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The rhetoric of closed borders: Quotas, lax enforcement and illegal immigration

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Abstract

Governments do not always enforce their laws, even when they have the means of doing so, and lax enforcement is common in the domain of immigration policy. To explain this paradox we develop a political agency model where gains from migration are unevenly distributed, and an elected government chooses both quotas and their enforcement. We show that distributional concerns can have perverse effects on migration policy since a utilitarian government may set a quota to appease the electorate, but then strategically under-invest in its enforcement. Under-investment is more likely, the larger the preference gap between median and average voter, and the higher the likelihood of a populist challenger gaining office. Our analysis also indicates that redistributive taxation reducing the share of enforcement cost borne by the median voter exacerbate the problem, whereas a compensatory tax rebate financed through a tax on profits from migration alleviates the conflict of interest, thus reducing illegal immigration.

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"(...) our government turns a blind eye to the thousands of people who illegally cross our borders. These scenarios exists because corporate America has convinced our leaders that this is one of the best ways to remain competitive" Lou Dobbs[1]

"When people make allegations about those here illegally the Home Office must act. Currently only 6 in 100 reports of illegal immigrants result in an actual investigation and only 1.5 in 100 result in removal.'" the Rt. Hon. Keith Vaz (Chair of the House of Commons Home Affair Select Committee)[2]

1 Introduction

Enforcement plays a fundamental role in the implementation of many policies that rely on legally binding provisions, such as licensing, taxes, tariffs or quotas to regulate economic activities. Yet, even countries with well developed institutional structures and legal apparatuses face enforcement problems. This is for example the case in the domain of immigration policy: while the regulation of international labor flows features prominently in the political agenda of most Western democracies, those very same countries seem unable to get to grips with the large numbers of undocumented aliens they host.[3]

Limited policy tools are often blamed as a cause of weak enforcement, but existing evidence indicates that politics can, in fact, play an important role. In the domain of migration policy, an important historical episode, namely the abolition of the U.S. "Bracero Program" in 1964, emblematically speaks to this point. Introduced in 1942 to address war time agricultural labor shortages, the Bracero program was renewed throughout the fifties at the request of the U.S. agricultural lobby. However, by the early sixties, public opinion had turned against the initiative, and the Program was eventually dropped.[4] Yet, "When the program

[1]Source: http://loudobbs.tv.cnn.com/category/broken-borders.

[2]Source: http://www.parliament.uk/business/committees/committees-a-z/commons-select/home-affairs-committee.

[3]Recent estimates suggest that in 2017 about 10.5 million unauthorized immigrants were living in the United States as undocumented aliens, representing approximately 3.2 percent of the total residents and 23 percent of the immigrant population (Source: https://www.pewresearch.org/fact-tank/2019/06/12/us-unauthorized-immigrant-population-2017/). Other major immigrant destinations also host large numbers of undocumented foreigners (Dustmann and Frattini 2013).

[4]When President Kennedy extended it for the last time in 1961, he expressed his concerns, pointing out that 'Studies of the operation of the Mexican labor program have clearly established that it is adversely

finally ended in 1964, the United States did not stop employing Mexican workers; it simply shifted from a de jure policy of active labor recruitment to a de facto policy of passive labor acceptance, combining modest legal immigration with massive undocumented entry" (Durand, Massey, and Parrado 1999, page 519). In fact, as pointed out by Green (1969) "It is not pure fantasy to conclude that the policy of the Justice Department on illegal entry is to do just enough to avoid wholesale criticism, without arousing the serious anger of antiunion employers who favor an abundance of cheap labor (Green, 1969, pages 405, 406)". The limited enforcement of migration restrictions endured – with several sectors relying heavily upon the employment of unauthorized migrants.[5] Although patrolling the US–Mexico border presents inherent challenges, the United States Government Accountability Office (GAO) itself has consistently emphasized the structural under-funding of enforcement agencies.[6] The paradox of lax enforcement of restrictive migration policies is not unique to the United States, since similar concerns have been raised in other major destination of migrations flows.[7] Why do governments set restrictive migration policies but do not endow their agencies with the resources necessary to enforce them?

To answer this question we develop a framework that, on the one hand, shows how limited policy tools lead to the emergence of illegal immigration, and on the other, highlights that distributional concerns play an important role in explaining how strategic weak enforcement can exacerbate the phenomenon. The unequal distribution of gains from free factor mobility is considered a key driver of the anti-globalization sentiment pervading Western democracies (Margalit 2008, Malhotra, Margalit, and Mo 2013). We capture this idea by assuming that

affecting the wages, working conditions and employment opportunities of our own agricultural workers, large numbers of whom are unemployed or underemployed.' Source: Public Papers of the Presidents of the United States: John F. Kennedy, 1961.

[5]Recent estimates by the Pew Research center (Passel and Cohn 2016) indicate that unauthorized migrants remain a significant fraction of the US civilian workforce accounting for respectively 26 and 15 percent of workers in farming occupations and construction jobs, where they outnumber lawful immigrant workers.

[6]In particular GAO has documented substantial under-funding of enforcement activities in the domain of employment sanctions (GAO 2005) and investigation and deportation of illegal aliens (GAO 2011, GAO 2017).

[7]In the UK, a recent enquiry by the House of Commons Home Affairs Select Committee (House of Commons, Home Affairs Committee 2012) has pointed out a concerning discrepancy between the government's objective of reducing immigration and the limited amount of resources devoted to the UK Border Agency. More generally, serious questions have been raised on the political will to curb illegal alien employment in Western European countries (Miller 1994) as well as on the lack of resources to control unauthorized entry via the asylum channel (Casarico et al. 2016, Hatton 2011).

voters differ in their factor endowments, and capital-rich individuals prefer more foreign workers. Thus, under standard income distributions (Alesina and Rodrik 1994, Dutt and Mitra 2002), the median prefers less migrants than the average voter.

To shed light on how distributional concerns interact with the limited set of policy tool available to policy makers, we propose a simple two–period political agency model. In this framework, the politician in office sets an official migration quota (number of visas) – prescribing how many migrants can be admitted legally – and the resources to be allocated to policy enforcement. Individuals in the country in excess of the quota are considered undocumented (i.e. "illegal") migrants. As it is typical in this class of models, we assume uncertainty on the state of the world – in our case the supply of migrants – and asymmetric information about the politician's preferences. In particular, the public does not know whether the incumbent is *populist* – i.e. his preferences are perfectly aligned with those of the median voter – or *utilitarian* – i.e. he shares the preferences of the average citizen – but knows the underlying type distribution.[8] Between periods there is an election, in which voters decide whether to re–appoint the incumbent or to replace him with another official randomly drawn from the distribution of politicians types.

Uncertainty on the supply of migrants captures the idea that the government has limited tools to enforce its quota: when the supply of migrants is larger than expected, the amount of enforcement carried out is insufficient and illegal immigration occurs. Importantly, the combination of uncertainty on the supply of migrants and asymmetric information on the preferences of the politician implies that the public cannot perfectly infer the politician's type and thus the *cause* of illegal immigration, e.g. limited policy tools versus lax enforcement. In this environment, rational voters use outcome measures of performance – i.e. the total number of migrants in the country – to gauge the incumbent's type. Since incumbents want to be re-elected to influence future policy, electoral incentives will be powerful. We show under what conditions a simple "reputation-building" equilibrium emerges. In this equilibrium a utilitarian incumbent overrides his personal preferences to gain the support of the median voter. To that end, he chooses the quota (number of visas) responding to

[8]While it has been documented that large majorities are often restrictionist, elected officials do not always share these preferences (Facchini and Mayda 2008, Margalit 2008), leading to the emergence of a *public opinion gap* (Chiswick and Hatton 2003).

the median voter's preferences, but *underinvests* in migration policy enforcement to *de facto* admit more foreign workers as illegals.

