Workers Without Borders?

Culture and the Political Economy of Temporary versus Permanent Immigration[*]

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Abstract

This paper examines the role of cultural factors in driving the politics, size and nature (temporary versus permanent migration) of migration policy. We demonstrate that there exists a broad *political* failure that results in inefficiently high barriers restricting the import of temporary foreign workers and also admitting an inefficiently large number of permanent migrants to fill a labor shortage. Strikingly, we show that countries that are poor at cultural assimilation may be better positioned to take advantage of temporary foreign worker programs than more culturally diverse and tolerant countries. Furthermore, relaxing restrictions on the mobility of migrant workers across employers has the potential to raise host country welfare. We demonstrate the existence of multiple equilibria: some countries have mostly temporary migration programs and see a low degree of cultural assimilation by migrants, while other countries rely more on permanent migrants and see much more assimilation.

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1   Introduction

The single international policy reform that will, arguably, yield the largest welfare gains, is an easing of restrictions on international worker mobility.[1] Nevertheless, despite these potentially large gains, high barriers to international labor mobility remain in place, due to political resistance arising from a potent brew of cultural and economic factors. However, the large gains from relaxing these political constraints makes the design a *politically feasible* migration programs a central challenge for international development policy (see Kremer and Watt 2009), Rodrik(2002), Pritchett(2006)). In this paper we take a first step in the direction of designing politically sustainable migration programs that account for cultural factors. In doing so, this paper also takes an first step that examines the differential impact of cultural factors in influencing the politics of temporary versus permanent worker migration.

Our contributions are three-fold. First, we develop a simple conceptual framework that assigns cultural factors a central role in driving the politics of migration policy. This allows us to examine the impact of culture on the political trade-off between temporary *and* permanent migration. In doing so we demonstrate the existence of a broad political failure with regard to migration policy. In particular, we show that this inefficiency manifests itself very differently across temporary and permanent migration – there is too little temporary migration and possibly inefficiently high permanent migration for filling any labor shortage. Second, our framework throws light on the optimal design of politically feasible migration policies. For instance, many temporary migration programs require the tying of the migrant worker to a specific employer. Our framework suggests that under some conditions, a relaxation in the ability of temporary migrant workers to move across employers may increase the politically feasible level of temporary migration and be Pareto-improving. Finally, the paper helps account for the diversity of experience with migration and cultural assimilation. For instance, cultural assimilation is high and most of the migration in the U.S. is permanent, in contrast with Europe (Huntington, 2004; Waters and Jiminez, 2005). Once the migrant's cultural assimilation decisions are endogenized and linked with migration policy, we demonstrate that such multiple equilibria can easily arise.

Our focus on the cultural underpinnings of the political resistance to migration is deliberate. Much of the migration literature has focused on its economic and distributional consequences (see

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[1]For instance, Walmsley and Winters (2003) estimate that a 3% increase in labor migration would result in half the gains associated with complete trade liberalization, and Klein and Ventura (2006) suggest that the removal of all barriers to migration between OECD and non-OECD countries would boost world output between 92 and 172%.

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Ottaviano and Peri (2008), Facchini and Mayda (2009), Ottaviano, Peri and Wright (2014) and Hanson (2010)).However, such distributional effects are not unique to labor: they also occur with the increased movement of goods and capital. Accordingly, we emphasize the distinctive aspect of the politics of migration – namely that it has the potential to affect a country's *culture* and identity. The importance of culture has been emphasized by a nascent empirical literature. For instance, Pritchett (2006) argues that "Of all the ideas that limit migration perhaps the most important is the idea that there is a national 'culture' and that increased labor mobility threatens that culture".[2] Similarly, Card, Dustmann and Preston (2012) provide evidence to argue that cultural factors are far more important than economic factors in driving the hostility towards migrants.[3] Accordingly, we give voters' concerns about culture and national identity, a central place in our framework.

We incorporate these cultural concerns in a simple dynamic political economy framework where this tension between the income gain from greater migration and the associated cultural cost is explored.[4] Our framework possesses two key features. First, the objectives of employers/firms and the country's citizens are only partially aligned. While both firms and citizens benefit from having temporary workers fill any shortage in labor, the firms would prefer to retain the more productive, experienced workers for the long run, even if by doing so they become permanent residents. In contrast, citizens worry about the costs of having culturally very dissimilar migrants, especially if there is the prospect of them becoming permanent citizens. Second, government policymaking in our framework can be influenced both by firms (through lobbying) and by citizens (via elections).[5] Under these conditions we demonstrate that there exists a broad *political* failure with regard to migration policy. In particular, countries let in not only an inefficiently *small* number of *temporary* migrants but also an inefficiently *large* number of *permanent* migrants to fill the labor shortage.

So why this political failure? It arises from the citizen-voter's recognition of a lack of intertemporal control over the elected government's future migration policy. Citizens recognize that, once these (ostensibly) temporary workers are admitted, firms which employ such workers will have

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[2] Similarly, according to Freeman (2006), "...public opinion and national policies toward immigration seem to rest on issues well beyond gains and losses in the labor market. Some natives worry that immigrants will present a cultural threat to their way of life and reduce social cohesion"

[3] They argue that hostility towards immigration is driven by 'compositional externalities' (i.e. culture, religion and ethnicity) associated with immigration, and suggest that such cultural factors are three to five times more important than economic factors in driving hostility towards immigration.

[4] The dynamic structure of the model shares many features with Coate and Morris (1999).

[5] In a common agency framework Facchini and Willmann (2005) examine how government policymaking with respect to factor mobility is affected by citizens' concerns as well as campaign contributions.

an incentive to lobby to retain them and make them permanent. Citizen-voters are well aware of the government's vulnerability to the lobbying efforts of the firms, and also realize that the larger the size of the temporary migrant workforce, the more vigorous the lobbying efforts are likely to be. Accordingly, an endogenous *threshold* emerges, with citizen-voters restricting the number of temporary migrants to a level such that these efforts at lobbying remain ineffective. It is worth observing that these inefficiencies have little to do with the distributional impact of immigration, nor any administrative costs of admitting or repatriating temporary workers. Rather, the failure to implement immigration policies that are 'potentially Pareto improving', in the terminology of Besley and Coate (1997, 1998), is solely due to the competing political interests of firms and citizens.

Our first comparative static result demonstrates a surprising result. It suggests that countries which are particularly averse to migrants, or where socio-cultural assimilation of foreign workers is difficult, may find it easier to sustain high levels of temporary migration. The reason is that it is politically very costly for the government to let temporary migrants stay on in such countries. This raises the politically sustainable level of temporary labor migration, thereby reducing overall inefficiency. From a policy perspective, this suggests that it may be easier to politically sustain a temporary migration program involving foreign workers who find it harder to assimilate. Indeed, this finding resonates with the experience of some of the largest guest-worker programs in the world, those in the Arabian Gulf states. In addition to a large increase in the size of their migrant workforce, there has been a dramatic shift in the source countries, with relatively easy-to-assimilate Arab workers from Jordan and Egypt being replaced by culturally very dissimilar migrant workers from India and the Philippines (Jureidini, 2006).

Our analysis provides several insights into the nature of practical policy design aimed at capturing the unrealized gains from the globalization of labor. Several influential papers (Pritchett (2006), Rodrik (2011) and Freeman (2006)) have argued that a policy that encourages greater *temporary* worker migration will have the largest positive impact on development. For example, Rodrik (2011) argues that "rich nations would commit to a temporary work visa scheme that would expand the labor force by no more than 3 percent". Similarly, Kremer and Watt (2008) propose a scheme for a program of temporary non-renewable visas for periods of not more than three years. The appeal of a temporary migration program emerges naturally in a framework where natives worry about the threat to culture and national identity that permanent migration may entail. However, while our framework provides analytical underpinnings that delineate the economic promise of such programs, it also highlights the real political limits of any such program.

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Any proposal to encourage temporary worker mobility has to allow for the endogenous political limits that will constrain the size of such a program - and this constraint is likely to *differ* across countries. Furthermore, we show that the temporary migration of workers may not be the way forward for each country. Indeed depending on history and its facility at cultural assimilation, a country may even prefer programs of permanent migration. Therefore, any policy recommendation for encouraging the globalization of labor, it has to be flexible enough to accommodate the considerable heterogeneity across countries in both the nature (temporary versus permanent) of migration as well as its size.

Countries differ in their ability to culturally assimilate foreign migrants. For instance, countries such as the U.S. have arguably been more successful in assimilating their migrants than many countries in Europe. Are these differences simply an accident of history, or are they due to differences in fundamentals, such as the degree of xenophobia? Furthermore, can the nature of migration policy itself influence (and be linked with) the migrants' incentives to culturally assimilate? These questions have been contentious and remain the subject of considerable debate.[6] A natural extension of our framework, where we endogenize the migrant's cultural assimilation decision, allows us to explore these issues. We show that there may be multiple equilibria, with countries having similar fundamentals being stuck in very different migration regimes, and being more or less successful with cultural assimilation by their migrants. Some countries rely mainly on temporary migration programs (with the scope for being made permanent being very low), and see a relatively poor degree of assimilation by the migrants. In contrast, other countries are good at assimilation, and have temporary migration programs that are a stepping-stone towards (largely) permanent migration. This multiplicity is generated by the impact of migration regimes on the migrants' assimilation decision on the one hand, and the influence of assimilation by migrants in the native culture on the natives' choice of migration policy on the other. The precise equilibrium that a country finds itself in could be a result of its history with migrants in the past.

Related Literature: As mentioned above, most of the large literature on the politics of international migration policy has focused on its distributional consequences (see Hanson (2010) for a survey). Typically, using either the framework of a median voter or of competing pressure groups, the focus

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[6]On the one hand, scholars such as Huntington (2004) have raised concerns about the scale of permanent migration, worried that "the single most immediate and serious challenge to America's traditional identity comes from the immense and continuing immigration from Latin America". In contrast, others such as Rodriguez (2007) believe that temporary migration programs "compromise our ability to integrate immigrants effectively into the American body politic".

has been on analyzing political forces stemming from a heterogeneity in the population. Such heterogeneity could be with respect to various economic factors such as skill levels, age (affecting productivity), capital ownership etc. The implications of such politics on migration policies have been studied in several important dimensions such as the number of migrants admitted (e.g. Epstein and Nitzan, 2006), the enforcement of policies against illegal immigration (e.g. Facchini and Testa, 2011), the relation with the pension system (e.g. Scholten and Thum, 1996) etc.[7] However, there has been virtually no formal analysis of the implications of cultural concerns as a determinant of migration policy. Our framework (using the structure of Coate and Morris, 1999) brings together the political pressures exerted both by voters (who are concerned about the cultural impact of migrants) and by firm-lobbies (who are not) in the determination of immigration policy.

Card, Dustmann and Preston (2012) (mentioned previously) and O'Rourke and Sinnott (2006) find in surveys of attitudes towards immigrants, non-economic factors such as the perceived crime and cultural impact of migrants play a strong role in determining these attitudes. As our framework shows, the explicit consideration of cultural issues is also related to the issue of temporary versus permanent migration, an important aspect of migration policy that has not received much attention in the previous literature.

The importance of accounting for issues of cultural assimilation in deciding the cultural composition of the immigration pool was systematically made first by Lazear (1999). In addition to papers cited earlier, Ottaviano and Peri (2006), Epstein and Gang (2010) and Konya (2007) have explored aspects of culture in the process of immigration such as cultural assimilation by migrants, its interaction with the decision to migrate in the first place etc. However all of these papers take immigration policy as given. Our focus is on the analysis of how the immigration regime (governing temporary versus permanent migration) itself may be shaped by the extent of the migrants' cultural assimilation.

The rest of the paper is organized as follows. We describe the model in Section 2 and analyze the equilibrium in Section 3. Other implications of the model are discussed in Section 4 and Section 5 concludes.

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[7]For a systematic analysis of the political economy of immigration, also see Facchini and Mayda (2009), Razin, Sadka and Suwankiri (2009), Facchini and Willmann (2005) and Dolmas and Huffman (2004).

2 The Benchmark Model

Labor migration affects the domestic labor market, the host country culture and its politics. The framework that we develop aims to capture these interactions in a dynamic framework. However, having all of these features necessitates that we include them in the most parsimonious way, and eliminate all that is not essential. With this caveat, we now describe the model.

Production and the Labor Market: Consider an infinite period economy with f production opportunities at the beginning of the game, the implementation of each of which requires one worker. For simplicity, we think of each of these production opportunities as occurring in separate firms. The country has a population comprised of i_N (native) citizen-workers, with the crucial assumption that $i_N < f$ i.e. there is a shortage of qualified native workers. Thus the employment of foreign workers is necessary to prevent some productive opportunities being wasted. Given this shortage of labor, economic output would be maximized if the country were to admit $v = f - i_N$ migrant workers to fill up the unutilized production opportunities. These migrant workers can be brought in on a temporary or permanent basis. We describe the productivity and cultural differences between these two types of migrant workers below.

