + \Gamma (p)]$ to the political objective, whereas those of the more skilled individuals who identify with the elite add $\lambda_h \alpha [w_h (p) + T (p, q) + \Gamma (p)]$ to the objective. Together these sum to $\alpha [Y (p) + T (p, q) + \Gamma (p)]$, 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.[13]

Second, when either skill group identifies 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. In the present context, a tariff has such an effect, inasmuch as the Stolper-Samuelson theorem ties the wage gap to the price of the import-competing good.

3 Equilibrium Protection with Social Identification

In this section, we maximize the utilitarian objective function, $U (p, q)$, subject to the self-identification constraints, in order to characterize the equilibrium tariff. We describe the conditions under which the trade politics with social identification give rise to protectionist outcomes and discuss how the equilibrium tariff rate responds to changes in social attitudes, technology, and the terms of trade for a given identification regime. We postpone consideration of changes in patterns of identification until Section 5.

Consider Figure 1. The figure depicts $U (p, q)$ as a function of p for each of the four possible identification regimes. 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_h and r_ℓ correspond, respectively, to identification regimes in which only the higher-skilled individuals and only the lesser-skilled individuals identify broadly with their fellow nationals, while those in the remaining skill group identify only with others in their own social class. Finally, the curve labeled $r_{h,\ell}$ corresponds to the identity regime $r = (1, 1)$ in which all citizens irrespective of skill level identify not only with those in 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 shall argue now that the equilibrium tariff is the one that gives rise to the domestic price p that achieves the *global maximum* in Figure 1; that is, we need not worry specifically about the individual-rationality constraints, because they are always satisfied at $p^\circ \equiv argmax_p U (p, q)$. Equilibria at $p_{h,\ell}$, p_h, p_ℓ, and p_0 all are possible outcomes, depending upon the perceived benefits from broad identification that are reflected in the parameters A_h^b and A_ℓ^b, as well as the other

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

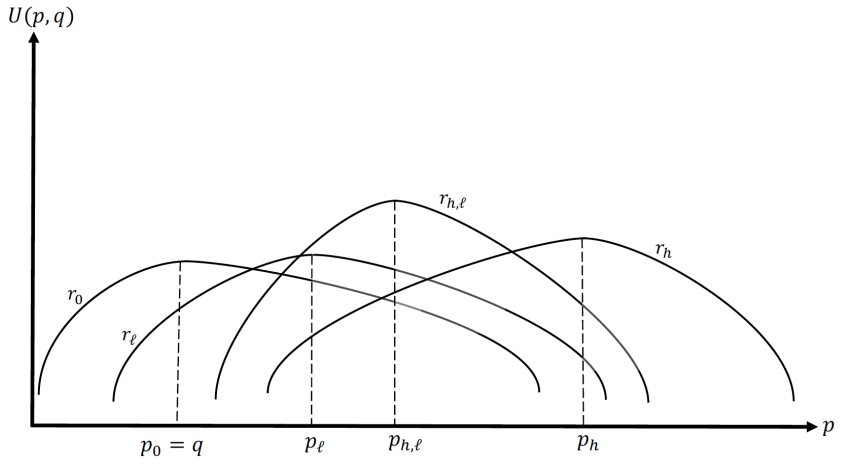


Figure 1: Equilibrium protection

parameters that characterize the economic and cultural environment.

To see this, suppose first that the global maximum is achieved for $p = p_{h,\ell}$, which is the domestic price that maximizes $U(p,q)$ for $r = (1,1)$. We have illustrated this case in Figure 1. Then, $U(p_{h,\ell},q)|_{\mathbb{I}_h^b=1,\mathbb{I}_\ell^b=0} < U(p_{h,\ell},q)|_{\mathbb{I}_h^b=1,\mathbb{I}_\ell^b=1}$ and $U(p_{h,\ell},q)|_{\mathbb{I}_h^b=0,\mathbb{I}_\ell^b=1} < U(p_{h,\ell},q)|_{\mathbb{I}_h^b=1,\mathbb{I}_\ell^b=1}$; i.e., the curves r_h and r_ℓ pass below $r_{h,\ell}$ at $p = p_{h,\ell}$. But the difference between $U(p,q)|_{\mathbb{I}_h^b=1,\mathbb{I}_\ell^b=1}$ and $U(p,q)|_{\mathbb{I}_h^b=1,\mathbb{I}_\ell^b=0}$ 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 identifying broadly at this price. Similarly, $r_{h,\ell}$ above r_ℓ at $p_{h,\ell}$ implies that the less-skilled workers prefer to see themselves as part of the broad nation at this price. In short, when the parties set the trade policy to achieve a utilitarian maximum at $p_{h,\ell}$, the identity choices that underlie this choice 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 $U(p_h,q)|_{\mathbb{I}_h^b=0,\mathbb{I}_\ell^b=0} < U(p_h,q)|_{\mathbb{I}_h^b=1,\mathbb{I}_\ell^b=0}$ implies that the more-skilled individuals enjoy a net benefit from identifying broadly, whereas the fact that $U(p_h,q)|_{\mathbb{I}_h^b=1,\mathbb{I}_\ell^b=1} < U(p_h,q)|_{\mathbb{I}_h^b=1,\mathbb{I}_\ell^b=0}$ 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 $U(p_0,q)|_{\mathbb{I}_h^b=1,\mathbb{I}_\ell^b=0} < U(p_0,q)|_{\mathbb{I}_h^b=0,\mathbb{I}_\ell^b=0}$ and $U(p_0,q)|_{\mathbb{I}_h^b=0,\mathbb{I}_\ell^b=1} < U(p_0,q)|_{\mathbb{I}_h^b=0,\mathbb{I}_\ell^b=0}$. No workers would choose to identify broadly under such conditions. In short, no matter which identification regime 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°. Suppose first that the global utilitarian maximum is achieved at p_0, so that each

worker identifies narrowly only with others in her own social class. In this case, $U(p,q)|_{\mathbb{I}_h^b=\mathbb{I}_\ell^b=0} = \lambda_h A_h^\varepsilon + \lambda_\ell A_\ell^\omega + (1+\alpha)[Y(p) + T(p,q) + \Gamma(p)]$, and the equilibrium trade policy is the 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. 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 $p = p_h$, at which the more-skilled workers identify broadly with the nation, while the less-skilled workers do not; i.e., $r = (1,0)$. Then the political maximand comprises the first-two lines in (7). 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, δ. The latter reflects the psychological cost to the more-skilled workers from identifying with other nationals who are different from themselves in terms of socioeconomic standing. As we noted before, the dissonance costs induce an aversion to inequality on the part of these elites, not from any sense of "fairness," but rather from a desire to "be more like the others." 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 $U(p,q)$ generates a positive tariff in this case, as long as $\beta_h^b > 0$.

A similar logic applies if the less-skilled workers identify with the broad nation but the more-skilled workers do not; i.e., $r = (0,1)$. Then the selfish motives of the working class and the elite cancel out, but the less-skilled voters have an additional interest in protection in order to reduce the psychological distance between themselves and the average national. In this case, too, the political maximand is increasing at $t = 0$, because the only force that does not cancel there is the less-skilled workers' aversion to being different from the prototype.

Finally, if broad identification is widespread among both skill groups, 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 may well prefer an import subsidy to further their own material interests and to boost the status of the elites with whom they also identify. But the material interests of the more-skilled voters balance those of the low-skilled voters at $t = 0$, leaving a net preference for protection. We recap these findings in[14]

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.*

[14] Technically, we have made only a local argument that $U(p,q)$ is increasing in p at $p = q$. But it is easy to see from (8) below that $U_p(p,q) > 0$ for all $p < q$. So a global maximum of $U(p,q)$ 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.