Our model identifies two sources of illegal immigration. On the one hand, the government might be unable to enforce its quota because the supply of immigrants is larger than expected.[9] This captures the idea that decision makers might have limited tools at their disposal, i.e. they might not able to enforce the policy, even if they wished to do so. When this happens, illegal immigration is higher, the more restrictive is the quota. On the other, the incumbent might strategically under-invest in enforcement because of re-election concerns. The prevalence of illegal immigration depends then on the interplay between the incumbent's type, the heterogeneity of preferences among citizens and populist pressures in the destination country. The *heterogeneity of preferences* channel is at work when either type of politician is in office. More specifically, if the preference gap between the median and average voter increases, a populist incumbent sets a more restrictive quota, leading to more illegal immigrants. A larger preference gap between the median and the average voter also affects the behavior of a utilitarian incumbent, but through a different mechanism. As the median voter becomes poorer, a "reputation-building" equilibrium, in which the utilitarian government sets the same quota as the populist, but under–invests in enforcement, is more likely to emerge. As a result, an increase in *inequality* has two consequences. First, the setting of a more restrictive quota leads to more undocumented immigrants. Second, under-investment in enforcement increases their number even further. Concerning the role of *populist pressures* – i.e. the likelihood that an incumbent will be replaced by a populist politician at the end of the first period – our model points out that this channel affects only the behavior of a utilitarian incumbent, making him more likely to engage in strategic under–investment the larger is the threat of a populist gaining power in case of electoral defeat. Thus an important implication of our analysis is that political competition alone may induce the utilitarian incumbent to distort policy, raising the number of illegal immigrants above the social optimum.

While migration policy enforcement budgets are typically limited, the funding of border

[9]Note that in our model, in the absence of uncertainty illegal immigration will not occur. This is because the quota is optimally set by trading off the benefits from migration and its costs, including those related to policy enforcement.

and domestic enforcement activities is often controversial.[10] To shed some light on how the mode of enforcement funding might affect illegal immigration, we extend our analysis by modeling two alternative redistributive tax regimes. In the first system, the burden of the enforcement varies directly across individuals; in the second one, the direct cost of funding migration policy enforcement continues to be financed with a lump sum tax, but the government levies also a proportional tax on the factor that directly benefits from migration, namely capital. We show that the implications for migration policy vary significantly. Under the first system, when the median voter pays a smaller than average share of the enforcement cost, the preferences gap between median and average voter increases, leading to more illegal immigration than in the benchmark case. Under the second scheme, where individuals equally share the cost of enforcement, but the median voter is compensated through a tax rebate financed by a tax on profits, the conflict of interests between capital-poor and capital-rich individuals is alleviated, leading in equilibrium to lower levels of illegal immigration.

Our analysis has stark implications for Western democracies, which have witnessed in recent years both an increase in anti-immigration sentiment and a raise in populist pressures. When the majority of voters demands more restrictive migration policies or populist stances are more likely to prevail, governments who are responsive to opposing interests will be more prone to inefficient pandering. On the one hand, they will put in place tighter migration quotas; on the other they will not equip their enforcement agencies with the resources necessary to implement them. As a result, illegal immigration becomes more widespread.

The remainder of the paper is organized as follows. Section 2 discusses the related literature. Section 3 introduces the economic environment. Section 4 presents the political game and the main results. In sections 5 and 6 we carry out a series of comparative statics exercises. Section 7 concludes.

[10] See for example the recent debate around the realization of a wall along the US-Mexico border to be paid – as promised by President Trump – by Mexico.

2 Related Literature

The economic literature on enforcement of laws and regulations emphasizes the key role of state capacity in regulatory and taxation policies (Besley and Persson 2009). The premise of the 'capacity' approach is that governments attempt to enforce laws, but they may fail either because of limited resources or because they rely on agencies (bureaucrats, local governments etc.) with misaligned objectives (Mukherjee and Png 1995, Banerjee 1997, Burgess et al. 2012, Pagano and Immordino 2010 and Shleifer and Vishny 1993).

Alongside this economic literature, focussing on agency problems arising from the delegation of enforcement powers, several scholars in the political science literature emphasize instead the importance of the central government as a direct enforcer of laws.[11] When governments have the power to control subordinate agencies, weak enforcement might not necessarily stem from limited state capacity. In fact, empirical evidence shows that, because of electoral concerns, governments often fail to enforce laws, even when they have resources and means for sanctioning violators (Holland 2016). Standard economic models cannot provide a rationale for lax enforcement when a central government has the capacity to directly enforce laws. Our work fills this gap by proposing a novel set up in which an elected government controls both the setting of a legal standard and its enforcement in a political agency framework, where the role of voters' preferences and re-election incentives can be explicitly analyzed.[12] By doing so we show that control on both the quota and its implementation gives raise to a particular type of pandering, whereby the government sets a quota to appeal to the majority of the electorate, while strategically under-investing in its enforcement to obtain a different policy outcome closer to its own preferences.

The political economy forces in our theoretical framework are unleashed by the distributional effects of immigration. A large literature in labor economics has investigated the effects of immigration on native labor market outcomes reaching often contrasting results.[13]

[11] According to the so–called "congressional dominance" approach (Weingast and Moran 1983), elected representatives have several tools at their disposal to control subordinate agencies, one of the most important being the "power of the purse", i.e. the allocation of the budget (Calvert, Moran, and Weingast 1989) For a recent review of this literature, see Moe (2013).

[12] For an overview of political agency models, see Besley (2006).

[13] See for example Dustmann, Schoenberg, and Stuhler (2016) for a recent survey showing how differences in the methodologies deployed can explain some of the differences in the estimated effects. See also Peri

While the debate will surely continue, a few recent papers have highlighted that the variety of results obtained in the literature might be reconciled by distinguishing between the "short" and the "long run". For example, Llull (2018) shows that when natives are not allowed to adjust their human capital and labor supply decisions – i.e. in the short run – immigration impacts natives' labor market outcomes, with less educated, younger male individuals being the most negatively affected. At the same time, when natives are allowed to change their labor supply decisions – i.e. in the medium to long run – these effects are substantially mitigated. Similar findings have been uncovered also by Monras (2019), who estimates a large negative short run impact of unskilled Mexican immigrants on similar native workers in the U.S. in the aftermath of the 1995 Peso crisis, with only very limited effects instead observed in the long run. Similar patterns have been uncovered also for refugee inflows by Borjas and Monras (2017), with negative effects on the outcomes of competing domestic workers, and positive effects for complementary workers. All this evidence provide support for our assumption that immigration affects - at least in the short run, the time frame considered in our settings - the income distribution in the host country.

The distributional impact of foreign workers on the political economy of migration policy has been analyzed by several papers that have developed models explaining how voters or lobbies influence policies towards overall migration (Benhabib 1996, Facchini and Willmann 2005 and Epstein and Nitzan 2006). Yet, the role of income inequality in determining national policies toward labor movements in receiving countries remains notably absent from this debate. Our works fill this gap by showing how inequality affects immigration quotas and their enforcement.

Our works also relates to several papers focussing on optimal policies to limit the inflow of undocumented foreigners (Ethier 1986, Bond and Chen 1987, Woodland and Yoshida 2006). These papers provide rich frameworks in which both the decision to migrate and the effects of different policies in the destination countries are considered. At the same time, they do not explicitly analyze the role of political economy forces in shaping the demand side of illegal immigration. Other papers have developed political economy models of illegal immigration from the point of view of the host country. In an early contribution, Djajic (1987) looks

(2014) for a review of the cross–country evidence.

at the level of enforcement that will be chosen by a government as the result of lobbying expenditure. Similarly, Chau (2003) uses a model with lobbying to study the political process through which border and domestic enforcement are chosen in equilibrium, and under which conditions an amnesty might be introduced. Importantly, in both these frameworks, legal immigration is absent from the model and as a result, the only source of additional labor supply for the destination country is represented by undocumented foreign workers.[14] In our paper, instead, illegal immigration only takes place when the number of migrants entering is higher than a binding official quota, and the phenomenon arises *endogenously* as the result of the migration policy chosen by the government, i.e. the combination of quotas and resources allocated to their enforcement.

3 Economic Environment

Consider a small open economy producing a single good using labor E according to a production function $Y = F(E)$, with $F'(E) > 0$, $F''(E) < 0$. $F(E)$ is such that there exists a well-defined profit function associated to it, and the corresponding monetary payment can be interpreted as the compensation received by an immobile factor.[15] As for prices, we choose aggregate output as the numéraire, the real wage in Home is denoted by $w(E)$, and the profit function is given by $\pi[w(E)]$.

The economy is populated by a continuum of native individuals indexed by $i \in [0, 1]$, whose mass is normalized to one. Every individual i inelastically supplies one unit of labor and receives a fraction $\lambda_i > 0$ of the profits π, with $\int \lambda_i di = 1$.[16] Furthermore, we assume the domestic wage under autarky to be larger than the wage prevailing in the rest of the world. Thus, abstracting from moving costs, foreign workers will always find it desirable to relocate to Home. To capture the uncertainty in immigration pressure, the supply $\widehat{I}$ of migrants is assumed to be stochastic, and depending on the state of the world s, which can

[14] For a model focussing on the sectoral dimension of illegal immigration see Hillmann and Weiss 1999.

[15] A natural candidate would be land, or alternatively capital.