The first key distinction between the two sets of workers is that temporary workers are to be repatriated at the end of their stint (assumed to be one period), while permanent workers can stay indefinitely. This has implications for their relative productivity and wages, that we now describe. In particular, given that foreign workers come from a dissimilar working environment, there are likely to be gains in productivity as foreign workers spend more time at their new jobs and adjust to their new environment. So the catch-up of foreign worker productivity with that of native workers will take time and may require a transition period – for simplicity, we assume that this takes one period. Accordingly, we assume that the productivity of a foreign worker is y in their first period in the country,[8] and that they are paid a 'world wage' w_0. This wage is the minimum required to attract a migrant worker, and comprises of the (low) wage in the 'source' country plus a 'moving cost'.[9] More generally, this initial expenditure on the migrant worker could also

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[8]We are thus assuming constant returns to scale in our production technology in the host country. An appealing aspect of our formulation is that it allows us to sidestep the issue of whether migration displaces native workers and adversely affects wages, and thus simplifies the analysis. Furthermore, this accords with results in most of the studies in the empirical literature on immigration that suggest that the displacement and wage effects of immigration are very small (see Kerr and Kerr, 2011 for a survey).

[9]For example, if the productivity of the worker in the source country was also given by a constant returns technology y_S, his wage there would be y_S, and w_0 would be given by $y_S + d$ where d represents the cost of worker

include any search and hiring costs incurred by the firm in locating and hiring such workers. We assume that the initial migrant wage is much smaller than his productivity i.e. $w_0 < y$.[10] From the next period onwards, their productivity increases to $y(1 + \Delta)$, part of which is firm-specific, while the remaining is general.[11] This could be either due to his increased experience or due to his access to a wider range of job-portfolios (say positions in mid or upper management) that his permanent status may make feasible. We denote the *firm-specific* increase in productivity by s and the *general* component by g so that $\Delta = s + g$. This results in the potential "immigration surplus" equalling vy or $vy(1 + \Delta)$, minus the corresponding wage, from the new and experienced foreign workers, respectively.[12]

While migrant productivity increases over time, there may well be legal or communication barriers that limit the inter-firm mobility of these migrant workers. We model this mobility barrier that migrant workers may face in a simple way. In particular, we assume that the cost for a migrant worker to move to another firm is γy, where a higher γ reflects an environment where

displacement across countries. We should point out that the literature typically either (a) assumes that migrants earn a (exogenously given) fraction of native wages, or (b) uses exogenous 'migration costs' to equilibrate wage gaps between the developing and developed world (see Borjas, 1994 for an overview), or (c) as in the rural-urban migration literature (see Stiglitz, 1976), invokes an efficiency wage argument to account for a wage premium being paid in developed country wages.

[10]Bauer, Lofstrom and Zimmerman (2000) report that "For guest workers, the existing studies suggest an initial earnings gap to natives, which range between 9 and 23 percent". Dustmann (2000) goes on to argue that "...seasonal workers from Eastern European to Western European countries are willing to accept job and wage packages which are not acceptable for natives ...The relatively low wage in their home countries, and the temporary nature of their migration reduces their reservation wages, and induces them to work harder while being abroad". Similar findings have been echoed by Anderson, Ruhs, Rogaly and Spencer (2006) in their study of migrant workers in Britain. The spate of lawsuits in the United States alleging discrimination suggest that migrant workers are underpaid relative to natives of similar productivity (for example, see the story carried by *Businessweek* at http://www.businessweek.com/magazine/content/08_06/b4070057782750.htm).

[11]A substantial amount of empirical evidence suggests that wages and productivity of migrant workers increase with time spent in the country. Kerr and Kerr (2011) summarize the literature on earnings assimilation and argue that "beyond the levels of earnings gaps at entry, most studies agree that the earnings gap diminishes with time spent in the host country. Earnings assimilation happens as immigrants improve their language skills or obtain more education (e.g. Chiswick, 1991; Borjas, 1994). There are several studies on the linguistic adjustment of immigrants including the important work of Dustmann (1994), Dustmann and Soest (2002) for Europe." These findings are echoed for the U.S. by Lubotsky (2007), which suggests that wages rise with time spent in the country and even outpace growth in native wages.

[12]Since it suffices for our purposes, we have chosen a particularly simple way to depict the labor market and the 'immigration surplus'. For a more elaborate general-equilibrium model of the labor market that shares many qualitative features of our simpler structure, see Helpman, Itskhoki and Redding (2008).

mobility across firms is relatively costly. The magnitude of this mobility cost can depend, inter alia, on immigration policies 'tying' migrant workers to a specific firm. As described in Table 1, such restrictions are common to some of the largest temporary migration programs across the world. γ can also depend on the nature of the country's labor market, and offers a simple way to capture differences in mobility between labor markets, for example, in the US and Europe.[13] It is important to note that if the mobility costs are high, then the parent firm can retain a *larger* part of the surplus generated by the increased productivity of the migrant worker.

Thus, if the worker is allowed to stay on for a second period, then the value of his outside option is $y(1 + g - \gamma)$, while the value of his (increased) productivity is $y(1 + \Delta)$. In this case, the worker and his employing firm bargain over the potential surplus $y(1 + \Delta) - y(1 + g - \gamma)$. Since the worker and the firm are in a situation of bilateral monopoly, as is common in labor-market models with such specificity, we model the interaction between the firm and the worker using Nash bargaining. Denoting the firm's relative bargaining strength by β, the share of the surplus enjoyed by the firm from retaining the worker is $\beta[y(1 + \Delta) - y(1 + g - \gamma)] = \beta y(s + \gamma)$. We assume that the intertemporal gain in productivity is high enough that firms gain a higher surplus from experienced workers than from temporary migrant workers:

Assumption 1: $y - w_0 < \beta y(s + \gamma)$

This assumption implies that firms would prefer to retain their migrant workers and make them permanent rather than repatriating them and recruiting a fresh batch of migrant workers.

Natives, Migrants and Sociocultural Heterogeneity: Native citizens gain from increases in firms' profits due to the filling of productive opportunities by migrant workers, but suffer cultural costs from having foreign migrant workers (we discuss this in detail below). Specifically, we describe the preferences of a native citizen-worker, U_N, in every period by:

$$U_N = \text{wage-income} + \text{share of firm profits} - \lambda * \text{cultural costs} \tag{1}$$

Here λ is a parameter that denotes the importance of economic gains relative to the cultural costs in the utility function. There are two features that deserve to be emphasized. First, we assume all natives are identical in the sense that each inelastically supplies a unit of labor, *and* also owns an equal share of all firms in the economy. This ensures that distributional effects are ruled out and

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[13] See Blanchard (2005) for an overview. Many commentators have argued that both geographic and inter-firm mobility costs are much lower in the U.S. than in Europe (Nickell, 1997; Beffy et. al. (2006), Buchinsky et. al. (2006) and Jolivet et. al. (2004) provide some estimates of labor mobility in France and the U.S.).

hence by assumption, cannot be behind any political backlash against immigration. As discussed earlier, this allows us to focus more closely on the implications of culture and heterogeneity for the politics of immigration policy, rather than on the distributional consequences of migration, which have been analyzed extensively in the existing literature. Second, natives are also assumed to be identical in terms of preferences with respect to foreigners.

Given this symmetry across the i_N native citizens, if w denotes the wage for each native worker and R_F the total revenues of all the firms in the economy *net* of wages to migrant workers,

$$U_N = w + \frac{1}{i_N}(R_F - wi_N) - \lambda \frac{C_c}{i_N} = \frac{1}{i_N}(R - \lambda C_c)$$

where C_c is the total cultural costs imposed by foreign migrant workers, discussed further below. Thus all citizens care identically about $R_F - \lambda C_c$.

While higher levels of migrant labor boost national income by allowing the implementation of productive opportunities which would have otherwise gone abegging due to a shortage of labor, migration levels also matter because they may change the country's sociocultural makeup. As forcefully argued by Alesina and La Ferrara (2005) and Huntington (2004) among others, citizens of a country care not just about their income but also the degree of sociocultural heterogeneity in society.[14] Greater ethnic and cultural diversity can adversely affect a native citizen through its impact on the nature of local public goods provided (see Alesina and Spolaore, 1997) - for example, natives may dislike the fact that the nature of public education might change with greater Hispanic immigration, with resources being diverted away from, say, music and towards teaching Spanish. Alternatively, greater cultural heterogeneity may have a direct (and adverse) impact on an individual's utility through social interaction, as in Alesina and La Ferrara (2005).[15]

We model this disutility by assuming that migrants impose a cultural cost C_c on native citizens (section 4.2 develops a model that provides some microfoundations for this cost). This cost is c_0 for every worker during the first (temporary) period which he spends in the country. However, if a migrant worker stays longer, then from the second period onwards this cultural cost is $c(\frac{n}{1+a})$ where n is the number of migrants present beyond their first period in the country, with $c', c'' > 0$. The parameter a captures the ease with which the migrant becomes culturally assimilated. Greater assimilation (i.e. higher a) lowers the adverse cultural impact of migration. This parameter can

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[14]For instance, Freeman (2006) suggests that "some natives worry that immigrants will present a cultural threat to their way of life and reduce social cohesion. This view is reflected in the attitudes of some Europeans toward immigrants from developing countries, particularly those from Moslem countries."

[15]See the pioneering work on social psychology by Tajfel et al (1971) that accords with this, and Leyens et al (2003) for a more recent discussion.

also be used to examine the differences in the cultural impact of temporary versus permanent migrants; when a is small, this difference is larger.

The above formulation captures, in a parsimonious way, several aspects of the cultural trade-offs between having temporary versus permanent migrants (i.e. those staying beyond the first period). Unlike short-term workers, permanent migrants acquire voting rights and may thereby influence the allocation of scarce resources across local public goods in ways that adversely affect native welfare (e.g. by directing resources towards bilingual education).[16] Permanent migrants are also more likely to be accompanied by family, which further increases their cultural 'burden'. Thus overall, permanent migrants may impose higher cultural costs because they arguably threaten the nation's "identity" and ethnic composition, in ways that temporary migrants do not. Furthermore, their influence on society and the cultural burden they impose on the native citizens is likely to be greater as they increase in number. Accordingly, we assume that the marginal cultural cost being imposed by these permanent migrants is increasing in n. For simplicity in analysis, we however assume that the cultural cost c_0 imposed by temporary migrants is linear in their numbers; allowing some convexity in these costs as well does not qualitatively change the results. While in our benchmark model we assume that the marginal cultural costs $\frac{1}{1+a}c'(\frac{n}{1+a})$ associated with permanent migration are higher than c_0 (the precise assumption is made in the next section), we relax this assumption in section 4.1, where we endogenize the migrant's assimilation decision. We do this because under some conditions it can be argued that the degree of cultural assimilation is a choice variable for migrants and therefore these imposed cultural costs are endogenous.[17]

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[16]There is considerable evidence that suggests that the resistance to permanent immigration is considerable in many countries - especially those without a history of cultural assimilation. Cesarini and Fulbrook (1996) emphasize how the political opposition to immigration is strongest in countries where historically, citizenship and national identity is both ethnic and exclusive (as in Germany or Japan). For example, Japan passed the Immigration Control Act of 1990 to ensure that (despite a severe labor shortage) only ethnic Japanese (upto the third generation) living in other countries would be allowed to emigrate into Japan. However, the suspicion that these *nikkeijin* from Brazil had acquired some Brazilian cultural mores was enough to limit such migration to a maximum of three years (Tsuda, 1999). Indeed the rise to prominence of several political parties in Europe (e.g. Joerg Haider's Freedom Party in Austria or Netherland's VVD) can arguably be attributed to the political salience of immigration as a threat to a country's culture and national identity. The fact that cultural reasons may underpin the reluctance of countries to encourage immigration is argued by Pritchett (2006), Abella (2006), Mayda (2006) as well as Winters et al (2003) who argue that temporary migrants are perceived to be 'less threatening' because they do not permanently influence a country's national identity. Similarly, Freeman (2006) argues that: "Another factor that determines attitudes toward immigration is that immigrants *eventually become citizens and affect politics*". [Emphasis added].