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°, and examine the response of t. We consider in turn changes in the psychological cost of identification, β_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 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 (3) we have that the marginal political benefit from an increase in the tariff rate, t, is equal to $qU_p(p,q)$, and then from (4) and (7),

$$U_p(p,q) = \left(1 + \alpha + \alpha^b \sum_{i=h,\ell} \lambda_i \mathbb{I}_i^b\right)(p-q)\,\Omega'(p) - 2\sum_{i=h,\ell} \beta_i^b \mathbb{I}_i^b \lambda_i (1-\lambda_i)^2\,\delta(p)\,\delta'(p)\ . \tag{8}$$

Considering the second-order condition that requires $U_{pp}(p^\circ, q) < 0$ at the global maximum of $U(p,q)$, the equilibrium tariff rises in response to a small increase in the parameter ξ if and only if $dU_p(p,q)/d\xi > 0$.[15]

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 β_h^ε or β_ℓ^ω. So, we need only consider changes in β_h^b and β_ℓ^b.

Suppose, then, that $\mathbb{I}_i^b = 1$ for $i = h$ or $i = \ell$, and that β_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, δ, 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 ($\mathbb{I}_i^b = 1$) and that a change in the cost of identification does not induce a change in the identification regime. Then an increase in β_i^b generates an increase in the equilibrium tariff rate, for $i = h$ or $i = \ell$.*

[15] Recall the last footnote in which we argued that a global maximum for $U(p,q)$ always exists.

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 π_i in all uses, and consider changes in π_i. If $d\pi_h/\pi_h^o = d\pi_\ell/\pi_\ell^o > 0$, where π_i^o is the initial productivity level for skill group i, then we have Hicks-neutral technological progress throughout the economy.[16] 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 productivity levels equal to one; i.e., $\pi_h^o = \pi_\ell^o = 1$. We can also define ρ 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 $dU_p\left(p,q\right) / \left. d\pi_\ell\right|_{d\pi_h=\rho d\pi_\ell} > 0$ 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 ($\mathbb{I}_i^b = 1$). Then Hicks-neutral technological gain that does not induce a change in identification regime 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 $U\left(p,q\right)$ at $\pi_h^o = \pi_\ell^o = 1$, we can sign $dU_p\left(p^\circ,q\right) / \left. d\pi_\ell\right|_{d\pi_h=d\pi_\ell}$ and thereby determine the direction of change in the rate of protection.

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 $w_h''\left(p^\circ\right) \leq 0$. This condition, is satisfied, for example, if the production technologies in both sectors are Leontief, in which case $w_h\left(p\right)$ is linear and $w_h''\left(p^\circ\right) = 0$. Second, the tariff rises if both $w_h''\left(p^\circ\right) > 0$ and $w_\ell''\left(p^\circ\right) > 0$. 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.

[16] 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.

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 (8), it is clear that

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

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, $U(p,q)$, 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, $\Omega(p)$. 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 δ 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 $\Omega'' \leq 0$ and $\delta'' \geq 0$, 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 provide a necessary and sufficient condition for the tariff rate to rise in response to a decline in the world price of the import good.

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*.[17] 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 distinguished 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 short, we imagine a change in identification regime whereby $\mathbb{I}_\ell^b = 1$ beforehand and $\mathbb{I}_\ell^b = 0$ afterward. In our model, such a change in self-categorization could be caused by an increase in β_ℓ^b, the dissonance cost of associating with those in a different income class, by skill-biased or Hicks-neutral technological progress that increases the wage gap and therefore the cost of identification, or by a terms of trade improvement that does likewise. Arguably, all of these trends have been observed in the period leading up to the recent rise in populist expression.

We illustrate how a populist revolution can generate a discrete jump in the tariff rate in Figure 2. The figure depicts the case in which $p_0 = q < p_\ell < p_{h,\ell} < p_h$, where $q, p_\ell, p_{h,\ell}$ and p_h are,

[17] 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)

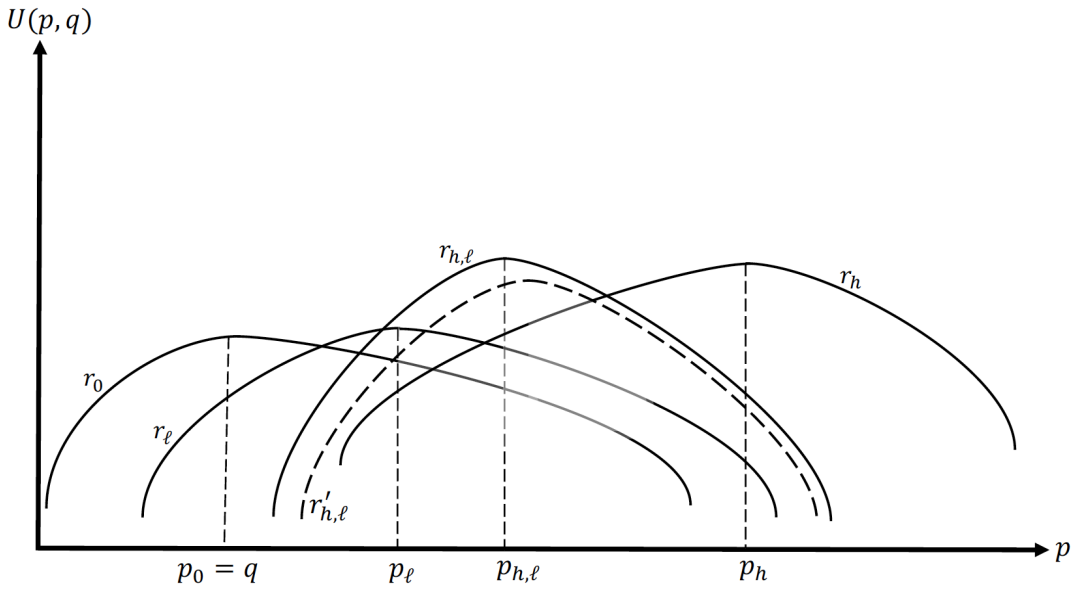


Figure 2: Populist Revolution

respectively, the peaks of the $U(p,q)$ curves for $r = r_0$, $r = r_\ell$, $r = r_{h,\ell}$, and $r = r_h$. In the appendix we show that $p_{h,\ell} < p_h$ if and only if the inequality in (11) below is satisfied. Moreover, if $p_{h,\ell} < p_h$, it must also be true that $p_\ell < p_{h,\ell}$, as drawn. The figure shows an initial equilibrium—prior to the populist revolution—at $p_{h,\ell}$, where $U(p,q)$ reaches a global maximum. Now, if β_ℓ^b rises, for example, the $r_{h,\ell}$ curve shifts down and its peak shifts to the right, as portrayed by the dotted curve labeled $r'_{h,\ell}$.[18] If there were no change in the identification regime, the equilibrium domestic price would rise slightly. However, the figure depicts a situation in which the initial peak of $r_{h,\ell}$ is only slightly above that of r_h. After the downward shift in $r_{h,\ell}$, the new global maximum occurs at p_h. Instead of a small rise in t°, we see a discrete jump in the tariff, as the political parties seek to appeal to less-skilled voters whose policy preferences have changed along with their social identities.

More formally, we can evaluate analytically how the equilibrium tariff adjusts following a populist revolution.[19] Beforehand, the equilibrium policy is determined by the first-order condition

$$U_p(p^\circ, q)|_{\mathbb{I}_h^b=\mathbb{I}_\ell^b=1} = \left(1+\alpha+\alpha^b\right)(p^\circ - q)\,\Omega'(p^\circ) - 2\sum_{i=h,\ell}\beta_i^b\lambda_i(1-\lambda_i)^2\,\delta(p^\circ)\,\delta'(p^\circ) = 0. \quad (9)$$

Afterward, the equilibrium policy is determined instead by

$$U_p(\tilde{p}^\circ, q)|_{\mathbb{I}_h^b=1;\ \mathbb{I}_\ell^b=0} = \left(1+\alpha+\alpha^b\lambda_h\right)(\tilde{p}^\circ - q)\,\Omega'(\tilde{p}^\circ) - 2\beta_h^b\lambda_h(1-\lambda_h)^2\,\delta(\tilde{p}^\circ)\,\delta'(\tilde{p}^\circ) = 0. \quad (10)$$

[18] The r_ℓ curve also shifts down and its peak shifts to the right, but this shift is not relevant to the case under discussion. We do not show the shift of r_ℓ in Figure 2, to avoid cluttering the figure.