[16] We assume the distribution of factor ownership to be atomless i.e., that every agent only owns a tiny fraction of the total supply of the fixed factor. Notice that if we denote with K_i agent's i supply of the fixed factor, $\int_I K_i di = K$. Since population size is normalized to 1, K is also the average supply of the fixed factor in the population. Define $\lambda_i = \frac{K_i}{K} > 0$. Then $E(\lambda_i) = \int_I \lambda_i di = 1$. In other words, λ_i can be interpreted as the holding of the fixed factor by agent i relative to the population average.

be either low (L) or high (H) with probabilities $1-q$ and q respectively. In particular, let $\widehat{I}(L) = \underline{I} < \overline{I} = \widehat{I}(H)$.

Admitting immigrants I leads to welfare gains for Home, which are bounded by the presence of a "congestion" cost $c(I)$, which is a differentiable, increasing and convex function.[17] Congestion costs capture for example, in a reduced form fashion, the presence of fiscal externalities associated with the scaling up of the provision of public services, and their presence insures the existence of an interior solution for the optimal number of immigrants. The government can limit the migrant's inflow by setting a quota – fixing for example the maximum number of visas to be issued in a given year – whose enforcement is costly. In this stylized model, the extent of resources necessary to enforce the quota is determined by a linear enforcement cost $\eta[I, \widehat{I}(s)]$ that depends on the supply of foreign workers $\widehat{I}(s)$ and the quota I chosen by the government. To fix ideas, η could capture – for example – the resources necessary to remove migrants who have entered the country in excess of the quota I or for apprehending at the border immigrants that try to move to the country in violation of entry requirements. Given the migrants' supply, it is natural to assume that the more stringent is the quota, the larger is the cost of enforcing it i.e. $\frac{\partial \eta[I,\widehat{I}(s)]}{\partial I} < 0$. Moreover, a larger supply of migrants has a positive effect on both the total and marginal cost of enforcement, i.e. if $\overline{I} > \underline{I}$, $\eta(I, \overline{I}) > \eta(I, \underline{I})$ and $\mid \frac{\partial \eta}{\partial I}(I, \overline{I}) \mid > \mid \frac{\partial \eta}{\partial I}(I, \underline{I}) \mid$ for all I. As a result, the supply of foreign workers $\widehat{I}$ can affect the optimal migration policy. Finally, if the quota is not binding, i.e. if $I \geq \widehat{I}(s)$, then $\eta[I, \widehat{I}(s)] = 0$.[18] To keep the presentation simple, our analysis will focus on situations in which the quota is always binding, i.e. $I < \underline{I}$.

The utility of a native individual i, for a given state of the world s, can thus be written as

$$u_i[I, \widehat{I}(s)] = \lambda_i \pi[w(1+I)] + w(1+I) - c(I) - \eta[I, \widehat{I}(s)] \tag{1}$$

where $1+I$ represents total employment of natives and migrants in the country.[19] The

[17] To keep the analysis tractable, we assume that legal and illegal immigrants generate the same congestion costs. One interesting extension of the model would involve allowing for asymmetries to capture for instance the possibility that undocumented migrants might be more likely to be involved in criminal activities.

[18] An example of an enforcement cost function satisfying the above properties is given by $\eta_s = a_s[\widehat{I}(s) - I]$, where $a_H > a_L$.

[19] In other words, native and immigrant labor are perfect substitutes in production. This assumption simplifies the analysis of model, and allowing for imperfect substitutability, while complicating the algebra,

first term on the right hand side captures the individual's share of profits, the second his wage income,[20] whereas the third and fourth terms denote the congestion and the policy enforcement costs, that are equally shared among all citizens.[21] As long as the congestion cost is sufficiently convex, the individual's utility function in equation 1 is concave in I and it is easy to show that:[22]

Lemma 1 *The number of immigrants $I^*(\lambda_i, s)$ maximizing individual i's utility under the state of the world s is an increasing function of λ_i. Moreover $I^*(\lambda_i, H) > I^*(\lambda_i, L)$ and $\eta\left[I^*(\lambda_i, H), \overline{I}\right] > \eta\left[I^*(\lambda_i, L), \underline{I}\right]$.*

Proof. See Appendix. ■

In the reminder of the paper we will simplify the notation and write $I^*(\lambda_i, s) = I_i^*(s)$. Knowing the probability of each state of the world, i's expected utility can be written as

$$\begin{aligned} E\{u_i[I, \widehat{I}(s)]\} &= qu_i(I, \overline{I}) + (1-q)u_i(I, \underline{I}) \\ &= G_i(I) + q\eta[I, \overline{I}] + (1-q)\eta[I, \underline{I}] \end{aligned} \tag{2}$$

where $G_i(I) = \lambda_i \pi[w(1+I)] + w(1+I) - c(I)$ and $q\eta[I, \overline{I}] + (1-q)\eta[I, \underline{I}]$ is the expected enforcement cost. To simplify the analysis, in the remainder of the paper we will assume a linear labor demand and a quadratic congestion cost.[23] Focusing on interior solutions, the first order condition for expected utility maximization is given by

$$G_i'(I) + q\eta'[I, \overline{I}] + (1-q)\eta'[I, \underline{I}] = 0$$

would not significantly affect our conclusions.

[20]Note that in this model, since labor supply is inelastic and given by $1+I$, the equilibrium wage, $w(1+I)$ is determined by $w = F'(1+I)$, with $w'(I) < 0$ and profits are given by $\pi[w(1+I)] = F(1+I) - (1+I)w$.

[21]In section 6 we will extend the analysis considering alternative redistributive taxation schemes to finance the enforcement cost.

[22]Note that under this assumption we could accommodate also a non-linear enforcement cost, but this would make the derivation of close form solutions to the utility maximization problem significantly more involved.

[23]As discussed in Facchini and Testa (2009) a concave production function giving rise to a linear labor demand is given by $Y = (a/b)E - (1/2b)E^2$, with the labor demand $E = a - bw$, with $a, b > 0$. The corresponding profit function is then given by $\pi(w) = (a^2/b) + (b/2)w^2 - aw$. Using a more general production structure (e.g. a constant elasticity factor demand) would make the analysis computationally more involved, without changing the essence of our main results.

Remember that η is linear in I and thus η' does not depend on I and that $G'(I)$ is monotonic. As a result, $I^* = (G_i')^{-1}\{-q\eta'[I,\overline{I}] - (1-q)\eta'[I,\underline{I}]\}$ and since G_i' is linear in I we have that the migration quota I_i^* maximizing expected utility is given by:

$$I_i^* = (1-q)I_i^*(L) + qI_i^*(H) \tag{3}$$

where $I_i^*(H)$ and $I_i^*(L)$ are respectively the optimal number of migrants under the high and low state of the world. Furthermore, since the enforcement cost is linear in I, Lemma 1 implies that the amount of resources spent on the enforcement of the quota I_i^* is given by:[24]

$$\eta(I_i^*) \in (\eta[I_i^*(L),\underline{I}], \eta[I_i^*(H),\overline{I}]) \tag{4}$$

Since the enforcement budget is chosen under imperfect information on the state of the world, the migration quota cannot be exactly met. In particular, ex–post, given the realized supply of foreign workers, the actual number of migrants $I_i(s)$ is different from the state contingent optimal quota $I_i^*(s)$.

[INSERT FIGURE 1 APPROXIMATELY HERE]

To understand this point, consider Figure 1, where we have represented the enforcement cost functions under the two possible states of the world. If the state of the world is high, to obtain the optimal immigration level $I_i^*(H)$, individual i should spend $\eta[I_i^*(H),\overline{I}]$. Hence, having spent only

$$\eta(I_i^*) < \eta[I_i^*(H),\overline{I}] \tag{5}$$

the actual number of migrants is $I_i(H) > I_i^*$. At the same time, given the information constraint, I_i^* maximizes his expected utility. The difference $I_i(H) - I_i^*$ represents the number

[24] Lemma 1 establishes a monotone relationship between resources spent on enforcement and state of the world (i.e. $\eta\left[I_i^*(H),\overline{I}\right] > \eta\left[I_i^*(L),\underline{I}\right]$). Since the expected enforcement cost function is a linear combination of the enforcement costs functions under the two states of the world, with weights equal to the probabilities of the states, then $\eta\left[I_i^*(H),\overline{I}\right]$ and $\eta\left[I_i^*(L),\underline{I}\right]$ provide upper and lower bounds to the amount of resources spent on enforcement depending on the probabilities of the two states.

of *illegal immigrants*. On the other hand, if the state of the world is low, the individual over-invests in enforcement, and the number $I_i(L)$ of immigrants actually entering the country is lower than the quota, I_i^*, i.e. no illegal immigration will arise in this case.