[17]There may be positive cultural benefits as well from having migrants – for example, in the form of increased diversity. Including this (e.g. in the form of negative costs over a certain range) does not change the qualitative

2.1 Politics, Policy and the Migration Protocol

Before proceeding to describe the underlying political structure, we describe the *migration protocol*. In particular, firms with vacant posts are randomly matched with migrants (temporary or permanent) upto the limit imposed by immigration policy. To model the difference between temporary and permanent migrants in a relatively simple and tractable way, we assume that if a migrant worker stays beyond the first period, then he becomes a permanent resident or citizen and cannot be repatriated. Thus the crucial decision comes at the end of the first period, when the government must decide whether to repatriate the existing group of temporary migrants or make them permanent. We neglect any technological constraints in the repatriation of temporary migrants by assuming that the government faces zero administrative costs in enforcing their repatriation. We also assume that all foreign workers are treated symmetrically. This implies that the government can neither selectively tax nor repatriate a subset of these workers. Relaxing these latter assumptions does not alter the qualitative nature of our results. While citizens may prefer the repatriation of temporary migrants and their replacement with a new batch due to their lower cultural costs, firms are solely interested in retaining them for their productivity gains. This conflict between the interests of citizens and the firms works through the political process, which we detail next.

The Political Structure and Immigration Policy: For the political structure, we adapt a model of moral hazard and political accountability, originally formulated by Barro (1973) and Ferejohn (1986) and widely used in various contexts (see Persson and Tabellini (2000)). Elections are held at the end of each period, in which citizen-candidates stand for election. They are all identical and care both about the citizens' aggregate lifetime utility V_N from government policy, as well as any rents they acquire, which consist of the ego rents R from holding office as well as any bribes B paid to them to influence their choice of policies. A politician's payoff each period is given by

$$U_{POL} = \theta(R + B) + U_N$$

where θ is the relative weight that he puts on his rents. As in the standard Barro-Ferejohn set-up, government policy is chosen by the incumbent after elections, and there is no commitment to electoral promises. Given the politician's preference function, both the citizens and the firms are in a position to influence (using different instruments) government policymaking. Firms can lobby the government by offering it a bribe to allow firms with experienced workers to retain them (thereby making them permanent workers, who are immune to future repatriation). In contrast,

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nature of our results. We explicitly incorporate such benefits in our analysis of cultural assimilation in section 4.

citizen-workers exercise control on government policy by threatening to replace the incumbent government with a randomly-chosen challenger in the upcoming elections. This particular political framework, which involves a dynamic game between the politician, the citizen-workers and also the firm lobby, is similar to the structure in Coate and Morris (1999), who use it to study the adoption and persistence of policies.

The strategies and timing of the game are as follows. At the beginning of the game, citizens observe the degree of labor shortage v in the economy, and decide on a migration policy P^*, which specifies the number of temporary and permanent migrants, (n_T, n_P) to be admitted in that period and in every subsequent period.[18]

At the start of any period t, if the migration policy P^* is still in operation in that period, firms hire the corresponding number of workers from foreign countries at the wage w_0. Then, citizen-voters choose a decision rule Ψ_t that has two components: (i) an election rule $\psi_t^v(\rho_t)$ defined as the probability of re-election of the incumbent politician, and (ii) a policy continuation rule $\psi_t^p(\rho_t)$, defined as the probability of whether to continue with P^* or scrap it altogether in subsequent periods. Both are defined as a function of the incumbent's action ρ_t, where $\rho_t = 0$ if the government repatriates the current set of temporary workers at the end of the period, and $\rho_t = 1$ if the government makes them permanent. Firms that receive the migrant workers observe the voting rule, invest in worker-training e_T and e_P, and form a lobby to choose a bribing strategy η_t which determines the bribe B_t to offer the politician in exchange for preventing repatriation and instead retaining their experienced temporary migrant workers.[19] The incumbent politician observes the citizens' voting rule and the bribe offered by the lobby, and decides on immigration policy. The politician can choose either to reject the bribe and implement the policy $\rho_t = 0$ of repatriating

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[18]Of course, (n_T, n_P) can be different in different periods. Indeed, as we show below, the optimal path may involve bringing in all the permanent migrants immediately, rather than adding to their number every period.

In Appendix B, we consider an alternative formulation of the model where, at the beginning of each period, citizens choose afresh the number of migrants to bring in. The qualitative results are the same as in the present version. The current formulation has the (perhaps more realistic) assumption that a referendum on the form of migration policy takes place at the beginning of the labor shortage, and then in every period people vote only on whether to continue with the policy or scrap it, rather than having a new referendum on the number of migrant workers in every election.

[19]The total number of firms is assumed to be large relative to the vacant productive opportunities that occur. Thus, *ex ante*, the chance that any particular firm will have a vacancy for which it will need a migrant worker is small. Hence it has little *ex ante* incentive to join a lobby to press the government to expand the temporary migration program. However, *ex post*, once a firm has an experienced worker on its payroll, its incentive in trying to retain this worker permanently is much stronger.
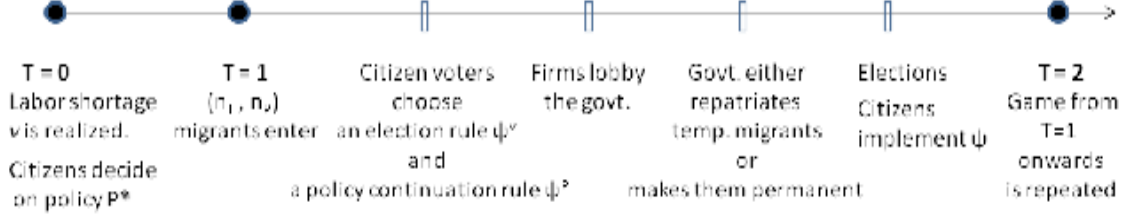
Figure 1: Timing of the game

the temporary workers, or accept the bribe and implement $\rho_t = 1$ i.e. allow the firms to retain their experienced migrant workers, which effectively gives these workers permanent residence. The politician's decision on whether or not to allow firms to retain their experienced migrant workers is observed by citizen-voters, who then implement their voting rule Ψ_t which determines whether or not the incumbent politician is re-elected, and whether or not the migration policy P^* is to be continued in the next period, or scrapped. The timing of the game is depicted in figure 1.

As mentioned above, an aspect of this particular formulation involves citizens choosing in every period whether to continue with the current migration policy or to scrap the policy completely. While, in general, one can consider the optimal updated continuation policy in each case, in reality coordinating on such complicated voting decisions may be difficult. Thus we adopt the simple possibility of only voting on continuing with the current policy or not. In Appendix B, we demonstrate in an alternative formulation of the model that allowing for more general continuation policies or the possibility that migrants who become citizens may impact future immigration policy, does not alter the qualitative nature of our results.

Formally, this defines a dynamic game between the politicians, the firms and the representative citizen. An equilibrium strategy profile (Ψ_t, η_t, ρ_t) requires that each player's strategy constitute a best response to the other players' equilibrium strategies. Next period, the same cycle is repeated, with either the re-elected politician, or the newly elected government that replaces him.

3 Equilibrium Analysis

We begin by briefly delineating key features of the social planner's problem by describing the optimal migrant mix in the *absence* of any political considerations on the part of the government. Having established the social optimum as a benchmark, we then analyze the equilibrium with

political factors at work in section 3.2.

3.1 The Socially Optimal Mix: Temporary versus Permanent Migrant Workers

A social planner maximizes the representative citizen's discounted stream of utility, by choosing the socially optimal number of temporary migrant workers m_T and permanent immigrants m_P which solve the following problem:

$$\max_{m_T, m_P} (y - w_0 - \lambda c_0)(m_T + m_P) + \frac{\delta}{1 - \delta}[(y - w_0 - \lambda c_0)m_T + \{y(1 + \Delta) - w_P\}m_P - \lambda c(\frac{m_P}{1 + a})]$$

subject to the constraint that $m_T + m_P \leq v$, where w_P denotes the wage that migrants earn once they become permanent. Here $(y - w_0 - \lambda c_0)$ is the contribution by a migrant worker in the *first* period, to national welfare net of cultural costs (recollect that temporary and permanent migrants are identical in their first period). The second term is the discounted payoff from having both a rotating pool of m_T temporary migrants as well as m_P permanent migrants in the country. The following assumption ensures that the surplus from temporary migrant workers, net of their cultural costs, is positive.

Assumption 2: $y - w_0 - \lambda c_0 > 0$

If the above inequality is violated, it will never be socially optimal to admit temporary migrants.

As discussed earlier, the firm and an experienced worker bargain over the surplus $y(1 + \Delta) - y(1 + g - \gamma)$. The share of the surplus enjoyed by the firm from having such a worker is $\beta[y(1 + \Delta) - y(1 + g - \gamma)] = \beta y(s + \gamma)$, while the wage paid to permanent workers, w_P, is given by $y(1 + \Delta) - \beta y(s + \gamma)$.

Incorporating this in the expression above, the first-order condition with respect to m_P yields three possibilities:

$$\text{If } \beta y(s + \gamma) - \frac{\lambda}{1 + a}c'(0) \leq y - w_0 - \lambda c_0, \text{ then } m_P = 0,$$

$$\text{if } \beta y(s + \gamma) - \frac{\lambda}{1 + a}c'(\frac{v}{1 + a}) \geq y - w_0 - \lambda c_0, \text{ then } m_P = v,$$

$$\text{otherwise } \beta y(s + \gamma) - \frac{\lambda}{1 + a}c'(\frac{m_P}{1 + a}) = y - w_0 - \lambda c_0 \tag{2}$$

and the solution for m_T is that temporary migrants fill up the rest of the shortage i.e. $m_T = v - m_P$.

Our framework emphasizes two factors that determine the socially optimal mix of temporary and permanent migrants. The first is the inter-temporal change in productivity of the migrant worker, and its impact on the income of the host economy; the gain to native-citizens' incomes

from a permanent migrant equals $\beta y(s + \gamma)$, versus $y - w_0$ from a temporary migrant. The other driving force is the preference that natives have for temporary versus permanent migrant workers in terms of their cultural impact – the inter-temporal "cultural assimilation" effect as captured by $\frac{\lambda}{1+a}c'(\frac{m_P}{1+a})$ versus c_0.[20] Given these effects, two main possibilities arise.

(i) Corner Solutions: Permanent Immigration versus Temporary Migration: The social planner's optimization problem may result in a corner solution where only temporary migrants are admitted to fill all available posts, i.e. $m_T = v$ and $m_P = 0$. This is the case when the cultural costs of permanent immigration are so high that it is not worth the increase in productivity, i.e. when $\beta y(s + \gamma) - \frac{\lambda}{1+a}c'(0) < y - w_0 - \lambda c_0$. The reverse case, i.e. $m_T = 0$, is also possible, where only permanent migrants are used. This will be the case when either the surplus from a temporary worker $y - w_0 - \lambda c_0$ is negative, i.e., Assumption 2 does not hold, or when the enhanced productivity of permanent migrants is enough to outweigh the cultural cost from even filling all v slots with permanent migrants i.e. if $\beta y(s + \gamma) - \frac{\lambda}{1+a}c'(\frac{v}{1+a}) > y - w_0 - \lambda c_0$.

(ii) Interior Solution: Both Temporary Migrants and Permanent Immigration: Alternatively, for a wide set of parameters we may have an interior solution with both temporary and permanent migrants i.e. $m_T, m_P > 0$. Such an outcome is possible if the cultural costs of the temporary migrants do not outweigh their productivity benefits i.e. $y - w_0 - \lambda c_0 > 0$, and at the same time, the cultural impact of filling all v slots with permanent migrants is too high relative to temporary ones i.e. $\beta y(s + \gamma) - \frac{\lambda}{1+a}c'(\frac{v}{1+a}) < y - w_0 - \lambda c_0$. In this case, the social optimum will consist of bringing in permanent migrants till the point where their productivity surplus, offset by their rising cultural cost, just equals the surplus from temporary migrants, and then filling the rest of the worker shortage using temporary migrants.

3.2   Politics and Barriers to Entry: Equilibrium Analysis

We turn next to incorporating political considerations in the migration decision. As mentioned earlier, this now involves a dynamic interaction between the decisions of the citizen-voters, the firms and the government. We proceed below in a series of steps. For expositional simplicity, we begin by considering the simplest case where permanent migration is never optimal and thus does not take place. By 'freezing' permanent migration, we are able to focus on the level of

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[20]Of course, a country's ability to assimilate foreign migrants is likely to be a function of the ethnicity of the migrant workers and the ability of the country's society to absorb and integrate migrants into the national fabric, and may differ widely across countries. In section 4.1 we endogenize the migrant's cultural assimilation decision and make it a function of his perceived length of migrant tenure in the host country.

temporary migration and to develop some insight for the sorts of policies that might sustain welfare-improving (higher) levels of temporary migration. In the subsection 3.2.2 that follows, we open up the parameter space to consider migration regimes that entail permanent migration as well.