[19] We consider a small change in some parameter that induces the change in identification from $\mathbb{I}_\ell^b = 1$ to $\mathbb{I}_\ell^b = 0$, so that the values of this parameter before and after are close enough that the difference can be ignored.

The *ex post* domestic price, $\tilde{p}^{\circ}$, will be discretely higher than the *ex ante* price, p°, if $U_p\left(p^{\circ},q\right)|_{\mathbb{I}_h^b=1;\,\mathbb{I}_\ell^b=0} > U_p\left(p^{\circ},q\right)|_{\mathbb{I}_h^b=\mathbb{I}_\ell^b=1} = 0$. The price will be discretely lower if the inequality runs in the opposite direction. And, if it happens that $U_p\left(p^{\circ},q\right)|_{\mathbb{I}_h^b=1;\,\mathbb{I}_\ell^b=0} = U_p\left(p^{\circ},q\right)|_{\mathbb{I}_h^b=\mathbb{I}_\ell^b=1}$, then the change in identification regime has no effect on the policy outcome.

Equations (9) and (10) imply that $U_p\left(p^{\circ},q\right)|_{\mathbb{I}_h^b=1;\,\mathbb{I}_\ell^b=0} > 0$ if and only if[20]

$$\beta_h^b \alpha^b \left(1-\lambda_h\right)^2 > \beta_\ell^b \left(1+\alpha+\alpha^b\lambda_h\right)\lambda_h. \tag{11}$$

Notice that (11) is satisfied for $\lambda_h = 0$ and that is violated for $\lambda_h = 1$. Notice too that the left-hand side is decreasing in λ_h and the right-hand side is increasing in λ_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 $\lambda_h < \lambda_h^*$. If $\beta_h^b = \beta_\ell^b$, λ_h^* can be expressed quite simply as $\lambda_h^* = \alpha^b / \left(2\alpha^b + 1 + \alpha\right)$.

When the working class ceases to identify with a broad group that includes the elites, the political pressures for protection may intensify or abate. On the one hand, the working class no longer reaps psychological gains from the status associated with national income. On the other hand, they no longer bear dissonance costs from the wage gap. In other words, the working class perceives protection as being less costly, but also as less valuable for its redistributive effects. The tariff rate rises whenever the former force outweighs the latter, as it will if most of the other citizens are in the same social class as themselves; i.e., if λ_ℓ is large and λ_h is small. For example, if $\beta_h^b = \beta_\ell^b = \beta^b$ and $\alpha = \alpha^b = 0.1$, the tariff rate jumps when the elite are 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 $\beta_h^b = \beta_\ell^b = \beta^b$, $\lambda_h^* = \alpha^b / \left(2\alpha^b + 1 + \alpha\right)$.*

Evidently, a change in identification regime can generate a precipitous change in trade policy. In particular, a populist revolution can generate a discontinuous jump in tariff rates. Whether the jump is upward or downward depends on the size of the elite. The revolution that provokes a discrete change in protectionism might be caused by economic factors, such as an increase in income inequality owing to skill-biased technical change or the forces of globalization, or by political factors,

[20] In footnote 6 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 jeaolousy and to the square of the difference in materal well-being. In the appendix we show that, in this case, the analog to condition (11) 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 λ_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.

as when entrepreneurial politicians stoke up anti-elite sentiments among the working class in order to promote their own political ends.

6 The Median Voter

Before extending our analysis to include additional identification categories, 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

$$\begin{aligned} U^{med}(p,q) &= A_\ell^\omega + (1+\alpha)\left[w_\ell(p) + T(p,q) + \Gamma(p)\right] \\ &\quad + \mathbb{I}_\ell^b \left\{ A_\ell^b + \alpha^b \left[Y(p) + T(p,q) + \Gamma(p) \right] - \beta_\ell^b (1-\lambda_\ell)^2 \left[\delta(p)\right]^2 \right\} , \end{aligned} \tag{12}$$

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 with the nation. The marginal political benefit from a tariff hike in this setting is $qU_p^{med}(p,q)$, where

$$U_p^{med}(p,q) = \left(1 + \alpha + \alpha^b \mathbb{I}_\ell^b\right)(p-q)\,\Omega'(p) - \left[(1+\alpha)\,\lambda_h + 2\beta_\ell^b \mathbb{I}_\ell^b \lambda_h^2 \delta(p)\right]\delta'(p) \ . \tag{13}$$

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 $\mathbb{I}_\ell^b(p) = 1$ or $\mathbb{I}_\ell^b(p) = 0$. In either case, $U_p^{med}(q,q) > 0$; i.e., the median voter's welfare rises when the tariff rate is increased from zero.[21] 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 $t^{med} > 0$.[22]

Now suppose that β_ℓ^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 reduces dissonance costs. It follows that $\partial t^{med}/\partial \beta_\ell^b = 0$ if $\mathbb{I}_\ell^b = 0$ and $\partial t^{med}/\partial \beta_\ell^b > 0$ if $\mathbb{I}_\ell^b = 1$.

[21] Also note that $U_p^{med}(p,q) \leq 0$ for all $p \leq q$.

[22] 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.

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^{med} 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 $w_h''(p) > 0$.[23]

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 $\mathbb{I}_\ell^b(p) = 1$ or $\mathbb{I}_\ell^b(p) = 0$ might be prohibitive. An increase in the rate of protection from any given level always raises the real income of the less-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 $U_p^{med}(p, q) = 0$, one with $\mathbb{I}_\ell^b = 1$ and the other with $\mathbb{I}_\ell^b = 0$. As before, we calculate the difference in the marginal benefit of a tariff in the two regimes, evaluated at $p = p^\circ$, the equilibrium tariff before the less-skilled individuals repudiate their identification with the broad group that includes the elite. We find

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

The rate of protection jumps upward in this case if $\alpha^b > 2\beta_\ell^b\lambda_h\delta(p^\circ)$, and it jumps downward if the inequality runs in the opposite direction. Once again, a populist revolution generates a discrete

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

rise in protection when the elite comprises a small enough fraction of the voting population.

7 Ethnic and Racial Identification

Until now, 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 this section, 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. We ask 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.

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 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 by h (high), ℓ (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 ℓ, 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. This service is provided 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

$$\nu_i(p, q, p_S) = w_i(p) + T(p, q, p_S) + \Gamma(p, p_S) \ , \ i = h, \ell, k,$$

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

Output of the nontraded service is fixed by the supply of low-skilled labor, i.e., $Y_S = \lambda_k$ (where λ_i again is the fraction of individuals with skill level i in the population of size one). Aggregate demand for the service can be derived from the surplus function, namely $C_S(p, p_S) = -\partial\Gamma(p, p_S)/\partial p_S$. Market clearing for services, $C_S(p, p_S) = Y_S$, yields a functional relationship between the price of services and the price of the import good. Considering that $w_k = p_S$, we can write (with slight abuse of notation) that $w_k = w_k(p)$, as well as $p_S = p_S(p)$.