We can also show that:

Lemma 2 *$I_i(H) - I_i^*$ decreases with λ_i.*

Proof. See Appendix. ■

Lemma 1 and 2 have some interesting implications. Consider two particular individuals, b and p. The first is characterized by an ownership share λ_b equal to the country's average (i.e. $\lambda_b = 1$) and his preferences coincide in our setting with aggregate welfare.[25] The share λ_p of the second equals instead the country's median, and since preferences are single peaked, the policy preferred by p will defeat any alternative under majority voting with pairwise comparisons. Furthermore, we know that typical wealth distributions are such that $\lambda_p < 1$ (Alesina and Rodrik 1994). Thus, lemma 1 implies that social surplus maximization and majority voting will deliver different outcomes: the median voter prefers a smaller number of migrants (I_p^*) than the one maximizing social surplus (I_b^*), whereas his preferred enforcement spending is higher (i.e. $\eta(I_p^*) > \eta(I_b^*)$). Moreover, lemma 2 implies that illegal immigration is higher if the policy preferred by the median instead of that preferred by the average voter is implemented.

4 The migration policy game

We are now ready to describe the process that leads to the choice of the equilibrium migration policy. We consider a model of elections with two periods, where the future is not discounted and in each period the politician in office chooses a migration policy (e.g. a migration quota and enforcement spending). Between periods there is an election, in which voters decide whether to re–elect or not the incumbent, and in our single–dimension model the median

[25] In particular aggregate welfare $u[I, \widehat{I}(s)]$ is given by

$$u[I, \widehat{I}(s)] = \int_i \{\lambda_i \pi(1+I) + w(1+I) - c(I) - \eta[I, \widehat{I}(s)]\} di = \pi(1+I) + w(1+I) - c(I) - \eta[I, \widehat{I}(s)]$$

Since $E(\lambda_i) = 1$, aggregate welfare coincides with average welfare.

voter plays a decisive role.[26] Politicians may be one of two types denoted by $g \in \{p, b\}$. The "populist" type ($g = p$), has preferences perfectly aligned with the median voter, whereas the "utilitarian" (or Benthamite, $g = b$), has preferences aligned with the average voter. In the context of our agency model, a natural way of justifying the presence of two types of candidates could be to consider a "pre-election stage", in which parties select candidates among a pool of politicians with heterogeneous preferences, with utilitarian types appealing to the interests of pro-business lobbies. To the extent that the general public is not perfectly informed on the degree of influence of various interests groups this would generate uncertainty on politicians' types. The types of the first period incumbent and challenger are draws from an identical distribution, and the probabilities that the politician is populist or utilitarian are denoted by μ and $1 - \mu$ respectively.

4.1 Information and timing

As it is typical in political agency models, we assume uncertainty on the state of the world – in our case the supply of migrants – and asymmetric information about the politician's preferences. Thus the supply of foreign workers $\widehat{I}(s)$ is not observed either by the politician or the public, but they both know its distribution.[27] The type of the politician is only known to himself, whereas the distribution of types is common knowledge. Hence, in the first period, the incumbent chooses a migration policy prescribing a quota and the amount of resources to be spent on enforcement under imperfect information on the actual supply of foreign workers. The quota is publicly announced – as it is often the case when it comes to the number of visas that can be issued in a given year. The public is instead not perfectly informed about the resources allocated to the enforcement of migration policy – a realistic

[26] Several studies have shown that migration consistently ranks among the most important issues in public opinion surveys, both in Europe and in the United States. For example, Hatton (2020) points out that in 2016, 32% of the respondents in the 17 countries sampled by the Eurobarometer survey considered immigration one of the two most important issues faced by the country. Similar patterns have been uncovered for the United States (Facchini, Mayda, and Puglisi 2017). Thus our single dimension model captures in a simple way the salience of the migration issue.

[27] This is simplest way to incorporate uncertainty in our set-up to capture the fact that the politician cannot perfectly control immigration flows. In real world, there are different possible sources of uncertainty, such as for example the entry channel of migrants, the type of enforcement activities that is most effective depending on the characteristics of the supply of migrants etc. As long as the politician has limited policy tools and the public cannot perfectly infer the cause of illegal immigration, the main message of our analysis will be the same.

hypothesis given that even researchers have hardly been able to collect systematic data on this issue.[28]

After the migration policy has been chosen, voters – having observed the quota I_g^* and the actual number of migrants $I_g(s)$, but neither their true supply nor the amount of resources spent on enforcement – revise their initial beliefs on the incumbent's type according to Bayes' rule.[29] We denote by $\mu[I_g^*, I_g(s)]$ the posterior probability that the incumbent is populist when the quota I_g^* and the actual number of migrants $I_g(s)$ are observed. Given the posterior probability $\mu[I_g^*, I_g(s)]$, voters choose whether to re–elect the incumbent or replace him with a challenger. In the second period, the elected politician chooses again the number of immigrants to be admitted under imperfect information on the supply of foreign workers. All players realize their payoffs and the world ends.[30]

4.2 Equilibrium

The above structure defines a game of incomplete information between voters and politicians. Using backward induction, we seek to characterize the perfect Bayesian Nash equilibria of this game (PBNE), which consist of a migration policy, a voting rule and a set of beliefs such that (a) the incumbent's strategy is optimal given the voters' beliefs and the oppo-

[28]To understand the nature of the problem, consider for example the recent U.S. experience. Two agencies – U.S. Customs and Border Protection and U.S. Immigration and Customs Enforcement (ICE) – are responsible for the enforcement of migration policy as well as for a series of other duties - ranging from the prevention of smuggling of contraband, to the prosecution and deportation of non–citizens who have been convicted of a felony etc. The publicly available data refer only to aggregate budgets, making it impossible to precisely measure the resources allocated to each particular activity. In fact these agencies have substantial flexibility in the allocation of their resources and as pointed out by GAO (2005) "... After September 11, 2001, INS and ICE focused their resources on national security-related investigations. According to ICE, the redirection of resources from other enforcement programs to perform national security-related investigations resulted in fewer resources for traditional program areas, like worksite enforcement and fraud." The data from Department of Homeland Security, on which GAO report are based, are not publicly available, and GAO is exempted from the Freedom of Information Act.

[29]Our aim is to capture, in a stylized way, the fact that the public is aware of the existence of illegal immigration, but it cannot see through all the details of the decision making process to understand whether the government is putting in place all the necessary measures to tackle it. Estimates of the size of the illegal immigrant population are often discussed in the press in many important destination countries – see for example for the US the work by the Pew Research Center available at https://www.pewresearch.org/fact-tank/2019/11/13/how-european-and-u-s-unauthorized-immigrant-populations-compare/.

[30]Note that as argued in the literature (see Coate and Morris 1995), a two-period model is the simplest finite horizon set-up in which the incentives provided by elections can be studied. It is of course possible to consider a finite horizon model with several elections. In this case, applying backward induction, the main thrust of our analysis would not be altered.

nent's and voters' strategies; (b) the voting rule is optimal given the voters' beliefs and the politicians' strategies; (c) voters update their prior beliefs according to Bayes' rule whenever it applies, whereas implausible out-of-equilibrium beliefs are ruled out by equilibrium dominance arguments (Cho and Kreps 1987).

In the last period, because there are no further elections, the incumbent simply chooses the policy maximizing his second period expected pay-off, given the probability of each state of the world. In the first period, the policy choice is more complex because of re-election concerns, and it crucially depends on voters' beliefs. To maximize his expected inter-temporal utility, the incumbent needs to take into account that his policy choice affects not only the expected number of migrants in the first period, but also his re-election chances, and thus the second period policy. The latter in particular depends on whether the incumbent is re-elected or not, and on the preferences of the challenger that might replace him. As a result, when choosing the migration quota and the enforcement spending in the first period, the incumbent must also take into account how voters will update their beliefs and cast their ballot.