3.2.1 Only temporary migrants

To understand the impact of political constraints on immigration, we first study the case where the only decision is on how many *temporary* migrants to let in every period. This will be the case when the marginal cultural cost of even a single permanent migrant is so high as to outweigh their economic gain. Thus in this section, we make the following assumption:

Assumption 3: $\beta y(s + \gamma) < \frac{\lambda}{1+a} c'(0)$

Together with assumptions 1 and 2 that $\beta y(s+\gamma) > y - w_0 > \lambda c_0$, this implies that $\frac{1}{1+a} c'(0) > c_0$ i.e. the marginal cultural cost imposed by temporary migrants is smaller than that imposed by any permanent migrant.

Under this parameter restriction, given assumption 2 that the surplus from employing them is positive, the socially optimal decision in this case would be to fill all the v vacancies with temporary migrants. However, it is possible that once admitted, the firms' lobby may bribe the government into making the temporary workers permanent, in order to reap the benefits of their increased productivity. This possibility, and the resultant large cultural costs, may limit the extent to which citizens are willing to allow in temporary workers in the first place. Observe that since the social optimum here is rather simple and involves a rotating pool of v (temporary) migrants every period, the extent of inefficiency can be easily measured as the deviation of migration policy from this level.

Consider first the citizen's decision in every period, which has two components – an election rule and a policy continuation rule. Here the primary issue under consideration is repatriation of the temporary migrants versus their being made permanent. Thus the citizen's decision rule Ψ_t implements the re-election rule $\psi_t^v(\rho_t)$ as well as the policy continuation rule $\psi_t^p(\rho_t)$ to maximize the incentives it provides to the incumbent politician to follow the citizen's migration preferences. Hence the citizen's equilibrium voting rule is very simple: the incumbent government will be re-elected if and only if all temporary workers are repatriated. A second aspect of this decision involves continuation of the migration policy if the government were to deviate and in fact allow the firms to retain the temporary workers permanently. Since politicians care both about rents

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from being in office *as well as* future welfare, the strongest incentive can be provided to them by promising the worst possible outcome on both dimensions. Since by assumption 2, the welfare benefit from bringing in temporary workers is always positive, the worst outcome on the welfare dimension is to scrap migration programs forever. Thus the promised (punishment) strategy following a deviation is $\psi_t^v(\rho_t = 1) = 0$ and $\psi_t^p(\rho_t = 1) = 0$. While one may view this as the usual grim trigger strategy of repeated games, here it can also be interpreted as the electorate losing faith in the political viability of migration and choosing to scrap it.[21]

We focus next on periods where the migration policy P^* of bringing in n_T temporary migrants is in place. Consider the equilibrium strategy of the incumbent politician. If offered a bribe B to retain the temporary migrants, he trades off the gain from accepting the bribe versus the loss in ego-rents R from being voted out of office as well as future welfare.

In any period, the incumbent politician's lifetime payoff from accepting the bribe ($\rho = 1$), to retain n_T temporary workers, is

$$V_I(\rho = 1; n_T) = \theta[R + B] + U_N(n_T, 0) + \delta V_N(\rho = 1; n_T) \tag{3}$$

where $U_N(a, b)$ represents the native citizens' utility this period from having a temporary migrants and b permanent migrants in the economy, and $V_N(\rho = 1; n_T)$ is the citizen's lifetime utility from tomorrow if the incumbent pursues the policy $\rho = 1$ today i.e. allows the n_T workers to stay on permanently. In this case, since the incumbent is ousted from office, $V_N(\rho = 1; n_T)$ is also his continuation payoff. Since the migration policy is scrapped altogether as a result of such a deviation, $V_N(\rho = 1; n_T)$ is the utility from having only the n_T permanent workers in the future, and is given by $V_N(\rho = 1; n_T) = \frac{1}{1-\delta} U_N(0, n_T)$.

In contrast, the incumbent politician's payoff from rejecting the bribe ($\rho = 0$) and adhering to the voters' preferences equals

$$V_I(\rho = 0; n_T) = \theta R + U_N(n_T, 0) + \delta V_I(\rho = 0; n_T) \tag{4}$$

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[21]It may be useful to make two points at this stage. First, instead of considering totally scrapping migration following a deviation, one might instead consider allowing the citizens to optimally chose a new policy at every stage following a deviation. We do this in Appendix B using a three-period version of the model. The analysis shows that the basic insight still holds, and in fact the degree of inefficiency is exacerbated as a result.

Second, an alternative to choosing a policy continuation rule would be to choose the type of new politician to elect into office. Suppose there are two types of politicians: pro- and anti- immigration. Then, on deviation, the voters could commit to always choosing anti-immigration politicians in the future, who would never implement any immigration programs at all.

where $V_I(\rho = 0; n_T)$ is the value function that the politician associates with being in power, having complied with the voters' wishes to have a rotating pool of n_T temporary migrant workers. If the politician continues with the policy of repatriating the temporary migrants, then he enjoys being in office the following period as well. Thus the total gain to the politician from not deviating is given by solving the above equation to get:

$$V_I(\rho = 0; n_T) = \frac{\theta R}{1 - \delta} + \frac{U_N(n_T, 0)}{1 - \delta} \tag{5}$$

Therefore if the number of temporary migrants under consideration is n_T, the incentive constraint for the politician to follow $\rho = 0$ is given by:

$$V_I(\rho = 0; n_T) \geq V_I(\rho = 1; n_T) \tag{6}$$

Substituting for the V_I's from above, it implies that the minimum bribe-level $B^{\min}$ that will be required to persuade the politician to allow n_T experienced (temporary) workers to be retained by their employers is given by:

$$\theta B^{\min} + \frac{\delta}{1 - \delta} U_N(0, n_T) = \frac{\delta}{1 - \delta} \theta R + \frac{\delta}{1 - \delta} U_N(n_T, 0) \tag{7}$$

where the natives' utility function U_N incorporates both the additional income as well as the heterogeneity-disutility from the immigrant workers. Hence we have:

$$
\begin{aligned}
U_N(0, n_T) &= [y(1 + \Delta) - w_P]n_T - \lambda c\left(\frac{n_T}{1 + a}\right) = \beta y(s + \gamma)n_T - \lambda c\left(\frac{n_T}{1 + a}\right) \\
U_N(n_T, 0) &= (y - w_0 - \lambda c_0)n_T
\end{aligned}
$$

On the other hand, recall that the firm lobby makes a take-it-or-leave-it offer to the politician where, in exchange for a bribe B, the politician agrees to let the lobbying firms retain their temporary migrants permanently. Thus we need to determine the maximum level of bribe that the firm lobby is willing to offer. For each firm, an extra experienced worker from period $t = 2$ onwards yields output of $y(1 + \Delta)$ each period. As discussed before, the surplus for the firm from having such a worker is $\beta y(s + \gamma)$. Hence the maximum bribe the firm lobby will be willing to pay for retaining permanently the n_T temporary workers is:

$$B^{\max} = \frac{\delta}{1 - \delta} \beta y(s + \gamma)n_T \tag{8}$$

The incentive-compatibility constraint for the politician requires that this maximum bribe-level not be enough to persuade the politician to retain the temporary migrants i.e. $B^{\max} \leq B^{\min}$,

which using (7) requires:

$$\theta \frac{\delta}{1-\delta}\beta y(s+\gamma)n_T + \frac{\delta}{1-\delta}[\beta y(s+\gamma)n_T - \lambda c(\frac{n_T}{1+a})]$$
$$\leq \quad \theta \frac{\delta}{1-\delta}R + \frac{\delta}{1-\delta}[(y-w_0-\lambda c_0)n_T] \qquad (9)$$

If this constraint is satisfied, then the optimal choice for a politician in any period will involve $\rho = 0$.

At the start of the game, in trying to decide on migration policy P^*, native citizens will take into account this constraint on politicians' action. Recall that, in this section, we are considering the case where the only decision is on how many *temporary* migrants to let in every period. Since by Assumption 2 the gain from bringing in temporary workers is positive, so long as they are not made permanent, the optimization problem for the citizen boils down to choosing the maximum number of temporary migrants n_T subject to the incentive constraint above. Rewriting it, we have:

$$n_T[(1+\theta)\beta y(s+\gamma) - (y-w_0-\lambda c_0)] - \lambda c(\frac{n_T}{1+a}) \leq \theta R \qquad (IC')$$

This is portrayed in figure 2(a). Given that $c(.)$ is convex, the left-hand side of the inequality is concave in n_T, while the right-hand side is constant. It is clear from the figure that unless the end point (i.e. at $n_T = v$) of the left-hand side of (IC') lies below θR, the equilibrium level of temporary migration is lower than the social optimum. This is summarized in the proposition below.

Proposition 1 *Under assumptions 1-3, if*

$$[(1+\theta)\beta y(s+\gamma) - (y-w_0-\lambda c_0)]v - \lambda c(\frac{v}{1+a}) > \theta R \qquad (10)$$

then, under political constraints, the equilibrium level of temporary migrants n_T^* will be lower than the socially optimal level, i.e. $n_T^* < m_T$.

The basic intuition for the result is fairly straight-forward. Since firms gain from retaining temporary migrant workers, they lobby the politician to not repatriate the temporary migrants. An increase in the number of temporary workers increases the resources the firms are willing to expend to effectively lobby the government. Anticipating this, at the beginning citizens decide on a suboptimal (low) number of temporary migrants.
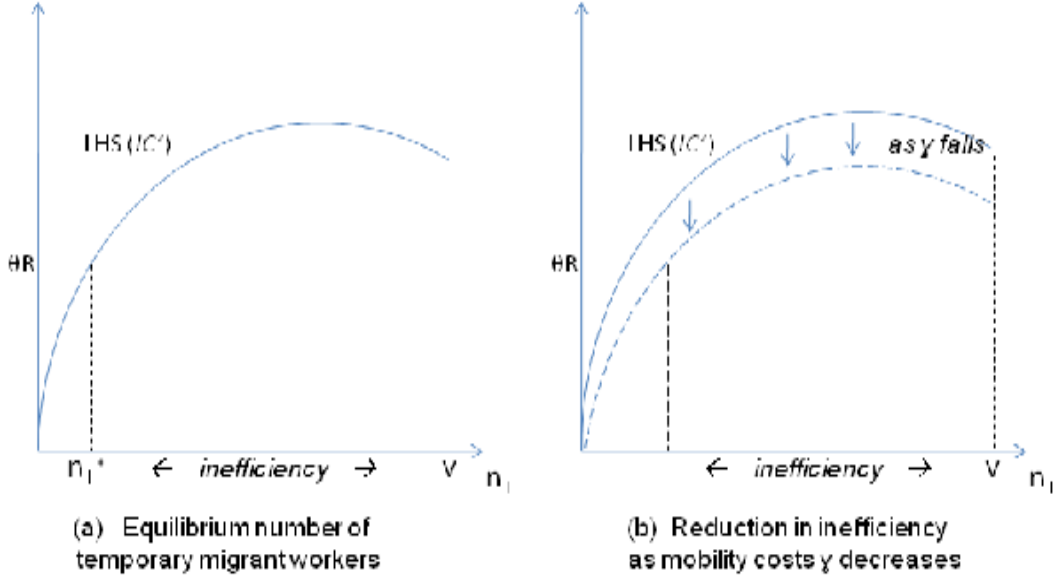
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Figure 2:

Put another way, the proposition suggests a case of *political failure* in the sense that everyone may gain from an alternative policy. There exist other (higher) levels of temporary migration that all parties would prefer. It is straightforward to see that firms would benefit from having more temporary migrants to fill the available vacancies. For the citizens as well, higher levels of temporary migration are preferable, since by assumption 2 the immigration surplus, net of the cultural cost, from each extra temporary worker is positive. However, the inability of citizen-voters to exercise intertemporal control over the politician means that these levels are not politically sustainable.

Aspects of the above political equilibrium are best understood by examining the impact of differences in the relevant parameters of the model on the degree of inefficiency. When is such political failure more likely? The following corollary to Proposition 1 addresses this.