The link between the price of the import good and the wage of low-skilled workers depends on

the substitutability or complementarity between Z and S in the typical consumer's demand. If the import good and the nontraded service are gross complements, then an increase in the domestic price of good Z depresses demand for services, which spells a decline in their price and thus a fall in the wage, w_k. Alternatively, if good Z and service S are gross substitutes, a rise in the price p induces an increase in w_k.[24]

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 ($\mathbb{I}_i^{j,b} = 0$).[25] 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 α^e is a constant that is common across ethnicities, λ_i^j is the fraction of individuals with skill level i and ethnicity j, and λ^j is the fraction of individuals with ethnicity j in the total population.[26] Similarly, the benefit from identifying with social class i is $\alpha\nu_i$, where α is another constant, possibly different from α^e. Finally, the benefit 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 $\bar{E}^g$

[24] Let consumer surplus be defined as

$$\Gamma\left(p, p_S\right) = \max_{c_Z, c_S} \; v\left(c_Z, c_S\right) - p c_Z - p_S c_S \;,$$

where $v\left(\cdot\right)$ is the utility from consuming the import good and the nontraded service. This function is increasing in each argument and strictly concave. The first-order conditions for maximizing consumer surplus require $v_Z = p$ and $v_S = p_S$, where $v_J \equiv \partial \; v\left(c_Z, c_S\right) / c_J$, and the concavity of $v\left(\cdot\right)$ ensures that the second-order condition is satisfied. Differentiating the pair of first-order conditions gives $\partial c_S / \partial p = -v_{ZS}/D$, where $D = v_{ZZ} v_{SS} - v_{ZS}^2 > 0$. Therefore, an increase in the import price, p, reduces demand for the nontraded service if $v_{ZS} > 0$ and lowers demand for the service if $v_{ZS} < 0$. The price of services, p_S, moves in the same direction as the shift in demand, because market clearing for nontraded services requires $C_S\left(p, p_S\right) = \lambda_k$.

[25] 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 sensitivities.

[26] 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 $i = h, \ell, k$.

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 β^e on the equilibrium trade policy. Arguably, β^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.

In the appendix, we display the expression for $U(p,q)$ in the present environment. The political objective, $U(p,q)$, 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 so identify. 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 the 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.[27]

As before, we need to calculate $U_p(p,q)$ and examine how the marginal political benefit from a tariff hike responds to changes in β^e (within an identification regime) and changes in identification patterns (across identification regimes). Note first that β^e multiplies terms that reflect the difference between an individual's own ethnic "value" and that of the average member of a group with whom she identifies. This difference reflects the ethnic composition of the group in question, but not the domestic price. For example, when an individual with ethnicity j and skill i identifies with others of her own social class, she bears a dissonance cost of $\beta^e\left[E^j-\left(\lambda_i^j E^j+\lambda_i^{-j}E^{-j}\right)/\lambda_i\right]^2$, where "$-j$" denotes the ethnic group that is different from j. This cost does not vary with p. It follows that $\partial U_p(p,q)/\partial\beta^e=0$ for fixed r, which implies that an increased sensitivity to ethnic differences has no effect on the equilibrium tariff unless it induces a change in identification regime. We record this observation in

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

An increase in β^e can generate two types of changes in social identification patterns. First, some individuals with skill level i and ethnicity j might cease to identify with the broad nation. Second, such individuals might cease to identify with their broad social class, inasmuch as these groups comprise a mix of ethnicities. In either case, the dissonance costs arising due to ethnic diversity are greater for those bearing the group's less-common ethnicity as compared to those with the group's

[27] Following on from foonote 25, 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.

more-common ethnicity, considering that $\bar{E}^g = \lambda^{M,g} E^M + \lambda^{m,g} E^m = \lambda^{M,g}$, where $\lambda^{j,g}$ is the fraction of those with ethnicity j in group g.[28] This implies that those with the less-common ethnicity in group g will cease to identify with the group before those with the more-common ethnicity, if all else is the same.

As before, we evaluate $U_p(p^\circ, q)|_{r=\tilde{r}}$, where p° denotes the equilibrium domestic price in the initial identification regime and $\tilde{r}$ represents the new identification regime. Also, as before, it is helpful to calculate $U_p(p^\circ, q)|_{r=\tilde{r}} - U_p(p^\circ, q)|_{r=r^\circ}$, which is the same as $U_p(p^\circ, q)|_{r=\tilde{r}}$, because $U_p(p^\circ, q)|_{r=r^\circ} = 0$ by the first-order condition for the optimum tariff in the original identification regime, r°. Suppose r° is any identification regime in which individuals in skill group i with ethnicity j identify with the nation. Let $\tilde{r}$ have the same pattern of identification as in r°, except that those with skill i and ethnicity j are induced to no longer identify with the nation; i.e., $\mathbb{I}_i^{j,b} = 1$ initially but $\mathbb{I}_i^{j,b} = 0$ in $\tilde{r}$. Then

$$U_p(p^\circ, q)|_{r=\tilde{r}} - U_p(p^\circ, q)|_{r=r^\circ} = -\alpha^b \lambda_i^j (p^\circ - q)\,\Omega'(p^\circ) + 2\beta\lambda_i^j \left[w_i(p^\circ) - \sum_{\iota=h,\ell,k} \lambda_i w_\iota(p^\circ) \right] \left[w_i'(p^\circ) - \sum_{\iota=h,\ell,k} \lambda_i w_\iota'(p^\circ) \right]. \tag{14}$$

In the appendix, we identify several scenarios when a group's repudiation of its broad national identity necessarily generates a jump in the tariff rate. One such scenario arises when the importable good Z and the nontraded service S are complements in demand and a group of low-skill workers of either ethnicity ends its identification with the broad nation. Another arises when the import good and nontraded services are complements and a group of middle-skilled workers whose wage happens to be above the average wage in the economy ends its identification with the broad nation. In both of these cases, the elimination of concern about the gap between a group's own wage and the national average implies a preference for a higher tariff. Moreover, when any group no longer receives a psychic boost from the material well-being of the average national, there is less resistance to a distorting tariff. Then the two terms on the right-hand side of (14) reinforce one another, leading to higher protection. Of course, these are not necessary conditions for a tariff hike, and protection can rise in many other circumstances. We highlight, for example, that $-(p^\circ - q)\,\Omega'(p^\circ) > 0$ when $p^\circ > q$, so the first term on the right-hand side contributes to higher protection no matter which group repudiates its broad national identity.

Now consider what happens when individuals in skill group i with ethnicity j are induced to no longer identify with their social class due to heightened concern about the diverse ethnic composition of that group. Initially, when $r = r^\circ$, $\mathbb{I}_{i,i}^j = 1$. But then, when β^e rises, the regime switches to $\tilde{r}$ in which $\mathbb{I}_{i,i}^j = 0$ but other self-categorizations remain unchanged. Then the direction

[28] It follows that $\beta^e \left(E^M - \lambda^{M,g}\right)^2 < \beta^e \left(E^m - \lambda^{M,g}\right)^2$, when $E^M = 1$ and $E^m = 0$.

of the jump in policy can be identified from the sign of

$$U_p\left(p^\circ, q\right)|_{r=\tilde{r}} - U_p\left(p^\circ, q\right)|_{r=r^\circ} = -\alpha\lambda_i^j \left[\left(p^\circ - q\right)\Omega'\left(p^\circ\right) + w_i'\left(p^\circ\right) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota'\left(p^\circ\right)\right] . \qquad (15)$$

Suppose, for example, that low-skill individuals in either ethnic group cease to self-identify as "working poor," a socioeconomic designation that includes low-skilled workers of all ethnicities. Suppose further that the import good and the nontraded service are complements in demand, so that $w_k'\left(p\right) < 0$. Then the term in the square bracket in (15) can be written as

$$\left(p^\circ - q\right)\Omega'\left(p^\circ\right) + \left(1 - \lambda_k\right) w_k'\left(p^\circ\right) - \left[\lambda_h w_h'\left(p^\circ\right) + \lambda_\ell w_\ell'\left(p^\circ\right)\right] < 0 ,$$

where the inequality reflects that $\Omega'\left(p^\circ\right) < 0$ and $w_h'\left(p^\circ\right) + w_\ell'\left(p^\circ\right) = Y_Z'\left(p^\circ\right) > 0$.[29] It follows that the tariff rate jumps upward following such a change in identification regime.