Remember that voters only observe the quota I_g^* and the actual number of migrants $I_g(s)$, and use this information to compute the posterior probability $\mu[I_g^*, I_g(s)]$ that the incumbent is populist. Since the preferences of the utilitarian politician are not aligned with those of the median voter, choosing the one period payoff maximizing strategy (i.e. *playing sincere*) might turn out not to be inter–temporally optimal. In particular, for electoral purposes he might gain from pooling with a populist by setting the quota I_p^* and choosing an enforcement level allowing him to replicate the number of migrants generated by the populist at least under some state of the world. This is possible under three strategies.[31] First, the amount spent on enforcement coincides with $\eta(I_p^*)$, so that the number of migrants admitted always equals that chosen by a populist. We label this strategy "*mimicking*". Second, enforcement could be set at a level $\eta(I_b^o) > \eta(I_p^*)$ allowing to "pool" with the populist only if the state of the world is high (i.e. $I_b^o(H) = I_p(L)$), whereas if it is low, the number of migrants will be smaller than the lower-bound obtained by the populist, i.e. $I_b^o(L) < I_p(L)$. Hence, the

[31]For simplicity, we illustrate the pooling strategies for the case of the utilitarian incumbent, that is the most relevant for our analysis. The pooling strategies for the populist are analogously defined.

expected number of migrants is $I_b^o = qI_p^o(L) + (1-q)I_p(L)$ where $I_b^o < I_p^*$. We label this strategy "*over–investment*". Third, the enforcement expenditure could be set at a level $\eta(I_b^u) < \eta(I_p^*)$ such that, if the state of the world is low, the migration level $I_b^u(L)$ equals that generated by a populist in the high state of the world, i.e. $I_b^u(L) = I_p(H)$. Clearly, if the state of the world is high, the number of foreign workers entering the country will be larger than under the populist, i.e. $I_b^u(H) > I_p(H)$. Thus, the expected number of migrants is $I_b^u = qI_p(H) + (1-q)I_b^u(H)$ with $I_b^u > I_p^*$. We label this strategy "*under–investment*". Since this strategy will play a key role in our analysis, we have illustrated the corresponding outcomes in Figure 2.

[INSERT FIGURE 2 APPROXIMATELY HERE]

Thus, once the quota I_p^* is announced, the voter cannot rule out that the incumbent is utilitarian. Voters can instead compute the posterior probability $\mu[I_p^*, I_g(s)]$ that he is a populist using Bayes rule whenever it applies, whereas we rely on equilibrium dominance arguments (Cho and Kreps 1987) to eliminate implausible out-of-equilibrium beliefs. Intuitively, when a deviation from equilibrium is observed, the voter's beliefs will assign zero probability to the type of politician that cannot possibly gain by deviating. We are now ready to establish a series of intermediate results needed to characterize the equilibrium of the game. First, considering the behavior of the utilitarian incumbent, we can show that:

Lemma 3 *In any PBNE that satisfies the Cho-Kreps intuitive criterion, a utilitarian incumbent will never mimic the populist or over-invest.*

Proof. See Appendix. ■

To understand this result, note that the second period payoff from mimicking (over-investment), in the best case scenario of re-election, is identical to the first period payoff from playing sincere. At the same time, the second period expected payoff from playing sincere, in the worse case scenario of no re-election, is higher than the first period payoff from mimicking (over-investment). Thus, mimicking is strictly dominated by playing sincere, and the same holds true for over-investment. Next, considering a populist politician, we can prove that:

Lemma 4 *In any PBNE that satisfies the Cho-Kreps intuitive criterion a populist incumbent will never choose a quota I_b^* and an enforcement spending level $\eta(I_b^*)$.*

Proof. See Appendix. ■

In other words, the populist will never find it optimal to perfectly 'mimic' the utilitarian. To understand this result, note that the second period payoff from 'mimicking' the utilitarian in the best case scenario of re-election is identical to the first period payoff from playing sincere. On the other hand the second period expected payoff from playing sincere and not being re-elected is higher than the first period payoff from 'mimicking', as with probability μ the newly appointed politician will also be a populist.

From lemma 3 we know that the voter can rule out that the outcomes $[I_p^*, I_p(L)]$ and $[I_p^*, I_b^o(L)]$ are generated by a utilitarian politician, and thus $\mu[I_p^*, I_p(L)] = \mu[I_p^*, I_b^o(L)] = 1$. On the other hand, the outcome $[I_p^*, I_p(H)]$ may be generated either by a populist playing sincere or by a utilitarian under-investing. Thus, by Bayes rule:

$$\mu[I_p^*, I_p(H)] = \frac{\mu q}{\mu q + (1-q)(1-\mu)}$$

where μq is the probability that $I_p(H)$ is generated by a populist, and $(1-q)(1-\mu)$ is the probability that it is generated by a utilitarian type under-investing in enforcement (if the state of the world is low). Note that $\mu[I_p^*, I_p(H)] \geq \mu$ if and only if $q \geq \frac{1}{2}$. In other words, under-investment can generate an upward revision of the ex-ante probability that the incumbent is a populist only if 'pooling' is sufficiently costly for the utilitarian incumbent, because the larger is q, the higher is the probability that by under-investing he will end up revealing his type.

Given this structure of beliefs, a sequentially rational voting rule for the median voter is to retain the incumbent if and only if the ex-post probability that the incumbent is a populist is larger than the ex-ante, i.e. $\mu[I_p^*, I_p(H)] \geq \mu$.[32] As a result, if $q < \frac{1}{2}$, under-investment cannot be optimal for the utilitarian politician and $\mu[I_p^*, I_p(H)] = 1$. We are now ready to characterize the equilibrium behavior of a populist politician.

[32]When $\mu[I_p^*, I_p(H)] \geq \mu$, then for the voter it is not optimal to replace the incumbent with a challenger who is less likely to be populist, and the opposite is true when $\mu[I_p^*, I_p(H)] < \mu$.

Proposition 1 *In any PBNE that satisfies the Cho-Kreps intuitive criterion a populist incumbent always plays sincere and is re-elected.*

Proof. See Appendix. ■

To understand this result, note that by playing sincere the populist generates the outcomes $[I_p^*, I_p(s)]$, with $s \in \{L, H\}$ and the voter finds it optimal to re–elect him because by Bayesian updating $\mu[I_p^*, I_p(L)] = 1$ and $\mu[I_p^*, I_p(H)] = 1$ if $q < 1/2$ and $\mu[I_p^*, I_p(H)] > \mu$ if $q > 1/2$. As a result, he finds it optimal to play sincere.[33]

We are now ready to characterize the equilibrium behavior of a utilitarian incumbent. As we have already pointed out, if in the first period he chooses the migration policy preferred by the average voter (sincere strategy), he can only decrease his ex-post probability of being considered a populist, whereas by 'pooling' with a populist, he may raise it. Given that the populist politician always plays sincere, in order to 'pool', the utilitarian must (i) set the median voter most preferred quota I_p^*; and (ii) choose a level of enforcement that allows him to replicate the same number of migrants admitted by the populist under at least some state of the world.[34]

We have already shown that mimicking the populist and over-investment are strictly dominated by playing sincere (see lemma 3), and that if $q < \frac{1}{2}$, under-investment cannot be optimal. At the same time, if $q \geq \frac{1}{2}$, under-investment might be optimal because if the state of the world is low, the incumbent is re-elected. Remembering that if the state of the world is high, he will be replaced by a populist with probability μ and by a utilitarian with probability $(1 - \mu)$, and denoting by $E\{u_b[\eta(I_g)]\}$ his expected one period payoff when the amount spent on enforcement is $\eta(I_g)$ and the expected number of migrants is I_g, then when $q \geq \frac{1}{2}$ his expected intertemporal payoff from under-investment can be written as:

$$\begin{aligned} U(under) &= E\{u_b[\eta(I_b^u)]\} + (1-q)E\{u_b[\eta(I_b^*)]\} \\ &+ q\mu E\{u_b[\eta(I_p^*)]\} + q(1-\mu)E\{u_b[\eta(I_b^*)]\} \end{aligned} \tag{6}$$

[33] We also show that the populist cannot gain from deviating from the sincere equilibrium, hence by equilibrium dominance arguments we can to rule out other equilibria supported by implausible out-of-equilibrium beliefs (see proof in appendix).

[34] Note that (i) and (ii) imply that the utilitarian politician cannot pool by choosing $[I_p^*, \eta(I_b^*)]$, i.e. $\mu[I_p^*, I_b(s)] = 0$ for all $I_b(s) \in \{I_b(L), I_b(H)\}$.

The first term on the right hand side of the equation denotes the expected first–period payoff from playing the underinvestment strategy. The second, third and fourth terms denote instead the second period payoffs when different states of the world materialize in the first period. In particular, if the state of the world is low, the incumbent will be reappointed to office and will implement his most preferred policy in the second period (the second term). If the state of the world is high instead, then the incumbent will be replaced at the election, with probability μ by a populist, and with probability $(1-\mu)$ by another utilitarian (third and fourth term respectively). Both agents implement their most preferred policy once in office, as they are not concerned with re–election.