Corollary 1 *Under the conditions in Proposition 1, the level of temporary migration n_T^* increases with (i) economic factors: a fall in the inter-temporal productivity increase s or in the world-wage w_0, or a decrease in the migrant worker's mobility cost across firms γ, or a fall in the firm's bargaining power β, (ii) cultural factors: an increase in the cultural costs λ from migration, or a lower degree of assimilation by migrants a.*

Proof. An decrease in s, w_0, γ, β or a or an increase in λ tends to lower the left-hand side of

(IC'). (For λ, $\frac{dLHS(IC')}{d\lambda} = n_T c_0 - c(\frac{n_T}{1+a}) = \int_0^{n_T}[c_0 - \frac{1}{1+a}c'(\frac{n_T}{1+a})]dn < 0$ by assumption 3.) From figure 2(b) it is then clear that this will result in a increase in n_T^* (although the figure depicts the impact due a change in γ, analogous figures hold for the other parameters as well). ∎

The above corollary thus suggests somewhat surprisingly, that higher cultural costs as well as greater ease of mobility across firms may both be associated with a greater amount of temporary migration. Explicit consideration of political constraints in the determination of migration policy is central to these results. To see the intuition consider the following examples. In a labor market with higher mobility (i.e. a lower γ), the economic rent to a firm from retaining a migrant worker (and making him permanent) is likely to be lower. It thereby reduces the maximum amount the firm lobby is willing to pay the government in order to retain its migrant workers, and makes a higher level of temporary migration sustainable i.e. incentive compatible. Similarly, a decrease in the world wage w_0 makes it less attractive for firms to retain experienced migrant workers as compared to freshly recruiting (low productivity) temporary workers at the wage w_0. Thus, it serves to increase the level of politically sustainable temporary migration.

The results can be used to examine the impact of some aspects of immigration policies. We highlight two of them below. First, a country may prefer to import (temporary) migrants from culturally *dissimilar* countries rather than from culturally similar ones. Second, the degree to which temporary migrant workers are allowed to change employers within the host country could be related to inherent features of the country's labor market. We analyze these in turn below.

(i) Culture and Guest Worker programs: Our framework has two distinct insights on the role of culture and the design of guest worker programs. First, on the positive side our framework suggests that larger temporary migration programs are more sustainable in countries with a higher aversion to foreign workers (i.e. a high λ) or where assimilation into the native society is more difficult (i.e. a low a). In other words, ceteris paribus we can have larger temporary migration programs in (high λ) countries such as Japan as compared to (relatively low λ) countries such as Canada. Second, on the normative side, our analysis suggests that a simple way in which the degree of inefficiency can be reduced is by replacing, for example, culturally similar (low λ) migrants with culturally distinct (high λ) migrants, resulting in higher levels of politically sustainable temporary labor migration – thus boosting overall national income and welfare.

Both these insights follow directly from Corollary 1 (ii). In particular, this corollary suggests that because it is (politically) much more costly (in terms of future payoffs) to the government to provide citizenship to culturally (dis)similar migrant workers (i.e. when λ is high or a is low), the

firm lobby needs to make a larger bribe in order to successfully persuade the politician to retain the temporary workers in this case. Therefore, the sustainable level of temporary migration n_T^* rises with the cultural distance of the migrants.

Some of the largest ongoing temporary migration programs in the world are in the Middle East – Bahrain, Kuwait, Saudi Arabia and the UAE being prominent examples.[22] During the late eighties there was a big expansion in the size of the guest-worker programs in these rich Gulf countries as well as an important change in the nature of the programs. In particular, there was large shift in the source countries for much of the migrant workforce, away from other Arab countries, such as Egypt, Yemen and Jordan, which had previously been the main sources from which migrant workers were drawn. Instead, these countries chose to deliberately replace temporary migrants of Arab origin with those of South (or South East) Asian origin. In fact, there was a decrease in not just the share, but even in the absolute number of Arab workers.[23] While a number of factors could have driven this policy switch, our analysis offers the intriguing possibility that the political sustainability of the expanded programs was possible precisely because of the cultural dissimilarity of the South Asian guest workers, as against the Arab guest workers. Indeed, Jureidini (2006) in his survey of temporary migration programs in the Gulf States, argues that one factor that contributed to the replacement of Arab workers with other Asians was that "Arabs were more likely to stay and eventually make demands for citizenship and political participation. Asians were considered more dependable and less demanding and were easily expelled."

(ii) Employer Assignment and the (im)Mobility of Guest Workers: One of the salient aspects of most temporary labor migration programs has been the fact that the guest workers are tied to specific employers i.e. restricted in their movement to firms other than the original employer. As described in Table 1, this feature is common to some of the largest temporary migration programs across the world, in countries such as the U.S., Kuwait and Switzerland.[24]

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[22]One might be hesitant to draw wider implications, given the large differences in the nature of politics in liberal western democracies as compared to the Middle East. However, we should point out that a simple modification of our model, where elections are replaced with the threat of political instability in a single-party/authoritarian regime, would also generate very similar results.

[23]The Arab share of the foreign worker population in the Arab countries of the Gulf Cooperation Council (GCC) went down from 56 percent in 1985 to 32 percent in 2002. This decrease in the Arab share of temporary migrants was mirrored by the rise in the share of South and South East Asian migrants over the same period. For details, see Kapiszewski (2006).

[24]While not strictly a temporary labor migration program, the *H-1B* program in the United States assigns foreign workers to specific employers and makes mobility across employers costly (Ruhs, 2002).

In our model, the degree of mobility for temporary migrant workers is captured by the parameter γ_0 which denotes the cost of changing employers during their period of temporary stay in the country. This parameter, which could be regulated by policies which delineate restrictions on the movement of migrant workers, could range from a low value of γ_1 (no restrictions i.e. same mobility costs as faced by permanent workers) to a high of 1 (full restrictions i.e. no possibility of changing employers). What are the trade-offs involved in the optimal choice of this policy?

To examine the above exercise, suppose that at the end of the first period a temporary migrant worker is applies for permanent residency. While this application is being processed, he is still subject to temporary migrant mobility policy, given by γ_0. Thus his wage in the second period is dictated by his outside option γ_0. However, if the worker is made permanent he becomes subject to same mobility costs that natives are , i.e. γ_1. We begin by observing that restrictions on the mobility of guest workers lowers their bargaining power and adversely affects their wages. This increases profits of the host country firms that hire these workers, and thereby directly increases national welfare. However, as γ_0 rises, it also has an impact on the level of temporary migration that is politically sustainable. However, as γ_0 rises, it makes a temporary worker more valuable relative to a permanent one, and thus serves to diminish the firm's lobbying incentives. The interaction of these various forces shapes the optimal choice of mobility policy γ_0, which is analyzed systematically in the proposition below.

PROPOSITION *Under the following conditions the optimal choice of policy would involve $\gamma_0 = 1$ (i.e. maximal restrictions on mobility). Otherwise, it would be optimal to allow some degree of inter-firm mobility for temporary migrants i.e. $\gamma_0 < 1$.*

PROOF: See Appendix A.

This suggests that restrictions on the mobility of temporary migrant workers are more likely to be optimal in a country with mobile labor market institutions as in North America (as in the case of the H1-B program) and less likely to be optimal in labor markets where there are greater frictions (as in some countries in Europe - see Bauer, Lofstrom and Zimmerman, 2000), and also in sectors where investment and the development of a worker's productivity is very important.[25]

The preceding discussion analyzed two possible mechanisms through which governments could credibly commit to make temporary migration politically sustainable. There are also other commitment devices available to governments. For instance, Kremer and Watt (2009) prescribe the migration of female workers for households (e.g. *au pairs*) as a means to relax the politically sus-

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[25]For example, under the United Kingsdom's 'Highly Skilled Migrant program', migrants are admitted without having a prior job offer. Once they have found a job, they are free to change employers.

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tainable level of temporary migration. In part this is because such a policy automatically limits family reunification and is less likely to have an impact on crime. Variants of such policies have operated in parts of the Middle East, Singapore (Filipino au pairs) and Canada (seasonal agricultural workers in which only married men with children could participate, see Abella (2006)). Alternately, policies could be related to the nature of wage-payments for migrant workers. For example, the *Bracero* program had a provision under which a part of the migrant worker's wages and salaries were withheld and kept as savings and given back to the migrant only upon return to Mexico. By making it harder for firms to hold on to workers in the long run, such mechanisms reduce their incentives for lobbying the government and thus make politically feasible larger-sized temporary migration programs.

3.2.2 Both temporary and permanent migrants

So far we have considered the case when the marginal cultural impact of permanent migrants is so high that citizens decide only on the number of temporary migrants to be allowed into the country to meet the labor shortage v. If the cultural cost is more moderate, and this labor shortage is expected to last indefinitely into the future, it may be worthwhile to fill some of the positions with permanent migrants and then use temporary migrants to fill the remaining slots. Thus in this section, we make the following assumption:

Assumption 4: $\beta y(s+\gamma) - \frac{\lambda}{1+a}c'(0) > y - w_0 - \lambda c_0 > 0 > \beta y(s+\gamma) - \frac{\lambda}{1+a}c'(v)$

This assumption implies that the marginal cultural impact of a few permanent migrants is small enough so as to make the overall gain from their employment greater than that from temporary migrants. However, the cultural cost from filling all v slots with permanent migrants is so high as to outweigh the economic gain from doing so. Under this assumption, in this section we study the political considerations in play when citizens choose the number of permanent migrants to bring in along with the number of temporary ones.

If $n_P(i)$ is the number of new permanent migrants admitted in period i and $n_T(i)$ is the number of temporary migrants allowed in that period (and due to be repatriated at the end of the period), the overall national welfare is given by:

$$\sum_{i=1}^{\infty} \delta^{i-1}[(y - w_0 - \lambda c_0)n_T(i) + (y - w_0 - \lambda c_0 + \frac{\delta}{1-\delta}\beta y(s+\gamma))n_P(i) - \delta\lambda c(\frac{\sum_{j=1}^{i} n_P(j)}{1+a})] \quad (11)$$

As before, $y - w_0 - \lambda c_0$ is a temporary migrant's contribution to national welfare net of the cultural costs he/she imposes. It is the same for a permanent migrant during the first period of stay, and

changes to $\beta y(s + \gamma) - \lambda c(\frac{\sum_{j=1}^{i} n_P(j)}{1+a})$ for subsequent periods, which takes into account the part of the productive surplus retained by the native firms as well as the cultural costs imposed. This overall welfare is to be maximized subject to the government's incentive constraint, which is now given for each period i by:

$$\theta \frac{\delta}{1-\delta}[\beta y(s+\gamma)n_T(i)] + \frac{\delta}{1-\delta}[\beta y(s+\gamma)(n_T(i)+n_P(i)) - \lambda c(\frac{n_T + \sum_{j=1}^{i} n_P(j)}{1+a})] \quad (12)$$

$$\leq \theta[\frac{\delta}{1-\delta}R] + \frac{\delta}{1-\delta}[\{y - w_0 - \lambda c_0\}n_T(i) + \beta y(s+\gamma)n_P(i) - \lambda c(\frac{\sum_{j=1}^{i} n_P(j)}{1+a})]$$

This is the same as constraint (9) in the case of only temporary migrants, but now taking into account that permanent migrants are also being brought in. The important extra factor at work here is that the addition of permanent migrants changes the marginal cost of retaining the temporary workers permanently, from $\frac{1}{1+a}c'(0)$ to $\frac{1}{1+a}c'(\frac{n_T}{1+a})$.

In the first-best case i.e. without the incentive constraints, the optimal outcome would involve importing all permanent migrants (if any) in the first period itself and then filling the rest of the slots using a rotating pool of temporary migrants. The intuition for this stems from the fact that the cultural costs imposed by permanent migrants are the same regardless of when they are imported. If their productivity gains outweigh these costs, then the gains should be availed of as early as possible. We first show (in the lemma below) that even in the presence of constraints to ensure that the politician does not succumb to the firms' lobbying efforts, the structure of the solution remains similar, i.e., the optimal still involves importing permanent migrants only in the initial period, together with a rotating pool of temporary migrant workers. This helps to simplify analysis of the equilibrium, which we do in proposition 2.

Lemma 1 *In the presence of political constraints, the optimum will involve $n_P(i) = 0$ for $i \geq 2$ and $n_T(1) = n_T(2) = n_T(3) = ...$*

PROOF: See Appendix A.

Denoting by n_P the number of permanent migrants admitted in the first period and by n_T the number of temporary migrants every period, the overall welfare is now given by:

$$\frac{1}{1-\delta}(y - w_0 - \lambda c_0)n_T + (y - w_0 - \lambda c_0)n_P + \frac{\delta}{1-\delta}[\beta y(s+\gamma)n_P - \lambda c(\frac{n_P}{1+a})] \quad (13)$$

while the government's incentive constraint is:

$$\theta \frac{\delta}{1-\delta}\beta y(s+\gamma)n_T + \frac{\delta}{1-\delta}[\beta y(s+\gamma)(n_T+n_P) - \lambda c(\frac{n_T+n_P}{1+a})] \quad (14)$$

$$\leq \theta \frac{\delta}{1-\delta}R + \frac{\delta}{1-\delta}[(y - w_0 - \lambda c_0)n_T + \beta y(s+\gamma)n_P - \lambda c(\frac{n_P}{1+a})]$$

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The equilibrium level of permanent and temporary migration is then determined by maximizing (13) subject to the above incentive constraint along with the constraint $n_T + n_P \leq v$. The following proposition compares it with the socially optimal level.