On the other hand, suppose it is middle-skill individuals in some ethnic group that cease to self-identify as "working class." Then the term in the square bracket in (15) becomes

$$\left(p^\circ - q\right)\Omega'\left(p^\circ\right) + \left(1 - \lambda_\ell\right) w_\ell'\left(p^\circ\right) - \lambda_h w_h'\left(p^\circ\right) - \lambda_k w_k'\left(p^\circ\right) .$$

The first term in this sum is negative, the second and third terms are positive, and the fourth is positive if the import good and the nontraded service are gross complements in demand, and negative otherwise. Evidently, it is not possible to offer a clear prediction about the resulting change in trade protection in this case.

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 β^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.*

In this section, we have shown 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

[29] Zero profits in the two tradable sectors implies $\lambda_h w_h\left(p\right) + \lambda_\ell w_\ell\left(p\right) = Y_X\left(p\right) + pY_Z\left(p\right)$, hence $\lambda_h w_h'\left(p\right) + \lambda_\ell w_\ell'\left(p\right) = Y_X'\left(p\right) + pY_Z'\left(p\right) + Y_Z\left(p\right) = Y_Z\left(p\right) > 0$.

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.

8 Conclusion

It has become commonplace to cite the frequent failure of some groups in society to vote their economic self-interests.[30] 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 should 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 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 along meaningful dimensions.

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 export 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

[30] 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.

different from the others around them.

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 two recent trends in western politics. First, in many western countries, populism has been on the rise. We interpret populism as a form of identity politics whereby the everyman ceases to identify with a broad group of fellow nationals and opts instead to identify more narrowly, i.e., only with other non-elites. 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. It occurs in our model in response to a widening of the income distribution, no matter whether that has been caused by globalization, by technological change, or by some other mechanism. 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. It is interesting to note that protectionist sentiments can emerge even if trade is not the primary source of a spread in wages.

Second, many western societies have experienced a heightened sensitivity to racial and ethnic cleavages. In the United States, the Black Lives Matter movement has become a salient identity group advocating on behalf of African Americans. Meanwhile, working class whites, especially males, have become a more potent force in identity politics. In Europe, an influx of immigrants from Eastern Europe and the Middle East has generated cultural tensions along ethnic and religious lines. In both the American and European cases, identity groups have narrowed along with the perceived definition among some sociocultural groups of what it means to be an "American," a "Brit," a "German" or a "Swede." The connection of this to trade policy in general, and to a rise in protectionist sentiments in particular, is not immediately obvious. By studying a model with two ethnic groups, three goods and three skill levels, we have identified situations where a narrowing of self-identification by certain low- and middle-income groups in society does lead to an increased aggregate demand for tariffs. More broadly, in a setting of identity politics, shifts in identification patterns that have entirely non-economic causes can affect political preferences and policy outcomes on economic matters.

In order to incorporate social identity into political-economic analysis, we need to make 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.

Further applications of social identity theory to political economics readily come to mind. Immigration policy stands high on our personal agenda. The immigrant waves in the United States and Western Europe are widely seen as having fomented nationalistic and anti-global sentiments, and the policy response has been dramatic. We hope to study the evolution of immigration policy in a setting with endogenous identification of national and global citizens in the near future. Another potentially fertile application is to growth theory. Fukuyama (2018) offers the intriguing hypothesis that a well developed national identity is necessary for economic development. He points to Japan, Korea and China as societies with strong national identities and to the Middle East and sub-Saharan Africa as regions with more narrow identification along religious and ethnic lines. We hope to study the political-economic mechanisms that might underlie successful modernization in the former countries and failed development in the latter.

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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 π_i be the productivity of labor of type i, $i = h, \ell$, the same in the exportable and import-competing sectors. If, say, π_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

$$\tilde{w}_i(p;\pi_i) = \pi_i w_i(p) \quad \text{for } i = h, \ell. \tag{16}$$

In other words, an increase in π_i raises proportionately the wage rate of labor of type i, given the domestic price of imports. These imply:

$$R(p;\pi_h,\pi_\ell) = \sum_{i=h,\ell} \lambda_i \pi_i w_i(p). \tag{17}$$

Now, starting with $\pi_h = \pi_\ell = 1$, consider changes in π_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.

The first-order condition that characterizes the initial equilibrium is given by

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

Then

$$\begin{aligned} \texttt{sign}\frac{\partial p^\circ}{\partial \pi} &= \texttt{sign}\left[\frac{\partial}{\partial \pi_\ell} U_p(p^\circ, q; \pi_h, \pi_\ell) + \rho \frac{\partial}{\partial \pi_h} U_p(p^\circ, q; \pi_h, \pi_\ell)\right]\Bigg|_{\pi_h=\pi_\ell=1} \\ &= \texttt{sign}\left[\sum_{i=h,\ell} \frac{\partial}{\partial \pi_i} U_p(p^\circ, q; \pi_h, \pi_\ell) + (\rho - 1)\frac{\partial}{\partial \pi_h} U_p(p^\circ, q; \pi_h, \pi_\ell)\right]\Bigg|_{\pi_h=\pi_\ell=1}. \end{aligned} \tag{18}$$

To evaluate the expression on the second line of (18), note that the first-order condition for the

equilibrium policy together with (8) yields

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

Also note from (17) that

$$R'\left(p; \pi_h, \pi_\ell\right) = \sum_{i=h,\ell} \lambda_i \pi_i w_i'\left(p\right) = Y_Z\left(p; \pi_h, \pi_\ell\right). \tag{19}$$

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

$$\begin{aligned}
&\frac{\partial}{\partial \pi_i} U_p\left(p^\circ, q; \pi_h, \pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1} \qquad (20)\\
= \;& -\left(1+\alpha+\alpha^b \sum_{i=h,\ell} \mathbb{I}_i^b \lambda_i\right)\left(p^\circ - q\right)\frac{\partial}{\partial \pi_i} Y_Z'\left(p^\circ; \pi_h, \pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1}\\
& -2\left[\sum_{i=h,\ell} \beta_i^b \mathbb{I}_i^b \lambda_i \left(1-\lambda_i\right)^2\right]\delta\left(p^\circ; 1, 1\right)\frac{\partial}{\partial \pi_i}\delta'\left(p^\circ; \pi_h, \pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1}\\
& -2\left[\sum_{i=h,\ell} \beta_i^b \mathbb{I}_i^b \lambda_i \left(1-\lambda_i\right)^2\right]\frac{\partial}{\partial \pi_i}\delta\left(p^\circ; \pi_h, \pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1}\delta'\left(p^\circ; 1, 1\right).
\end{aligned}$$

But

$$\delta\left(p; \pi_h, \pi_\ell\right) = \pi_h w_h\left(p\right) - \pi_\ell w_\ell\left(p\right),$$
$$\delta'\left(p; \pi_h, \pi_\ell\right) = \pi_h w_h'\left(p\right) - \pi_\ell w_\ell'\left(p\right),$$

which imply

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

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

It follows that

$$\left.\sum_{i=h,\ell}\frac{\partial}{\partial\pi_i}U_p\left(p^\circ,q;\pi_h,\pi_\ell\right)\right|_{\pi_h=\pi_\ell=1}=-\left(1+\alpha+\alpha^b\sum_{i=h,\ell}\mathbb{I}_i^b\lambda_i\right)\left(p^\circ-q\right)\left.\sum_{i=h,\ell}\frac{\partial}{\partial\pi_i}Y_Z'\left(p^\circ;\pi_h,\pi_\ell\right)\right|_{\pi_h=\pi_\ell=1}$$
$$-4\left[\sum_{i=h,\ell}\beta_i^b\mathbb{I}_i^b\lambda_i\left(1-\lambda_i\right)^2\right]\delta\left(p^\circ\right)\delta'\left(p^\circ\right)\ .$$