Since the utilitarian politician will not be re-elected if he plays sincere, then his expected intertemporal payoff under this strategy is given by:

$$U(sincere) = E\{u_b[\eta(I_b^*)]\} + \mu E\{u_b[\eta(I_p^*)]\} + (1-\mu)E\{u_b[\eta(I_b^*)]\} \tag{7}$$

We can now determine when underinvestment is preferred to playing sincere (e.g. $U(under) > U(sincere)$). Let $L_1(\lambda_p) = E\{u_b[\eta(I_b^u)]\} - E\{u_b[\eta(I_b^*)]\} < 0$ be the first period expected utility loss from choosing under–investment rather than the sincere strategy, and let $G_2(\lambda_p) = E\{u_b[\eta(I_b^*)]\} - E\{u_b[\eta(I_p^*)]\}$ be the second period expected utility gain from being in power, as compared to being replaced by a populist challenger. Under–investment is preferred if the following holds:

$$L_1(\lambda_p) + (1-q)\mu G_2(\lambda_p) > 0 \tag{8}$$

where the second term on the left hand side represents the expected second period gain from under–investment. [35]

Let $\widetilde{\mu}_u = -\frac{L_1(\lambda_p)}{(1-q)G_2(\lambda_p)}$, where $0 < \widetilde{\mu}_u < 1$, then the following holds:

Proposition 2 *If $q > \frac{1}{2}$ and $\mu > \widetilde{\mu}_u$, there exists a pooling equilibrium with under–investment whereby, if $s = L$, the utilitarian incumbent admits $I_p(H)$ migrants and is re-elected, whereas if $s = H$, $I_b^u(H)$ migrants are admitted and he is voted out of office. If $q > \frac{1}{2}$ and $\mu < \widetilde{\mu}_u$,*

[35] Note that if the state of the world is low – which happens with probability $(1-q)$ – the utilitarian incumbent will be re-elected and obtain his most preferred level of migration in the second period. Since by playing sincere he could obtain the same gain with the lower probability $(1-q)(1-\mu)$, the expected gain is given by $(1-q)\mu G_2(\lambda_p)$.

there exists instead a separating equilibrium such that $I_b(L)$ migrants are admitted if $s = L$, $I_b(H)$ are admitted if $s = H$, and the utilitarian incumbent is never re-elected. Finally, if $q \leq \frac{1}{2}$ the utilitarian incumbent plays sincere and is not re-elected.

Proof. See Appendix. ■

The first part of the proposition points out that electoral incentives can induce the utilitarian politician to admit on purpose more migrants than the number specified under his official quota, by strategically under-investing in enforcement. Moreover, re-election concerns raise illegal immigration above the level implied only by imperfect information on the true supply of foreign workers. In fact, if the utilitarian politician played sincere, illegal immigration, which only arises when the state of the world is high, equals $I_b(H) - I_b^*$. On the other hand, with underinvestment, illegal immigration arises always, and under the high state of the world, it is higher than that occurring if the politician plays the sincere strategy (i.e. $I_b^u(H) - I_p^* > I_b(H) - I_b^*$).

5 Preferences Heterogeneity and illegal immigration

Our model shows that re-election concerns can induce a utilitarian politician to 'distort' his migration policy.[36] Since, as shown in proposition 2, heterogeneity of preferences is crucial for this result, in this section we further explore the role played by *i*) the fixed factor's ownership distribution (income inequality) and *ii*) the likelihood that the politician preferences are aligned with those of the median voter.[37]

To assess the role of income inequality, we study how the incentives to under–invest highlighted in proposition 2 change with the share of the fixed factor owned by the median voter. As λ_p decreases, the number of migrants admitted by a populist politician decreases. As a result, the utilitarian politician has more to gain from remaining in office, implying

[36] In a different set up, focussing on the transmission of information from the government to its citizens, Alboronoz, Esteban, and Vanin 2014 show how a benevolent government might distort information communication with the hope to increase social welfare.

[37] An additional comparative statics exercise could have involved a change in the enforcement cost across countries. In our setting an increase in the policy enforcement cost unambiguously leads to an increase in the number of legal immigrants to be admitted. At the same time, under our assumption on the form of the utility function, this will not affect the incentives faced by the utilitarian politician. The formal argument is available upon request.

that $(1-q)\mu G_2(\lambda_p)$ is a decreasing function of λ_p, which tends to zero as λ_p approaches one. On the other hand, $L_1(\lambda_p)$ crucially depends on the difference between the amount of resources spent on enforcement if the politician chooses to under–invest ($\eta(I_b^u)$) instead of playing sincere ($\eta(I_b^*)$). Clearly, if $\eta(I_b^u) = \eta(I_b^*)$, then the number of migrants admitted with under-investment coincides with the one obtained with the sincere strategy, and the expected loss equals zero. As we depart from this point (either by increasing or decreasing $\eta(I_b^u)$), the expected loss will increase, because the further away is $\eta(I_b^u)$ from $\eta(I_b^*)$, the larger is the gap between the number of migrants entering the country in the two cases. Remembering that $\eta(I_b^u)$ decreases with λ_p,[38] we can represent the two relationships on the same diagram, with $0 < \lambda_p \leq 1$. Assuming that $G_2(\lambda_p)$ is flatter than $L_1(\lambda_p)$ as λ_p tends to zero, if the largest possible gain is bigger than the corresponding loss – as illustrated in Figure 3 – there exists a unique value λ_{sup} of the median voter's capital share such that the two curves intersect. As a result, we have that:

Proposition 3 *Assume that* $\lim_{\lambda_p \to 0} G_2(\lambda_p) > \lim_{\lambda_p \to 0} L_1(\lambda_p)$. *Then an equilibrium with under–investment arises for all* $\lambda_p < \lambda_{sup}$, *whereas a separating equilibrium arises if* $\lambda_p > \lambda_{sup}$.

Thus, if the median voter's share of profits is sufficiently close to the average (i.e. $\lambda_p > \lambda_{sup}$), then a utilitarian politician will not raise illegal immigration above the 'constrained efficient' level by carrying out strategic under–investment. As a result, if $\lambda_p > \lambda_{sup}$ the number of migrants admitted legally will be higher and the number entering illegally will be lower than if $\lambda_p < \lambda_{sup}$.[39] Hence, one interesting prediction of our model is that under–investment with inefficiently high illegal immigration is more likely to occur the more unequal is the distribution of rents accruing to fixed factors.

[INSERT FIGURE 3 APPROXIMATELY HERE]

[38] As λ_p increases, the populist's migration quota increases and his enforcement spending decreases. Thus the spending required for the under-investment strategy declines.

[39] Note that if instead $\lim_{\lambda_p \to 0} G_2(\lambda_p) < \lim_{\lambda_p \to 0} L_1(\lambda_p)$, then there exists a λ_{inf} such that an equilibrium with under–investment will arise if $\lambda_{inf} < \lambda_p < \lambda_{sup}$.

Using Figure 3, we can also analyze the effect of a change in the likelihood that a politician has preferences aligned with those of the median voter: as μ increases, the expected second period gain from underinvestment $(1-q)\mu G_2(\lambda_p)$ shifts upwards, leaving the expected loss function $L_1(\lambda_p)$ unaffected. This results in an increase in the range of λ_p values for which an equilibrium with under–investment arises. Formally:

Proposition 4 *For a given λ_p, an equilibrium with under–investment is more likely to arise the larger is the ex-ante probability μ that the politician is populist.*

This result highlights the importance of political competition as a driving force behind policy choices. To illustrate this point, consider again Figure 3 and assume that $\lambda_p > \lambda_{sup}$ so that the utilitarian is not underinvesting. Suppose now that μ increases, implying that the utilitarian politician's gains from holding office in the second period raise (dotted curve), with λ'_{sup} pinning down the new intersection. If the increase in μ is sufficiently large so that $\lambda_{sup} < \lambda_p < \lambda'_{sup}$, then political competition really matters since now the utilitarian politician will underinvest to prevent a populist from winning office, exacerbating the illegal immigration problem.[40] This result can shed light on how even just the emergence of populist forces witnessed by many western destination countries can affect policy choices due to strategic considerations in the electoral competition.

6 Taxation, redistribution and illegal immigration

We have so far assumed that the cost of enforcement is equally shared among the citizens of the destination country. As a result, heterogeneity of preferences on the optimal number of migrants is purely driven by the asymmetric distribution of the benefits from migration. In reality, the provision of public goods (e.g. migration policy enforcement) in most modern fiscal systems involves redistribution, and as a result richer individuals tend to contribute more than their poorer counterparts.[41] What are the effects of introducing a more realistic

[40] We would like to thank the editor for suggesting this interpretation.