Proposition 2 *Under assumptions 1,2 and 4, under political constraints, the optimal mix of migrants will involve an excess number of permanent migrants as compared with the social optimum i.e. $n_P^* > m_P$.*

PROOF: See Appendix A.

The intuition for the above result stems from the fact that by increasing the number of permanent migrants, the marginal cultural cost of admitting an extra migrant is raised. Thus the cultural impact of making temporary migrants permanent is now bigger. Since the politician cares (partially) about the welfare of the citizen voter, his incentive constraint gets tightened as a result. In other words, as the marginal cultural cost of immigration goes up, the politician becomes less likely to accept the lobby's bribe to retain the temporary migrants. Thus the permanent migrants also play a deterrent role in reducing the politician's incentive problem with respect to temporary migrants. It is this additional deterrence effect that causes the citizens to choose permanent migrants beyond their socially optimal level. Even taken together, it may result in not all v productive opportunities getting filled, especially when the intertemporal control of politicians is difficult.

How is this level of permanent migration affected by the various parameters? This is analyzed in the following corollary to proposition 2.

Corollary 2 *The level of permanent migration n_p^* decreases with (i) a rise in the world wage w_0, or (ii) an increase in the cultural cost of temporary migration c_0. The effect of a rise in the intertemporal productivity gain s or in γ or in the cultural costs λ on the level of permanent migration is ambiguous.*

PROOF: See Appendix A.

The intuition for the ambiguous comparative static results stems from the fact that permanent migrants impact both the incentive constraint for politicians as well as the overall surplus. Increases in factors such as firm-specific productivity s, or in the mobility costs γ, which raise firm profitability cause the firms to lobby politicians much more aggressively to retain the temporary workers. As noted before, by raising the marginal cultural cost, permanent migrants help to

tighten the politician's incentive constraint. When the incentives are more skewed, as is the case when firm profitability is higher, the incentive gain from bringing in more permanent migrants is not as high. This calculation encourages a reduction in the number of permanent migrants brought in when s or γ is high. On the other hand, by raising the lifetime surplus from any permanent migrant, an increase in s or γ suggests an increase in their number. These effects go in opposite directions, and thus their overall impact on the number of permanent migrants depends on which effect dominates. Similarly, an increase in the cultural cost parameter λ positively impacts the incentive constraint, but negatively the overall surplus.

The previous section established the important policy conclusion that an easing of mobility restrictions γ for migrant workers could be potentially Pareto-improving. One may ask if a similar conclusion is also true here i.e. when both temporary and permanent migrants are used to fill the labor shortage. The additional issue here is that a lowering of γ improves the outside option for permanent migrant workers; as a result their wages rise, and consequently the surplus enjoyed by native citizens from each permanent migrant decreases.[26] Of course, the decrease in surplus to each firm also means that their incentive to lobby the government for making temporary workers permanent falls. As a result more temporary workers can be brought in without violating the government's incentive constraint. These two effects can be seen by differentiating the overall lifetime national welfare (13) with respect to γ (using the Envelope theorem):

$$\frac{dW}{d\gamma} = \frac{\delta}{1-\delta}\beta y n_P + \frac{1}{1-\delta}(y - w_0 - \lambda c_0)\frac{d}{d\gamma}\{n_T(n_P)\}$$

where $n_T(n_P)$ denotes the maximum supportable level of temporary migrant workers n_T for a given level of permanent migrants n_P. As discussed earlier, a rise in mobility costs γ implies higher rents for the firms and therefore a lower number of temporary workers are supportable i.e. $\frac{d}{d\gamma}\{n_T(n_P)\}$ is negative. This "incentive effect" is captured by the second term in the expression above. On the other hand, the surplus from each permanent migrant, $\beta y(s + \gamma)$ increases as his wage is now lower. The first term in the expression captures this "wage effect". Which effect dominates? This is analyzed in the next proposition.

Proposition 3 *When δ is low and/or the gains from permanent migrants $\beta y(s + \gamma)$ relative to that from temporary migrants $y - w_0$ are not too high, overall welfare for the native citizens rises with a decrease in the mobility cost γ.*

PROOF: See Appendix A.

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[26] This did not arise in the previous section, as in equilibrium, no permanent migrants were employed.

The intuition for this proposition derives from the fact that productivity gains from permanent migrants are realized in the future. When δ is low, it implies that the future "wage effect" is small as compared to the "incentive effect", due to which more temporary workers can be brought in today. Thus in this case, the incentive gain due to a lower γ outweighs the loss from higher (future) wages and overall causes an increase in welfare. Secondly, when the productivity gains from permanent migrants are only slightly higher than that from temporary migrants, the number of permanent migrants brought in, n_P, is low (due to their higher cultural costs). The loss in welfare due to higher wages for permanent migrants is proportional to their number (it is $\frac{\delta}{1-\delta}\beta y n_P$ in the expression for $\frac{dW}{d\gamma}$ above) and is small when n_P is low. The welfare gain from being able to hire more temporary workers (due to the incentive effect) is much larger and so again under these conditions, welfare for the native citizens is raised from an easing of the mobility restrictions for migrant workers. In fact, the permanent migrant workers gain as well as their wage also go up. Thus again, any policy that facilitates guest worker mobility across employers is potentially Pareto-improving in this situation.

4   Additional Issues

4.1   Migration Policy and Cultural Assimilation

Our analysis has so far has taken the cultural costs to be exogenously given. In reality, the magnitude of these cultural costs imposed by migrants depends on the degree to which they have culturally assimilated in the host country. For instance, a number of influential commentators have compared the difference between the immigrant experience in the United States versus that in much of Europe. In broad terms, the United States is considered to be more of a 'melting pot' where migrants invest in assimilation and are welcomed (Waters and Jiminez, 2005). In contrast, barring a few exceptions, in Europe migrants often do not make investments in assimilation and are socially segregated (Huntington, 2004). Indeed these broad patterns of cultural assimilation across the Atlantic also mirror differences in the nature of migration policy, with permanent migrants being much more important in the U.S.[27] In this section we show how our framework can be

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[27]For instance, an editorial in *The New Republic* (dated 04/17/2006) argues that "..there is little that is more antithetical to the American ideal than a guest worker. While there are dangers in romanticizing this country's immigrant heritage, it is an unmistakable part of the national ethos. For generations, immigrants have come to the United States in search of a better life. In the process, they often remake themselves — as Americans. Even those who are here illegally, and whom we call illegal immigrants, can transcend that identity — or at least see

adapted to reflect these broad differences. In doing so, we show that the greater assimilation in the U.S. need not be because socio-cultural fundamentals are different. Rather, it may be because of the existence of multiple cultural equilibria linking migration policy and assimilation.

We begin by observing that the migrant's willingness to imbibe the local cultural ethos and assimilate is (in part) a choice variable for the migrant and is likely to be determined by the returns to this investment. From the migrant's point of view, the perceived returns to investment in socio-cultural assimilation is driven by two concerns. First is the expected length of time the migrant worker plans to stay, work and live in the country.[28] Since our focus here is on the length of time that the migrant spends in the country (temporary versus permanent), we primarily focus on this channel. However, before we move on, it is perhaps appropriate to mention that there is a second factor which affects investment in cultural assimilation. This occurs if natives make complementary investments in accepting and welcoming migrants. After all, social interactions are a two-way process, depending on attitudes and investments made by both migrants and natives. Indeed it is easy to see that this two-way interaction can give rise to multiple equilibria.[29] While the possibility of multiple equilibria is relatively easy to see in the case of two-way investments by migrants and natives, there is an additional more subtle argument that generates a similar outcome through its interaction with migration policy. We describe this now.

In particular, for temporary migrants a key issue is whether they can reasonably expect to be made permanent. For example, for many migrant workers in the U.S., an H1-B temporary permit is perceived to be a reliable stepping stone towards their permanent resident status and eventual citizenship (see Table 1 for additional examples). Therefore, if temporary migrants believe that they have a good chance of being made permanent, then their payoff from investment in imbibing the local culture is much larger. Conversely, if they perceive themselves to be truly temporary

their children who are born here transcend it. But a guest worker and his family have no such opportunity for transcendence....Indeed, to see the pernicious (and un-American) nature of a guest-worker program, one need only look across the Atlantic at the misery such programs have wrought in Europe."

[28]Dustmann (1999) shows using German data that the degree of investment in human capital (language) depends on the expected length of time the migrant expects to be in the host country.

[29]If a migrant believes that natives are relatively insular and unlikely to interact meaningfully with him, then he will have diminished incentives to invest in assimilation into the local culture and may indeed prefer to spend more of his time associating with fellow migrants. On the other side, if natives believe that migrants will not invest in assimilation, they too have little to gain from making an effort to culturally interact with the migrants. This may result in a "ghetto" like equilibrium where migrants are socially segregated from natives. In contrast, if each group believes that the other will also make investments in social integration, then we have an equilibrium where there is a good degree of socio-cultural assimilation.

(having to return to their home country at the end of their tenure), then such temporary migrants will have very little incentive to invest in cultural assimilation. On the other hand, the decision by temporary migrants to homogenize themselves or not affects the natives' perceived cultural costs in making them permanent, and thereby impacts their decision of how many temporary migrants to bring in the first place. Thus the two decisions (that by the migrants and the natives) are interdependent, resulting in the possibility of multiple equilibria.

To examine this possibility we extend our benchmark model in a simple way by endogenizing the migrants' decision at cultural assimilation and by allowing for the possibility that some temporary migrants may be made permanent in the long run. Specifically, temporary migrants can decide whether or not to invest in assimilation with the host country culture (e.g. by learning the local language and customs, making an effort to attend and participate in local customs). We assume that if migrants incur a cost e, their level of assimilation increases from a_0 to a_1, where $a_0 < a_1$. This reduces the cost that they impose on the local society from $c(\frac{n}{1+a_0})$ to $c(\frac{n}{1+a_1})$. Temporary migrants' decision to incur this cost or not depends on their perceived probability of becoming permanent migrants into this society and their gains from such assimilation with the local culture. We denote migrants' gains from increased interaction with the locals by V, which is only realized if they stay permanently. Second, we allow for the possibility that natives may prefer some degree of cultural diversity.[30] To model this in the simplest manner, we assume that $d(n_P)$ is the diversity benefit to natives every period from bringing in n_P permanent migrants. However, apart from contributing to increased diversity, permanent migrants impose other costs on the natives as discussed before, and we still use $c(\frac{n_P}{1+a})$ to denote these costs. In all other respects the model is the same as earlier.

The timing of the game is as before, with n_T temporary migrants admitted at the beginning of each period. Each migrant decides whether or not to make the private investment in cultural assimilation with the local populace. At the end of the period, if the government succumbs to the firm lobby, all n_T are made permanent. On the other hand, if it does not succumb, then among this group of temporary migrants, n_P are made permanent. In making this decision, the government cannot observe the degree of assimilation undertaken by each individual migrant and so it chooses the n_P permanent migrants *randomly* from among the pool of n_T temporary migrants. Thus if n_P increases or the pool of temporary migrants n_T decreases, the chance for each individual migrant

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[30]This relaxes the assumption made in our benchmark model that permanent migrants only impose (negative) cultural costs on the natives. While a simplification, in reality natives perhaps also gain from the cultural diversity that is brought by new migrants.

to be absorbed permanently goes up.

An equilibrium for this game consists of the number of temporary migrants n_T who are brought in, investment decisions by them in cultural assimilation and the fraction of them who are admitted as permanent migrants, along with (as before) an electoral rule specifying government re-election as a function of its actions.

Under these assumptions we can show the following results, summarized in the proposition below.

Proposition 4 *If the ratio e/V is in an intermediate range, there exist multiple equilibria where, in one equilibrium, temporary migrants invest in cultural assimilation and are likely to be made permanent citizens; and in the other equilibrium, temporary migrants do not invest in cultural assimilation and are likely to remain temporary. In contrast, if e/V is sufficiently small (large), then there is a unique equilibrium, where all temporary migrants invest (do not invest) in cultural assimilation.*

The argument is the following. First, if a_i is the degree of assimilation by the temporary migrants, then the optimal number of permanent migrants requires trading off the diversity benefits against the cultural costs (ignoring productivity gains). This results in the optimal number of permanent migrants being given by:

$$d'(n_P^i) = \frac{1}{1+a_i} c'(\frac{n_P^i}{1+a_i}) \tag{15}$$

Note that when the assimilation level a_i is high, it is optimal to admit more permanent migrants as the marginal cost that they impose are smaller. Let us denote by n_P^1 and n_P^0 the number of permanent migrants and by n_T^1 and n_T^0 the number of temporary migrants when the migrants do and do not assimilate respectively. Note that $n_P^0 < n_P^1$ as the costs imposed by assimilated migrants is lower.