But (19) implies

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

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

$$\begin{aligned}\frac{\sum_{i=h,\ell}\frac{\partial}{\partial\pi_i}U_p\left(p^\circ,q;\pi_h,\pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1}}{\left(1+\alpha+\alpha^b\sum_{i=h,\ell}\mathbb{I}_i^b\lambda_i\right)\left(p^\circ-q\right)}&=-Y_Z'\left(p^\circ;1,1\right)-2\Omega'\left(p^\circ;1,1\right)\\&=-2C_Z'\left(p^\circ\right)+Y_Z'\left(p^\circ;1,1\right)>0\ .\end{aligned}\tag{21}$$

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

We now turn to skilled biased technical change, for which we need to evaluate $\left.\frac{\partial}{\partial\pi_h}U_p\left(p^\circ,q;\pi_h,\pi_\ell\right)\right|_{\pi_h=\pi_\ell=1}$. Equations (**??**) and (19) imply

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

Evidently, $\left.\frac{\partial}{\partial\pi_h}U_p\left(p^\circ,q;\pi_h,\pi_\ell\right)\right|_{\pi_h=\pi_\ell=1}>0$ if $w_h''\left(p^\circ\right)\leq0$, which is satisfied both sectors produce with Leontief technologies. In this case, skilled biased technical change raises the rate of protection. We next consider the case when $w_h''\left(p^\circ\right)>0$. Substituting the first-order condition (**??**) into the

former equation yields

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

Now note that

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

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

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

When this expressions is smaller than one, we have $\frac{\partial}{\partial \pi_h} U_p\left(p^\circ, q; \pi_h, \pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1} > 0$, and more-skilled labor biased technical change raises the rate of protection. This condition is satisfied when $w_h''\left(p^\circ\right) > 0$ and $w_\ell''\left(p^\circ\right) \geq 0$, 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 bias technical change, because $\frac{w_h'(p^\circ)}{\delta'(p^\circ)} + \frac{w_h(p^\circ)}{\delta(p^\circ)} > 1$.

Section 4.3

For an interior equilibrium (8) implies that p° satisfies

$$\begin{aligned} U_p\left(p^\circ, q\right) &= \left(1+\alpha+\alpha^b \sum_{i=h,\ell} \mathbb{I}_i^b \lambda_i\right)\left(p^\circ - q\right)\Omega'\left(p^\circ\right) \\ &\quad -2\left[\sum_{i=h,\ell} \beta_i^b \mathbb{I}_i^b \lambda_i \left(1-\lambda_i\right)^2\right]\delta\left(p^\circ\right)\delta'\left(p^\circ\right) = 0. \end{aligned} \tag{22}$$

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

$$U_p\left[\left(1+t^\circ\right)q, q\right] = 0, \tag{23}$$

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

In this case

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

where $U_{pq}\left[\left(1+t^{\circ}\right)q,q\right]$ is the derivative of $U_{p}\left[\left(1+t^{\circ}\right)q,q\right]$ with respect to the second argument. Note, however, from (8) that

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

which implies

$$\frac{\partial t^{\circ}}{\partial q}\times\frac{q}{1+t^{\circ}}=-1+\frac{1+\alpha+\alpha^{b}\sum_{i=h,\ell}\mathbb{I}_{i}^{b}\lambda_{i}}{p^{\circ}U_{pp}\left(p^{\circ},q\right)}q\Omega'\left(p^{\circ}\right). \tag{24}$$

Since $U_{pq}\left[\left(1+t^{\circ}\right)q,q\right]>0$, the domestic price p° 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 (24) is negative.

Since $\Omega'\left(p^{\circ}\right)<0$ and $U_{pp}\left(p^{\circ},q\right)<0$, the expression in (24) is negative if and only if

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

Using (8) to compute $U_{pp}\left(\cdot\right)$, this is equivalent to

$$\begin{aligned}-q\Omega'\left(p^{\circ}\right) &< -p^{\circ}\left[\Omega'\left(p^{\circ}\right)+\left(p^{\circ}-q\right)\Omega''\left(p^{\circ}\right)\right]\\ &\quad +2p^{\circ}\frac{\sum_{i=h,\ell}\beta_{i}^{b}\mathbb{I}_{i}^{b}\lambda_{i}\left(1-\lambda_{i}\right)^{2}}{1+\alpha+\alpha^{b}\sum_{i=h,\ell}\mathbb{I}_{i}^{b}\left(p^{\circ}\right)\lambda_{i}}\left\{\delta\left(p^{\circ}\right)\delta''\left(p^{\circ}\right)+\left[\delta'\left(p^{\circ}\right)\right]^{2}\right\}\ .\end{aligned}$$

But the first-order condition (22) implies

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

Substituting this result into the previous inequality then yields

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

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

$$-\frac{p^{\circ}\Omega''\left(p^{\circ}\right)}{\Omega'\left(p^{\circ}\right)\left(p^{\circ}\right)}+\frac{\delta'\left(p^{\circ}\right)p^{\circ}}{\delta\left(p^{\circ}\right)}+\frac{\delta''\left(p^{\circ}\right)p^{\circ}}{\delta'\left(p^{\circ}\right)}<1. \tag{25}$$

The second term on the left-hand side of the inequality is negative, and the third term is negative when $\delta''(p^\circ) \geq 0$ (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, $\Omega''(p^\circ) \leq 0$ 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

To evaluate the impact of a populist revolution, we start with a regime in which every individual identifies broadly with the nation. Under these circumstances the equilibrium policy is characterized by (9), which we reproduce here as

$$U_p(p^\circ, q)|_{\mathbb{I}_h^b=\mathbb{I}_\ell^b=1} = \left(1+\alpha+\alpha^b\right)(p^\circ - q)\,\Omega'(p^\circ) - 2\sum_{i=h,\ell}\beta_i^b\lambda_i(1-\lambda_i)^2\,\delta(p^\circ)\,\delta'(p^\circ) = 0. \quad (26)$$

The populist revolution leads members of the working class to repudiate their affinity with the elite. When the less-skilled workers identify only with the fellow members of their own socioeconomic class, the marginal utility of p evaluated at p° becomes

$$U_p(p^\circ, q)|_{\mathbb{I}_h^b=1;\,\mathbb{I}_\ell^b=0} = \left(1+\alpha+\alpha^b\lambda_h\right)(p^\circ - q)\,\Omega'(p^\circ) - 2\beta_h^b\lambda_h(1-\lambda_h)^2\,\delta(p^\circ)\,\delta'(p^\circ). \quad (27)$$

Substituting (26) into (27) implies that $U_p(p^\circ, q)|_{\mathbb{I}_h^b=1;\,\mathbb{I}_\ell^b=0} > 0$ if and only if

$$\beta_h^b\alpha^b(1-\lambda_h)^2 > \beta_\ell^b\left(1+\alpha+\alpha^b\lambda_h\right)\lambda_h, \quad (28)$$

which is condition (11) 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.