[41] While obtaining data on spending on migration policy enforcement is challenging, the evidence we have from GAO (2005) does indeed suggest that the overall amount of resources allocated are rather limited. Still, the issue of how enforcement is financed and its implications on taxation has been quite controversial in the recent political debate. For example, when President Trump announced the construction of a wall on

fiscal system on the levels of illegal immigration emerging in the political equilibrium?

In this section we consider two possible alternatives. The first one directly allows the burden of the enforcement to vary across individuals. The second retains instead a lump sum tax to finance migration policy enforcement, but adds a proportional levy on capital, i.e. on the factor that benefits from the inflow of immigrants. While both settings capture the idea of redistributive taxation, as we will see their implications for migration policy vary significantly.

The first scheme can be thought of as simplified characterization of the working of most modern fiscal systems, where individuals contribute different amounts to the provision of a public good (i.e. migration policy enforcement). Under this regime every individual i pays a share γ_i of the enforcement cost so that his utility function becomes:

$$u_i[I, \widehat{I}(s)] = \lambda_i \pi[w(1+I)] + w(1+I) - c(I) - \gamma_i \eta[I, \widehat{I}(s)] \tag{9}$$

Using the same argument of lemma 1, we can immediately establish the following result:

Lemma 5 *The number of immigrants $I_i^*(s)$ maximizing individual i's utility under the state of the world s is an increasing function of γ_i. Moreover, illegal immigration becomes more severe as γ_i decreases.*

Focusing now on the share of enforcement cost borne by the median voter (γ_p) we can focus on a redistributive scheme, whereby the median voter pays a smaller fraction of the enforcement cost compared to the average voter, e.g. $0 < \gamma_p < 1$. Our main result is summarized in

Proposition 5 *Suppose that $0 < \gamma_p < 1$. An equilibrium with under-investment is more likely to arise the smaller is γ_p.*

Intuitively, the extent to which individuals internalize the cost of enforcement crucially depends on how the cost is financed. As γ_p decreases – i.e. as the tax system becomes more redistributive – the gap in the most preferred level of migration between the median and

the US-Mexico border, he emphasized that "Mexico will pay for it". Later on the financing of the project became highly controversial, leading even to a government shutdown at the end of 2018.

the average voter increases. As a result, everything else equal, a utilitarian policy maker will be more likely to resort to under–investment for electoral purposes. Therefore, for a given distribution of capital, this type of scheme leads to more illegal immigration because it exacerbates the conflict of interest between capital-rich and capital-poor individuals.

The alternative scheme we consider is instead aimed at reducing the distributional conflict in the native society and works as follows: the enforcement cost is equally shared among all individuals through a lump sum tax $T = \eta[I, \widehat{I}(s)]$, but every native is eligible to receive a proportional tax rebate $t_i\pi[w(1+I)]$, such that $\int t_i\pi[w(1+I)]di = 0$.[42] This tax scheme could be desirable since, on the one hand, it does not affect the extent to which individuals internalize the cost of enforcement, on the other, it can be used to compensate individuals who contribute equally to the cost of enforcement while enjoying a lower return from migration. Under this taxation scheme the utility of every individual i becomes:

$$u_i[I, \widehat{I}(s)] = \lambda_i\pi[w(1+I)] + w(1+I) - c(I) - T + t_i\pi[w(1+I)] \tag{10}$$

Consider now a redistributive scheme whereby the median voter receives a positive tax rebate $t_p\pi[w(1+I)] > 0$. In this case it is immediate to establish the following:

Proposition 6 *An equilibrium with under-investment is less likely to arise the larger is the proportional tax rebated to the median voter.*

Intuitively, the tax rebate changes the return to capital, alleviating the conflict of interest between rich and poor individuals. As these simple examples show, the redistributive nature of the fiscal system might play a role in exacerbating illegal immigration unless it tackles directly the distributive conflict lying at the heart of our analysis.[43]

[42] In other words some individuals will be net receivers, whereas others will be net contributors.

[43] In our uni-dimensional setting we do not model political competition on taxation. In practice political parties often run campaigns promising a tough stance on immigration, combined with fiscal restraint. Hence, when it comes to the realization of their pledges, they might be unable to keep both promises, and thus renege on their migration pledge by under-investing in order to keep taxes low. While a multidimensional setup is beyond the scope of our analysis, this indicates yet another source of strategic behavior that could lead to under-investment in migration policy enforcement.

7 Conclusions

In this paper we have developed a model in which illegal immigration arises endogenously as the result of a binding official immigration quota and imperfect enforcement. Furthermore, we have shown that electoral concerns play a crucial role. In particular, as long as the government has an information advantage over the public concerning the way it controls migration flows, it might find it optimal to announce a quota pleasing a majority of the electorate, but then strategically relax its enforcement. Thus, our model is able to explain both the prevailing political rhetoric of "closed" borders and the systematic lack of enforcement.

While we have focused on the design and enforcement of migration policy, the analysis carried out in this paper has implications for a broader variety of economic environments in which elected officials both codify and enforce rules and regulations. Two contexts appear particularly relevant: taxation and regulatory policy. We often see governments setting very high headline tax rates, but then carry out limited efforts to enforce them. The result is pervasive tax evasion, which often has first–order consequences on the distribution of the actual tax burden. Similarly, when it comes to regulatory policy, it is not uncommon to observe stringent anti–trust or environmental policy being legislated but not adequately enforced. Our model thus provides useful insights on the incentives faced by elected officials when simultaneously choosing policies and their enforcement.

We can think of at least two lines along which our theoretical model could be extended. First, the process through which policy enforcement is captured in our paper is rather simple, i.e. it is the choice of a single elected body. In reality, the implementation of legally binding standards often involves multiple agents. An analysis of the micro–level interactions among the various elected bodies playing a role in the enforcement process might provide further insights to understand some of the existing enforcement policy puzzles. Second, enforcement in one country can generate externalities on its neighbors'. An interesting extension of our analysis would involve accounting for these spillovers, in an environment in which quotas and enforcement are set strategically. An analysis of a richer model which considers these aspects is left for future research.

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Appendix: Proofs

Proof of Lemma 1. The optimal number of migrants $I^*(\lambda_i, s)$ is the solution of the following first order condition

$$u_i'[I, \widehat{I}(s)] = -\lambda_i(1+I)w'(1+I) + w'(1+I) - c'(I) - \eta'[I, \widehat{I}(s)] = 0 \tag{11}$$

where we have used Hotelling's lemma ($\frac{d\pi}{dw} = -E$) and the factor market clearing condition $E = 1 + I$. Equation 11 defines a function $g[I^*(\lambda_i, s), \lambda_i] \equiv u_i'[I, \widehat{I}(s)] = 0$ and applying the implicit function theorem, we have that

$$\frac{dI^*[\lambda_i, s]}{d\lambda_i} = -\frac{\frac{\partial g}{\partial \lambda_i}}{\frac{\partial g}{\partial I}} \tag{12}$$

Given that the utility function in equation 1 is concave, $\frac{\partial g}{\partial I} < 0$. Notice that $\frac{\partial g}{\partial \lambda_i} = -(1 + I)w'(I) > 0$, which implies the result. Moreover, since $\mid \frac{\partial \eta}{\partial I}(I, \overline{I}) \mid > \mid \frac{\partial \eta}{\partial I}(I, \underline{I}) \mid$ for all I, for the first order condition to be satisfied, $I^*(\lambda_i, H) > I^*(\lambda_i, L)$. Finally, if $c(I)$ is sufficiently convex, $I^*(\lambda_i, H) < I_{sup} < \overline{I}$, where I_{sup} is implicitly defined by $\eta[I_{sup}, \overline{I}] = \eta[I^*(\lambda_i, L), \underline{I}]$, and thus $\eta\left[I^*(\lambda_i, H), \overline{I}\right] > \eta\left[I^*(\lambda_i, L), \underline{I}\right]$.