From each migrant's perspective, the probability of being made permanent is given by n_P^i/n_T^i and thus they incur the cost of cultural assimilation only if:

$$\frac{n_P^i}{n_T^i} V - e > 0 \tag{16}$$

As noted before $n_P^0 < n_P^1$. To study the impact of a_i on the number of temporary migrants to be brought in, recall from section 3 that as the cultural cost imposed by permanent migrants is lowered, the government's incentive constraint becomes harder to sustain as deviating from the given policy does not cost as much. This point is made specifically in Corollary 1 where as a increases, n_T goes down. In the present context, since $a_1 > a_0$, it implies that $n_T^1 < n_T^0$.

Combining the two facts, $n_P^0/n_T^0 < n_P^1/n_T^1$. In other words, in the case where migrants do invest in assimilation, the pool of temporary migrants brought in every period is smaller and the number of them made permanent is higher. Thus the chances for any individual migrant to be made permanent is high in this case, thus justifying their investment in assimilation in the first place. More specifically, this happens if $\frac{n_P^1}{n_T^1}V > e$. At the same time, if $e > \frac{n_P^0}{n_T^0}V$, it implies that of the large pool of temporary migrants brought in every period, too few are made permanent for any of them to invest in assimilation with the local culture. Thus, when $\frac{n_P^1}{n_T^1}V > e > \frac{n_P^0}{n_T^0}V$, we have the possibility of multiple equilibria.

On the other hand, if $\frac{n_P^0}{n_T^0}V > e$, then the only equilibrium is where everyone invests in assimilating into the local society, while at the opposite extreme, if $e > \frac{n_P^1}{n_T^1}V$, then the only equilibrium involves no assimilation by migrants, with very few temporary migrants being made permanent and most being repatriated at the end of their tenure. This completes the argument.

4.2 Cultural Heterogeneity and Migration: Some Microfoundations

The maintained assumption of this paper is that worker migration affects native welfare not only through its effect on overall income but also its effect on the culture of the host country. We further assumed that (under some conditions) the effects of permanent migration on native welfare are likely to be different from that of temporary migration. Indeed we suggested that even if one set aside distributional considerations, the political backlash against permanent migration may well be more severe than against temporary migration. We now elaborate on one such mechanism.

The key distinction that we highlight is that permanent immigrants acquire citizenship and voting rights. This has the potential to change the political dynamic, at least at the local level. For example, take education. As pointed out by Alesina, Baqir and Hoxby (2004), there is a fundamental trade-off that affects the provision of local public goods like education, namely that between the benefit of economies of scale and the cost of an increasingly heterogeneous population. For instance, there may be significant differences in preferences (on average) for bilingual education between the native and the immigrant population. Natives may prefer to spend school resources for extra piano classes while the immigrant may prefer particular language lessons. For simplicity, we capture these differences in a single dimension – the unit line. Assume that an individual i has payoffs given by $u_i = w - A(g - x_i)^2$, where g is the location of the public good provided (e.g. the share of resources spent on piano lessons) and x_i is the 'location' of the individual i, representing his ideal choice. Here A is a parameter denoting the importance of the publicly provided good

in an individual's utility. It is likely to be low in an economy where there are ample alternatives to public education, for example. The second term in the utility function is the payoff to the individual from the local public good, with his payoff decreasing (at a convex rate) in the distance between his ideal point and the point actually chosen. Given this utility function, an individual's ideal choice for the public good is $g = x_i$.

Let us assume that native preferences are uniformly distributed on the unit line, with the (pre-immigration) median voter preferences among the natives (and therefore the location of the public good) given by $g^N = \frac{1}{2}$. To make the point in the simplest manner, we assume that all migrants are identical and have their public good preferences given by $x_M = 1$. Then the addition of permanent migrants to the society results in a shift in the identity of the median voter. Suppose the initial mass of natives is unity, and that of the migrants is n; the median voter now changes from the one located at $x_i = \frac{1}{2}$ to that located at $x_i = \frac{1+n}{2}$, resulting in a change in public good provision to $g^M = \frac{1+n}{2}$. Given the preferences, the utility of a native located at x_i is now given by $u_i = w - A(\frac{1+n}{2} - x_i)^2$; thus, natives whose preferences are closer to $x_i = 1$ gain, while those located near $x_i = 0$ lose. What about overall welfare? Evaluating aggregate utility for the natives, it changes from $w - \frac{A}{12}$ to $w - \frac{A}{12}[1 + 3n^2]$ after the addition of a mass n of permanent migrants to the society. Thus there is a decrease in overall welfare by $\frac{A}{4}n^2$. The following proposition summarizes the impact.

Proposition 5 *Overall welfare for the native population falls at an increasing rate with permanent migration. Furthermore, the negative impact of permanent migration is higher the greater is the importance of public goods on citizens' welfare.*

Note that, as we have assumed in reduced form for our basic model, the cost imposed by the migrants is convex in their number. Notice also that the impact is higher the bigger is A. This implies that the constraints on immigration are likely to be higher in countries where there is greater dependence on goods and services that are publicly provided and hence there is enhanced concern that immigration may change the nature of their provision. Again, this may serve to partly explain the difference in attitudes towards immigration between the US and Europe (where publicly provided goods/services are more prevalent than in the US).

Notice that temporary migrants do not skew the allocation of resources for local public goods as much. This is mainly because of two factors: one, temporary migrants lack political clout and are unlikely to affect public good allocation to the same degree as permanent migrants; two, temporary migrants are less likely to bring with them their children and families, and therefore

may not be as concerned with the provision of public goods such as education.

5 Conclusion

Aging populations, rising pension payments and labor shortages in parts of the developed world are likely to increase the debate on the shape of migration from the developing world. This paper explores a neglected channel that may prevent lowering of barriers to labor migration even in the face of greater economic gain – namely, concern about the country's culture and identity. We showed how culture can affect both the extensive margin (i.e. size) of migration and the intensive margin (i.e. temporary versus permanent migration). Despite the potential to boost world income, the analysis here suggests that any policy aimed at encouraging migration will face political limits driven by cultural concerns.[31] In particular we demonstrate that countries may fail to encourage worker migration even if such a policy has no distributional impact and where enforcement of policy is administratively costless. The inefficiency that arises affects both the levels of temporary and permanent migration. Furthermore, our framework also allows us to understand which countries may find it politically difficult to take advantage of the globalization of labor migration and points out that simple alterations in worker-employer tying requirements can help make greater amounts of labor migration politically feasible.

While the era of substantially freer international labor migration may be a long time coming, our formal model suggests that there are several politically feasible policies that may allow at least some of the gains from labor market liberalization to be realized. This paper is but a first step in examining the impact of culture on the politics and pattern of migration policy. Many other issues remain for future work – for example, the dynamics in the process of cultural assimilation by migrants and the resulting impact on future migration policy. Should host countries deliberately choose a diverse migrant pool or focus instead on importing migrants from a particular cultural

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[31]Kremer and Watt (2009) propose a policy which is designed to be both Pareto improving and politically feasible. They suggest that relaxing restrictions on the "migration of foreign private household workers can potentially (1) equalize wages among natives, (2) provide a fiscal benefit, and (3) limit the perceived impact of immigration on culture and crime." Despite its attractive features, our framework suggests caution about some of the political constraints that even such an apparently attractive program might face. The key point is that the household sector is one in which the (employer-specific) productivity of the worker naturally rises over time. For example, over time there is likely to be a household-specific increase in productivity of au pairs. By contrast, there are likely to be small differences in the productivity of workers with different amounts of experience in, say, the fast-food industry. Our model suggests, *pace* Kremer and Watt (2009), that the political feasibility of temporary migration programs might be greater in the latter sector than in the household production sector.

area? We leave this and much else for further exploration.

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Appendix A

Proofs:

PROOF OF LEMMA 1:

It is useful to rewrite the problem in terms of the total number of permanent residents in the country at any point in time. Denoting this by $z(i)$ for period i, the problem becomes:

$$\max_{n_T(i),z(i)} (y-w_0-\lambda c_0)(n_T(1)+\delta n_T(2)+.....)+[(1-\delta)(y-w_0-\lambda c_0)+\delta\beta y(s+\gamma)](z(1)+\delta z(2)+.....)$$

$$-\delta\lambda c(\frac{z(1)}{1+a})-\delta^2\lambda c(\frac{z(2)}{1+a})-......$$

subject to the government's incentive constraint for all i:

$$\theta\beta y(s+\gamma)n_T(i)+\beta y(s+\gamma)n_T(i)-\lambda c(\frac{n_T(i)+z(i)}{1+a})]$$

$$\leq \theta R+(y-w_0-\lambda c_0)n_T(i)-\lambda c(\frac{z(i)}{1+a})]$$

Thus each combination of $n_T(i)$ and $z(i)$ satisfy the **same** incentive constraint, and the contribution to overall welfare is given by $(y-w_0-\lambda c_0)n_T(i)+[(1-\delta)(y-w_0-\lambda c_0)+\delta\beta y(s+\gamma)]z(i)-\delta\lambda c(\frac{z(i)}{1+a})$, discounted appropriately. Hence it implies that $n_T^*(1)=n_T^*(2)=n_T^*(3)....$ and $z^*(1)=z^*(2)=z^*(3)....$ because if $n_T^*(i)\neq n_T^*(i')$ and/or $z^*(i)\neq z^*(i')$, one would replace the combination $(n_T^*(i),z^*(i))$ or $(n_T^*(i'),z^*(i'))$ by the other depending on for whichever the value $(y-w_0-\lambda c_0)n_T^*+[(1-\delta)(y-w_0-\lambda c_0)+\delta\beta y(s+\gamma)]z^*-\delta\lambda c(\frac{z^*}{1+a})$ is higher (as both satisfy the same incentive constraint).

This implies that the number of temporary migrants imported every period is the same, and $z(1)=z(2)=z(3)=.....$ i.e. all the permanent migrants are imported in the first period itself. ∎

PROOF OF PROPOSITION 2: Denote l as the Lagrange multiplier on the inecntive constraint (14) and k as the Lagrange multiplier on the constraint $n_T+n_P\leq v$. The first order conditions with respect to n_T and n_P are respectively:

$$\frac{1}{1-\delta}(y-w_0-\lambda c_0)-l\{(1+\theta)\beta y(s+\gamma)-(y-w_0-\lambda c_0)n_T-\frac{\lambda}{1+a}c'(\frac{n_T+n_P}{1+a})\}-k=0$$

$$(y-w_0-\lambda c_0)+\frac{\delta}{1-\delta}[\beta y(s+\gamma)-\frac{\lambda}{1+a}c'(\frac{n_P}{1+a})]+l\frac{\lambda}{1+a}\{[c'(\frac{n_T+n_P}{1+a})-c'(\frac{n_P}{1+a})]\}-k=0$$

Combining the two equations gives:

$$\frac{\delta}{1-\delta}[\beta y(s+\gamma)-\frac{\lambda}{1+a}c'(\frac{n_P}{1+a})-(y-w_0-\lambda c_0)]=$$

$$-l[(1+\theta)\beta y(s+\gamma)-\frac{\lambda}{1+a}c'(\frac{n_P}{1+a})-(y-w_0-\lambda c_0)]$$

Since $\theta > 0$, and $l \geq 0$, if $\beta y(s + \gamma) - \frac{\lambda}{1+a}c'(\frac{n_P}{1+a}) - (y - w_0 - \lambda c_0) \geq 0$, then the equation cannot hold (since the left-hand side will be positive, while the right-hand side will be negative). Thus, it must be that $\beta y(s + \gamma) - \frac{\lambda}{1+a}c'(\frac{n_P}{1+a}) - (y - w_0 - \lambda c_0) < 0$. Comparing this with the social optimum condition (2) shows that $n_P > m_P$.

PROOF OF COROLLARY 2:

Let us rewrite the incentive-constraint when it binds:

$$(1 + \theta)\beta y(s + \gamma)n_T - (y - w_0 - \lambda c_0)n_T - \lambda[c(\frac{n_T + n_P}{1 + a}) - c(\frac{n_P}{1 + a})] = \theta R \qquad (17)$$

i.e. for a given level n_P, it gives a maximum supportable level of n_T as a function of n_P. Let us call this function as $n_T(n_p)$. The left-hand side of the above equation is similar to that in figure 2 i.e. it is inverse U-shaped in n_t and its intersection with the R line gives $n_T(n_P)$. Given that $c(.)$ is convex, an increase in n_P lowers the left-hand side of the above equation and thus increases $n_T(n_P)$ i.e. $\frac{dn_T}{dn_P} > 0$.