Next note that (27) also implies that the peak of the $r_{h,\ell}$ curve is to the right of the peak of the r_ℓ curve. To see why, suppose that the peak of the $r_{h,\ell}$ curve is to the left of the peak of the r_ℓ curve and therefore $U_p(p^\circ, q)|_{\mathbb{I}_h^b=0;\,\mathbb{I}_\ell^b=1} > 0$. Then (26) together with

$$U_p(p^\circ, q)|_{\mathbb{I}_h^b=0;\,\mathbb{I}_\ell^b=1} = \left(1+\alpha+\alpha^b\lambda_\ell\right)(p^\circ - q)\,\Omega'(p^\circ) - 2\beta_\ell^b\lambda_\ell(1-\lambda_\ell)^2\,\delta(p^\circ)\,\delta'(p^\circ)$$

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

$$-\frac{p^\circ\Omega''(p^\circ)}{\Omega'(p^\circ)} = -\frac{p^\circ C_Z''(p^\circ)}{C_Z'(p^\circ)},$$

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

imply that $U_p(p^\circ, q)|_{\mathbb{I}_h^b=0;\, \mathbb{I}_\ell^b=1} > 0$ 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 (28) this inequality implies

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

or

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

a contradiction. It follows that $U_p(p^\circ, q)|_{\mathbb{I}_h^b=0;\, \mathbb{I}_\ell^b=1} < 0$ when (28) is satisfied and the peak of the r_ℓ curve is to the left of the peak of the $r_{h,\ell}$ curve, as drawn in the figure.

Now suppose that the working class bears a cost of envy when they repudiate the elite. Such a cost might arise when a less-skilled individual considers others in the working class to be the "in-group" and elites to be the "out-group," and when comparison with the out-group generous jealousy and "schadenfreude," as is suggested by various research in social psychology. Suppose that failure to identify broadly with the nation (a group that includes the elites) causes each less-skilled worker to suffer disutility of $\lambda_h \gamma (v_h - v_\ell)^2$, $\gamma > 0$, which is proportional to the number of elites that inspire jealousy and to the square of the difference in material well-being. Under such circumstances, the marginal utility from narrow identification (27) is replaced with

$$\begin{aligned} U_p(p^\circ, q)|_{\mathbb{I}_h^b=1;\, \mathbb{I}_\ell^b=0} &= \left(1+\alpha+\alpha^b \lambda_h\right)(p^\circ - q)\,\Omega'(p^\circ) - 2\beta_h^b \lambda_h (1-\lambda_h)^2 \delta(p^\circ)\,\delta'(p^\circ) \\ &\quad - (1-\lambda_h)\lambda_h \gamma \delta(p^\circ)\,\delta'(p^\circ). \end{aligned}$$

Substituting (26) into this formula implies that $U_p(p^\circ, q)|_{\mathbb{I}_h^b=1;\, \mathbb{I}_\ell^b=0} > 0$ if and only if

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

Evidently, for $\gamma > 0$ this inequality is satisfied for a larger range of λ_h than (28).

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 π_h and π_ℓ and (12), the marginal impact of an increase in p on $U^{med}(\cdot)$ can be expressed

as

$$\begin{aligned} U_p^{med}(p,q;\pi_h,\pi_\ell) &= \left(1+\alpha+\alpha^b\mathbb{I}_\ell^b\right)(p-q)\,\Omega'(p;\pi_h,\pi_\ell) \\ &\quad -\lambda_h\left[1+\alpha+2\beta_\ell^b\mathbb{I}_\ell^b\lambda_h\delta(p;\pi_h,\pi_\ell)\right]\delta'(p;\pi_h,\pi_\ell)\ . \end{aligned} \tag{29}$$

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

$$\begin{aligned} U_p^{med}(p^\circ,q;1,1) &= \left(1+\alpha+\alpha^b\mathbb{I}_\ell^b\right)(p^\circ-q)\,\Omega'(p^\circ;1,1) \\ &\quad -\lambda_h\left[1+\alpha+2\beta_\ell^b\mathbb{I}_\ell^b\lambda_h\delta(p^\circ;1,1)\right]\delta'(p^\circ;1,1)=0\ . \end{aligned} \tag{30}$$

For technical change of the form

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

(29) implies

$$\begin{aligned} \mathtt{sign}\frac{\partial p^\circ}{\partial \pi} &= \mathtt{sign}\left[\frac{\partial}{\partial\pi_\ell}U_p^{med}(p^\circ,q;\pi_h,\pi_\ell)+\rho\frac{\partial}{\partial\pi_h}U_p^{med}(p^\circ,q;\pi_h,\pi_\ell)\right]\Big|_{\pi_h=\pi_\ell=1} \\ &= \mathtt{sign}\left[\sum_{i=h,\ell}\frac{\partial}{\partial\pi_i}U_p^{med}(p^\circ,q;\pi_h,\pi_\ell)+(\rho-1)\frac{\partial}{\partial\pi_h}U_p^{med}(p^\circ,q;\pi_h,\pi_\ell)\right]\Big|_{\pi_h=\pi_\ell=1}\ . \end{aligned} \tag{31}$$

From (29) and (16) we obtain

$$\begin{aligned} \left[\sum_{i=h,\ell}\frac{\partial}{\partial\pi_i}U_p^{med}(p^\circ,q;\pi_h,\pi_\ell)\right]\Big|_{\pi_h=\pi_\ell=1} &= -\left(1+\alpha+\alpha^b\mathbb{I}_\ell^b\right)(p^\circ-q)\,Y_Z'(p^\circ;1,1) \\ &\quad -\lambda_h\left[1+\alpha+4\beta_\ell^b\mathbb{I}_\ell^b\lambda_h\delta(p^\circ;1,1)\right]\delta'(p^\circ;1,1)\,. \end{aligned}$$

Subtracting (30) from this equation yields

$$\begin{aligned} &\left[\sum_{i=h,\ell}\frac{\partial}{\partial\pi_i}U_p^{med}(p^\circ,q;\pi_h,\pi_\ell)\right]\Big|_{\pi_h=\pi_\ell=1} \\ &= -\left(1+\alpha+\alpha^b\mathbb{I}_\ell^b\right)(p^\circ-q)\,C_Z'(p^\circ)-\lambda_h 2\beta_\ell^b\mathbb{I}_\ell^b\lambda_h\delta(p^\circ;1,1)\,\delta'(p^\circ;1,1)>0\ . \end{aligned}$$

It follows that Hicks-neutral technical change increases the tariff rate. Next, use (29) and (16) to

obtain

$$\frac{\partial}{\partial \pi_h} U_p^{med}\left(p^\circ, q; \pi_h, \pi_\ell\right)\Big|_{\pi_h=\pi_\ell=1} = -\left(1+\alpha+\alpha^b \mathbb{I}_\ell^b\right)\left(p^\circ - q\right) w_h''\left(p^\circ\right)\lambda_h$$
$$-\lambda_h\left[1+\alpha+2\beta_\ell^b \mathbb{I}_\ell^b \lambda_h \delta\left(p^\circ;1,1\right)\right] w_h'\left(p^\circ\right) - \lambda_h 2\beta_\ell^b \mathbb{I}_\ell^b \lambda_h w_h\left(p^\circ\right)\delta'\left(p^\circ;1,1\right).$$

The right-hand side is positive for $w_h''\left(p^\circ\right) \leq 0$. In such circumstances, skilled biased technical change raises the rate of protection. And, like in the case in which the trade policy maximizes aggregate welfare, skill biased technical change can increase the tariff rate even when $w_h''\left(p^\circ\right) > 0$.

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

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

where $U_{pq}^{med}\left[\left(1+t^\circ\right)q, q\right]$ is the derivative of $U_p^{med}\left[\left(1+t^\circ\right)q, q\right]$ with respect to the second argument. Note, however, from (13) that

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

which implies

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

This expression is negative if and only if

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

Using (13) to compute $U_{pp}^{med}\left(\cdot\right)$, this inequality is equivalent to

$$\left(1+\alpha+\alpha^b \mathbb{I}_\ell^b\right) q\Omega'\left(p^\circ\right) > p^\circ\left(1+\alpha+\alpha^b \mathbb{I}_\ell^b\right)\left[\Omega'\left(p^\circ\right) + \left(p^\circ - q\right)\Omega''\left(p^\circ\right)\right]$$
$$-p^\circ \lambda_h\left[1+\alpha+2\beta_\ell^b \mathbb{I}_\ell^b \lambda_h \delta\left(p^\circ\right)\right]\delta''\left(p^\circ\right) - p^\circ \lambda_h 2\beta_\ell^b \mathbb{I}_\ell^b \lambda_h\left[\delta'\left(p^\circ\right)\right]^2.$$

Substituting the first-order condition $U_p^{med}\left(p^\circ, q\right) = 0$ and (13) into the inequality then yields

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

It follows that an improvement in the terms of trade raises the rate of protection if and only if the last inequality is satisfied. Note that this condition is similar to condition (25), the difference being only the weight in front of $p^\circ \delta'\left(p^\circ\right)/\delta\left(p^\circ\right)$, which is smaller here. Because $p^\circ \delta'\left(p^\circ\right)/\delta\left(p^\circ\right) < 0$, the condition for a rise in the tariff is less likely to be satisfied when the median voter's preferences determine the policy choice.