Now, one can use $n_T(n_P)$ to rewrite the objective function in terms of only the number of permanent migrants as:

$$\max_{n_P} \frac{1}{1 - \delta}(y - w_0 - \lambda c_0)n_T(n_P) + (y - w_0 - \lambda c_0)n_P + \frac{\delta}{1 - \delta}[\beta y(s + \gamma)n_P - \lambda c(\frac{n_P}{1 + a})]$$

with the attendant first-order condition:

$$\frac{1}{1 - \delta}(y - w_0 - \lambda c_0)n_T'(n_P) + (y - w_0 - \lambda c_0) + \frac{\delta}{1 - \delta}[\beta y(s + \gamma) - \frac{\lambda}{1 + a}c'(\frac{n_P}{1 + a})] = 0 \qquad (18)$$

Analysis of this equation shows how the level of permanent migration, n_P, is affected by the various parameters.

The various parameters can affect this equation either directly or though their effect on $n_T'(n_P)$. One can derive the expression for $n_T'(n_P)$ as:

$$\frac{dn_T}{dn_P} = \frac{\frac{\lambda}{1+a}\{c'(\frac{n_T + n_P}{1+a}) - c'(\frac{n_P}{1+a})\}}{(1 + \theta)\beta y(s + \gamma) - (y - w_0 - \lambda c_0) - \frac{\lambda}{1+a}c'(\frac{n_T + n_P}{1+a})}$$

Hence $n_T'(n_P)$ decreases as β, s, γ, w_0 or c_0 increases or as λ decreases.

Returning to (18), an increase in θ lowers the left-hand side only through its effect on $n_T'(n_P)$. Thus n_P^* falls as θ increases. A rise in w_0 or c_0 lowers the left-hand side both directly as well as their effect on $n_T'(n_P)$; hence n_P^* falls as w_0 or c_0 increases. An increase in the cultural cost parameter λ or a decrease in the intertemporal productivity parameters s, γ have two countervailing effects:

they lower the left-hand side via their direct negative effect on the marginal cultural cost and marginal productivity, but at the same time raise the left-hand side through their positive effect on $n_T(n_P)$. Thus their overall impact on the level of permanent migration is ambiguous.

PROOF OF PROPOSITION 3:

From (17), one can derive $\frac{d}{d\gamma}\{n_T(n_P)\}$. Inserting this into the expression for $\frac{dW}{d\gamma}$, one gets:

$$\frac{dW}{d\gamma} = \frac{\beta y}{1-\delta} \frac{\delta[(1+\theta)\beta y(s+\gamma) - (y-w_0-\lambda c_0) - \frac{\lambda}{1+a}c'\left(\frac{n_T+n_P}{1+a}\right)]n_P - (1+\theta)(y-w_0-\lambda c_0)n_T}{(1+\theta)\beta y(s+\gamma) - (y-w_0-\lambda c_0) - \frac{\lambda}{1+a}c'\left(\frac{n_T+n_P}{1+a}\right)}$$

Since the denominator is positive (from the first-order conditions for deriving n_T and n_P above), the sign of $\frac{dW}{d\gamma}$ is determined by the sign of the numerator. Now,

$$\delta[(1+\theta)\beta y(s+\gamma) - (y-w_0-\lambda c_0) - \frac{\lambda}{1+a}c'\left(\frac{n_T+n_P}{1+a}\right)]n_P - (1+\theta)(y-w_0-\lambda c_0)n_T$$
$$\leq \delta[(1+\theta)\beta y(s+\gamma) - (y-w_0-\lambda c_0)](v-n_T) - (1+\theta)(y-w_0-\lambda c_0)n_T$$
$$\leq \delta K v - [\delta K + (1+\theta)(y-w_0-\lambda c_0)]n_T(0)$$
$$\leq 0 \quad \text{if } \delta K v/[\delta K + (1+\theta)(y-w_0-\lambda c_0)] \leq n_T(0)$$

where $K = (1+\theta)\beta y(s+\gamma) - (y-w_0-\lambda c_0)$. The first inequality follows from the fact that $n_T + n_P \leq v$, while the second inequality comes from the fact that n_T is an increasing function of n_P and so $n_T(n_P) \geq n_T(0)$. Thus to determine if $\frac{dW}{d\gamma} \leq 0$, one requires to plug in $n_T = \frac{\delta K v}{[\delta K+(1+\theta)(y-w_0-\lambda c_0)]}$ into the left-hand side of (17) with $n_P = 0$ and check if it is less than θR i.e.

$$\frac{dW}{d\gamma} \leq 0 \text{ if } K\frac{\delta K v}{[\delta K + (1+\theta)(y-w_0-\lambda c_0)]} - \lambda c(\frac{\delta K v}{[\delta K + (1+\theta)(y-w_0-\lambda c_0)]}/(1+a)) \leq \theta R$$

The left-hand side of the above inequality is increasing in δ and in K and is satisfied when either δ or $K = 0$. Thus $\frac{dW}{d\gamma} \leq 0$ when δ is low or when $K = (1+\theta)\beta y(s+\gamma) - (y-w_0-\lambda c_0)$ is low i.e. when $\beta y(s+\gamma)$ is small compared to $(y-w_0-\lambda c_0)$.

Appendix B

Robustness of results: Here we consider relaxing some of the simplifying assumptions of our analysis so far to examine the robustness of our basic results.

Optimal follow-up policies and influence of new immigrant citizens on future immigration policy: a three-period model. Consider a 3-period version of our model. The first

two periods $t = 1$ and 2, are the same as the basic model, with temporary migrants being admitted at the beginning of each period and the government taking a decision on whether or not to make them permanent at the end of the period. However, any vacancies that are unfilled at the beginning of period 3 disappear. Hence the only relevant decisions to be studied are those taken in periods $t = 1, 2$ and 3. As before, elections take place at the beginning of periods 2 and 3.

We incorporate two new features in this 3-period version of our basic model in order to investigate the robustness of the results. First, instead of banning all further immigration following a deviation by the government, we allow the choice of an optimal follow-up policy in terms of the number of immigrants to be let in after such a deviation. Secondly, we incorporate the possibility that immigrants who become citizens (after being made permanent) may yield some influence on the future politics of immigration (as in Ortega (2005)). Specifically, we assume that if n immigrants are made permanent and then subsequently awarded citizenship, then with probability $\rho(n)$, the median voter is from this group, while with probability $1 - \rho(n)$, the median voter continues to be from the original group of native citizens. The natural assumption here is that $\rho(n)$ is increasing in n i.e. the influence of immigrant-citizens is increasing in their numbers. However, the general form of the function $\rho(n)$ can incorporate many other possibilities. For example, it can be that $\rho(n) = 0$ for $n < n^c$ and $\rho(n) > 0$ for $n > n^c$ i.e. immigrants can have an impact on the political process only if there are sufficiently many of them.

The crucial aspect of the immigrant-citizens is that they may differ from the natives in terms of their preferences about further immigration. Specifically, we will consider the case where the immigrant-citizens do not suffer any disutility from the presence of more immigrants. While this particular assumption is more extreme than necessary, it helps simplify the analysis and as we discuss below, the basic intuition is maintained under the more general assumption that immigrant-citizens suffer positive but lesser disutility than the natives from the presence of more immigrants.

The rest of the game is as before, with n_1 temporary immigrants entering at the beginning of period $t = 1$, firms lobbying for their retention, and the government deciding on whether or not to make them permanent. Elections then take place at the beginning of period 2, in which the incumbent government is reelected or not and the decision is taken by the median voter for how many more temporary migrants to bring in period 2. Again, the same sequence of actions are repeated in period 2, and then elections take place at the beginning of period 3. No further decisions need to be taken beyond this stage, as all unfilled vacancies disappear.

Solving the equilibrium by backward induction, we start in period $t = 3$. The only decision

here is whether or not to oust the incumbent government. Since the strongest incentive can be provided by promising to not reelect the incumbent if it makes the temporary migrants from period 2 permanent, this is the optimal decision at this stage.

Going back to period $t = 2$, the number of migrants to let in depends on the outcome of the government's decision in period $t = 1$ i.e. whether the n_1 temporary immigrants were made permanent or not. Consider first the case where none of the immigrant workers from the first period were made permanent. In this case, the median voter is from the native citizens' group. In determining the number of temporary migrants n_2 to let in at this stage, he takes into account the government's incentive, which is similar to before:

$$n_2[(1 + \theta)\beta y(s + \gamma) - (y - w_0 - \lambda c_0)] - \lambda c(\frac{n_2}{1 + a}) \leq \theta R \tag{19}$$

On the other hand, in the case the n_1 immigrant workers from the first period were made permanent, then with probability $\rho(n_1)$, the median voter is chosen from this group. Since he suffers no disutility from immigration, it will thus choose to fill all the remaining vacancies at that stage with migrants i.e. $n_2 = v - n_1$. On the other hand, if the median voter is from the group of native citizens, then in his choice of migrants to let in, he will again take into account the government's incentives, which is given by:

$$n_2[(1 + \theta)\beta y(s + \gamma) - (y - w_0 - \lambda c_0)] - \lambda c(\frac{n_1 + n_2}{1 + a}) \leq \theta R \tag{20}$$

Both the above incentive constraints (19) and (20) can be depicted by figures similar to figure 2 before. Let us denote the largest n_2 that satisfies (19) as n_2^0 and that which satisfies (20) as $n_2(n_1)$. These will be the optimal follow-up immigration policies in period $t = 2$, if the median voter is from the native citizens group.

Next going back to the initial period, in computing the government's decision of whether or not to succumb to the firm lobby and retain permanently the n_1 migrant workers, it compares the payoffs from the two actions i.e. its incentive constraint is given by:

$$n_1(1 + \theta)(1 + \delta)\beta y(s + \gamma) - \lambda c(\frac{n_1}{1 + a}) - (y - w_0 - \lambda c_0)n_2^0$$

$$+\rho(n_1)\{(y - w_0 - \lambda c_0)(v - n_1) + \delta(v - n_1)\beta y(s + \gamma) - \delta\lambda c(\frac{v}{1 + a})\}$$

$$(1 - \rho(n_1))\{(y - w_0 - \lambda c_0)n_2(n_1) - \delta\lambda c(\frac{n_1}{1 + a})\} \leq \theta R \tag{21}$$

On the left-hand side it takes into account the consequences of deviation by the period 1 government from making the n_1 migrants permanent. It now not only has an impact through the

cultural costs, but also possibly on the future political process through its impact on the identity of the median voter.

Comparing this with the incentive constraint (IC') in our basic model, one can highlight three points:

Effect of optimal follow-up policies. To enable comparison with the basic version, lets us eliminate the electoral effect of immigrant-citizens by setting $\rho(n_1) = 0$ for all n_1. In this case, the only difference here is that instead of committing to no future immigration in the case of deviation by a first-period government, we now consider the case where the native citizens choose optimally the number of temporary immigrants $n_2(n_1)$ to let in that case. Since $(y - w_0 - \lambda c_0)n_2(n_1) > 0$, this implies that the left-hand side of the incentive constraint is now higher as compared to before. From figure 2, it implies that the choice of n_1 is now lower due to the incorporation of the optimal follow-up policies i.e. the degree of inefficiency gets exacerbated.

Threshold influence of migrant-citizens. In a classical Downsian model of politics, migrant-citizens would only have an effect on the politics if the median voter was from that group i.e. if migrant-citizens were in the majority. More generally, it is likely that this group would only yield political influence only when they are in a significant enough number. This can be incorporated into the analysis above by assuming $\rho(n_1) > 0$ only for $n_1 > n^c$. Thus if n_1 is below this threshold, then the political influence of migrant-citizens will be minimal and the analysis in the basic model remains unchanged. This will be the case for example if the number of vacancies to be filled, n, is below n^c. It will also be so if the optimal choice by the native citizens for the initial period migrants is given by $n_1^* < n^c$.

Inefficiency. The incentive constraint (21) is similar to that in the basic model i.e. constraint (IC'). Thus, in this case too the optimal number of temporary migrants to be let in, n_1, is given by the maximum value of n_1 that satisfies constraint (21). Thus, analogous to proposition 1, we have the following result here: If

$$v(1 + \theta)(1 + \delta)\beta y(s + \gamma) - (1 + \delta)\lambda c(\frac{v}{1 + a}) - (y - w_0 - \lambda c_0)n_2^0 > \theta R$$

then in a world with political constraints, the equilibrium level of temporary migrants will be lower than the socially optimal level. Note that this condition for inefficiency is independent of the influence function $\rho(.)$, as we are evaluating incentive compatibility at the limiting case of where all v vacant positions are filled by temporary migrants.