Section 7

We provide here more details for the arguments advanced in Section 7 on Ethnic and Racial Identification. We begin with the production structure. As before, the price of the export good, X, is normalized to one and the domestic price of the import competing product, Z, is p. The foreign price of Z is q. Goods X and Z are produced with high-skilled workers h and medium-skilled workers ℓ under constant returns to scale, as in the previous sections. As a result, wages of these workers depend on p, where $w_h(p)$ is a declining function and $w_\ell(p)$ is an increasing function as long as there is incomplete specialization. Due to the Stolper-Samuelson result, the elasticity of the function $w_\ell(p)$ is greater than one.

The price of the nontraded service, S, is p_S. The service sector produces output with one unit of low-skilled labor k per unit output and it uses no other inputs. Therefore, the competitive wage rate of low-skilled workers is $w_k = p_S$ and the output level of services is $Y_S = \lambda_S$, a constant.

Material well-being is represented by the utility function $c_X + v(c_Z, c_S)$, where $v(\cdot)$ is increasing and concave. For an individual with wage income w_i this yields the measure of material well-being,

$$\nu_i = w_i + T + \tilde{\Gamma}(p, p_S),$$

where T is the per capita rebate of tariff revenues and

$$\tilde{\Gamma}(p, p_S) = \max_{c_Z, c_S} v(c_Z, c_S) - pc_Z - p_S c_S$$

is the consumer surplus function. The solution to this problem generates the demand functions $\tilde{C}_Z(p, p_S)$ and $\tilde{C}_S(p, p_S)$ that do not depend on income as long as the individual consumes all three products. The demand function $\tilde{C}_Z(p, p_S)$ is declining in p, and it is also declining in p_S if and only if $v_{ZS}(c_Z, c_S) > 0$. Similarly, $\tilde{C}_S(p, p_S)$ is declining in p_S, and it is also declining in p if and only if $v_{ZS}(c_Z, c_S) > 0$. The product-market clearing condition for services is $\tilde{C}_S(p, p_S) = \lambda_S$. This implies that p_S is a function of p—which we write as $p_S(p)$—and that p_S is decreasing in p if and only if $v_{ZS}(c_Z, c_S) > 0$. Since $w_k(p) = p_S(p)$, the wage rate of low-skilled workers also is decreasing in p if and only if $v_{ZS}(c_Z, c_S) > 0$

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

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

from which we obtain

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

where

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

Using the price function for services, we also obtain

$$T(p,q) = (p-q)\,\Omega(p),$$

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

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

which is similar to the case without the service sector.

The aggregate utility function $U(p,q)$ 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,

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

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

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

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 results only from the fact that the groups exhibit ethnic diversity. With our normalization of $E^M = 1$ and $E^m = 0$, we obtain

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

A higher value of β^e raises the cost of identification in a group of mixed ethnicities.[32]

The third line in the expression for $U(p,q)$ 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

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

[32] 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 $U(p,q)$ 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 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

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

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

$$\begin{aligned}
& U_p(p,q)|_r \qquad (32)\\
= & \left(1 + \alpha \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_{i,i}^j + \alpha^e \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,j} + \alpha^b \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,b} \right) (p-q)\, \Omega'(p)\\
& + \alpha \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_{i,i}^j \left[w_i'(p) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota'(p) \right]\\
& + \alpha^e \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,j} \left[\sum_{\iota=h,\ell,k} \frac{\lambda_\iota^j}{\lambda^j} w_\iota'(p) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota'(p) \right]\\
& - 2\beta \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,j} \left[w_i(p) - \sum_{\iota=h,\ell,k} \frac{\lambda_\iota^j}{\lambda^j} w_\iota(p) \right] \left[w_i'(p) - \sum_{\iota=h,\ell,k} \frac{\lambda_\iota^j}{\lambda^j} w_\iota'(p) \right]\\
& - 2\beta \sum_{j=M,m} \sum_{i=h,\ell,k} \lambda_i^j \mathbb{I}_i^{j,b} \left[w_i(p) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota(p) \right] \left[w_i'(p) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota'(p) \right].
\end{aligned}$$

Evidently, $U_p(p,q)|_r$ does not depend on the distance in ethnic space and, therefore, changes in β^e that do not induce changes in identification have no effect on trade policy, as stated in Proposition 6.

Now consider an equilibrium with some identification regime $r = r^\circ$ in which individuals with

skill level i and ethnicity j identify with the nation. Let p° be the associated domestic relative price of the import good. Assuming an interior solution, this price is characterized by

$$U_p\left(p^\circ, q\right)\big|_{r=r^\circ} = 0.$$

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 $p^\circ > q$, i.e., that the initial equilibrium has a positive tariff.

Now suppose that a change in either β^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 $p_i^{j,-b} > p^\circ$ if and only if

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

But (32) yields

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

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

$$\left[w_i\left(p^\circ\right) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota\left(p^\circ\right)\right]\left[w_i'\left(p^\circ\right) - \sum_{\iota=h,\ell,k} \lambda_\iota w_\iota'\left(p^\circ\right)\right] \geq 0. \tag{33}$$

Note that, by assumption, $w_h\left(p^\circ\right) > w_\ell\left(p^\circ\right) > w_k\left(p^\circ\right)$. 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 other two skill groups. Then, the first term in the square bracket on the right hand side of (33) 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 $w_k'\left(p^\circ\right) < 0$ and therefore

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

Under these circumstances, the tariff rate jumps upward when the least-skilled of either ethnicity

cease identifying 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

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

This expression is positive when the import-competing good and the nontraded service are gross complements in consumption, because, in this case, $w'_k(p^\circ) < 0$ while the Stolper-Samuelson theorem implies that $w'_\ell(p^\circ) >$ and $w'_h(p^\circ) < 0$. 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 an above-average wage.

Finally, consider $i = h$. If such workers of either ethnicity end their national identification, the term in the first square bracket of (33) is positive. The term in the second square bracket can be expressed as

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

This expression is negative if the import-competing good and the nontraded service are gross substitutes in consumption, in which case $w'_k(p^\circ) > 0$. 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° in which individuals of ethnicity j and skill level i identify with their own social class; $\mathbb{I}^j_{i,i} = 1$. Now suppose that an increase in β^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 $\tilde{p}^\circ$. The new policy entails a higher rate protection if and only if

$$U_p(p^\circ, q)|_{r=r^j_{i,-i}} - U_p(p^\circ, q)|_{r=r^\circ} > 0.$$

In the present circumstances, (32) yields

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

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

$$w'_i(p^\circ)(1-\lambda_i) \leq \sum_{\iota \neq i} \lambda_\iota w'_\iota(p^\circ). \tag{34}$$

For $i = k$, the expression on the left-hand side of (34) 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 (34) is positive in this case, because it equals $Y_Z(p^\circ)$. Under these circumstances, 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, $\lambda_\ell w'_\ell(p^\circ)$, and one negative term (in the case of gross complementarity), $\lambda_k w'_k(p^\circ)$. It follows that we cannot predict the direction of change in the equilibrium tariff.