Proof of Lemma 2. First note that $\frac{\partial [I_i(H) - I_i^*]}{\partial \lambda_i} = \frac{\partial I_i(H)}{\partial \lambda_i} - \frac{\partial I_i^*}{\partial \lambda_i}$. Moreover

$$\frac{\partial I_i^*}{\partial \lambda_i} = (1 - q)\frac{\partial I_i^*(L)}{\partial \lambda_i} + q\frac{\partial I_i^*(H)}{\partial \lambda_i} \tag{13}$$

To study $\frac{\partial I_i(H)}{\partial \lambda_i}$, remember that $I_i(H)$ is the actual number of migrants entering when $\eta(I_i^*)$ has been spent on enforcement and the state of the world is high. Hence, $I_i(H)$ is implicitly defined by $\eta\left[I_i(H), \overline{I}\right] = \eta(I_i^*)$, and the linearity of the enforcement cost implies that:

$$\eta(I_i^*) = (1 - q)\{(1 - q)\eta[I_i^*(L), \underline{I}] + q\eta[I_i^*(H), \underline{I}]\} + q\{(1 - q)\eta[I_i^*(L), \overline{I}] + q\eta[I_i^*(H), \overline{I}]\}$$

As the function $\eta[I_i, \overline{I}]$ is monotonic in I_i, then $I_i(H) = \eta^{-1}\left[\eta(I_i^*), \overline{I}\right]$. Some simple algebra allows us to show that

$$\frac{\partial [I_i(H) - I_i^*]}{\partial \lambda_i} = \left[(1 - q)\frac{\partial I_i^*(L)}{\partial \lambda_i} + q\frac{\partial I_i^*(H)}{\partial \lambda_i}\right] \times \left\{\frac{\partial \eta^{-1}(\overline{I})}{\partial \Upsilon}\left[q\frac{\partial \eta(\overline{I})}{\partial I_i} + (1 - q)\frac{\partial \eta(\underline{I})}{\partial I_i}\right] - 1\right\} < 0 \tag{14}$$

Note that $\frac{\partial \eta^{-1}(\overline{I})}{\partial \Upsilon}\frac{\partial \eta(\overline{I}, I_i)}{\partial I_i} = 1$ and $\frac{\partial \eta^{-1}(\overline{I})}{\partial \Upsilon}\frac{\partial \eta(\underline{I}, I_i)}{\partial I_i} < 1$ since $\mid \frac{\partial \eta}{\partial I}(I, \overline{I}) \mid > \mid \frac{\partial \eta}{\partial I}(I, \underline{I}) \mid$ by assumption. It follows immediately that $\frac{\partial I_i(H)}{\partial \lambda_i} < \frac{\partial I_i^*}{\partial \lambda_i}$, thus establishing the result.

Proof of Lemma 3. We first show that playing sincere dominates mimicking. Let $E\{u_b[\eta(I_g)]\}$ denote the one period expected payoff when the amount spent on enforcement is $\eta(I_g)$ and the expected number of migrants is I_g, where $E\{u_b[\eta(I_g)]\}$ is a concave function that is maximized when enforcement spending equals $\eta(I_b^*)$ and $I_b^* = (1-q)I_b^*(L) + qI_b^*(H)$. Thus $E\{u_b[\eta(I_b^*)]\}$ denotes the one period expected payoff from playing sincere, and $E\{u_b[\eta(I_p^*)]\}$ denotes the one period expected payoff from mimicking.

In the best case scenario in which the utilitarian plays mimicking in the first period and

is re-elected, his intertemporal expected payoff will be

$$E\{u_b[\eta(I_p^*)]\} + E\{u_b[\eta(I_b^*)]\} \tag{15}$$

On the other hand, if he plays sincere, in the worse case scenario of no re-election, he obtains the following intertemporal expected payoff:

$$E\{u_b[\eta(I_b^*)]\} + \mu E\{u_b[\eta(I_p^*)]\} + (1-\mu)E\{u_b[\eta(I_b^*)]\} \tag{16}$$

Since by expected utility maximization $E\{u_b[\eta(I_p^*)]\} < E\{u_b[\eta(I_b^*)]\}$, it follows immediately that (15) $<$ (16). We now show that over-investment is strictly dominated by playing sincere. Let $E\{u_b[\eta(I_b^o)]\}$ be the one period expected payoff from playing over-investment where $I_b^o = qI_p^o(L) + (1-q)I_p(L)$ and $I_b^o < I_p^* < I_b^*$. In the best case scenario in which the utilitarian plays over-investment and is re-elected, his intertemporal payoff is given by

$$E\{u_b[\eta(I_b^o)]\} + E\{u_b[\eta(I_b^*)]\}. \tag{17}$$

On the other hand, if the utilitarian plays sincere, in the worse case scenario in which he is not re-elected, he obtains the intertemporal expected payoff given by equation 16. To establish that playing sincere strictly dominates over-investment we need to show that:

$$\mu E\{u_b[\eta(I_p^*)]\} + (1-\mu)E\{u_b[\eta(I_b^*)]\} > E\{u_b[\eta(I_b^o)]\} \tag{18}$$

Since $I_b^o < I_p^* < I_b^*$, by concavity of $E\{u_b[\eta(I_g)]\}$ and expected utility maximization, $E\{u_b[\eta(I_b^*)]\} > E\{u_b[\eta(I_p^*)]\} > E\{u_b[\eta(I_b^o)]\}$, which implies the result.

Proof of Lemma 4. We show that for the populist playing sincere strictly dominates choosing the utilitarian's most preferred policy $[I_b^*,\, \eta(I_b^*)]$. Let $E\{u_p[\eta(I_g)]\}$ denote the one period expected payoff when the amount spent on enforcement is $\eta(I_g)$ and the expected number of migrants is I_g, where $E\{u_p[\eta(I_g)]\}$ is a concave function that is maximized when enforcement spending equals $\eta(I_p^*)$ and $I_p^* = (1-q)I_p^*(L) + qI_p^*(H)$. Thus $E\{u_p[\eta(I_p^*)]\}$ denotes the one period expected payoff from playing sincere and $E\{u_p[\eta(I_b^*)]\}$ denotes the

one period expected payoff from choosing the utilitarian's most preferred policy .

In the best case scenario in which the populist chooses $\eta(I_b^*)$ and is re-elected, his intertemporal expected payoff will be

$$E\{u_p[\eta(I_b^*)]\} + E\{u_p[\eta(I_p^*)]\} \tag{19}$$

On the other hand, if he chooses $\eta(I_p^*)$, in the worse case scenario of no re-election, he obtains an intertemporal expected payoff:

$$E\{u_p[\eta(I_p^*)]\} + \mu E\{u_p[\eta(I_p^*)]\} + (1-\mu)E\{u_p[\eta(I_b^*)]\} \tag{20}$$

Since by expected utility maximization $E\{u_p[\eta(I_p^*)]\} > E\{u_p[\eta(I_b^*)]\}$, it follows immediately that (19) < (20).

Proof of Proposition 1. In Lemma 4 we have already established that playing since strictly dominates choosing the policy $[I_b^*, \eta(I_b^*)]$. We now show that in equilibrium the populist always plays sincere and is re-elected. Remember that by playing sincere the populist generates the outcome $[I_p^*, I_p(L)]$ when $s = L$ and $[I_p^*, I_p(H)]$ when $s = H$. We have already shown that Bayesian updating implies that $\mu[I_p^*, I_p(L)] = 1$, and that $\mu[I_p^*, I_p(H)] = 1$ if $q < 1/2$ and $\mu[I_p^*, I_p(H)] > \mu$ if $q > 1/2$. As a result, voters find it optimal to re-elect an incumbent generating the outcomes $[I_p^*, I_p(L)]$ and $[I_p^*, I_p(H)]$ and the populist incumbent finds it optimal to play sincere, since this allows him to obtain the maximum expected payoff in both periods.

Applying equilibrium dominance arguments, we now show that the populist incumbent never finds it optimal to deviate from the sincere equilibrium by choosing a level of enforcement $\eta(I_g) \neq \eta(I_p^*)$ or a quota $I_g \neq I_p^*$. To this end, consider first the expected payoff from all possible deviations $\eta(I_g) \neq \eta(I_p^*)$ in the best case scenario, e.g. when the populist chooses $\eta(I_g) \neq \eta(I_p^*)$ and is re-elected. In the second period he will receive the same payoff as by playing sincere. However, since by expected utility maximization the first period payoff is maximized when enforcement spending is equal to $\eta(I_p^*)$, then $\eta(I_p^*)$ is strictly preferred to any other level of enforcement $\eta(I_g) \neq \eta(I_p^*)$.

Next, consider the case where the populist chooses $\eta(I_p^*)$ but sets a conflicting quota $I_g \neq I_p^*$. First note that the quota can only affect the payoff of the incumbent if it affects the voter's decision to re-elect him. If the voter disregards the conflicting signal, then the ex-post probability that the incumbent is considered populist will be the same as in the sincere equilibrium and the populist will be re-elected. However, suppose that with some probability the voter believes that the quota reveals some information on the preferences of the politician. If the voter updates upward the ex-ante probability μ that the incumbent is populist when I_g is observed, then he will re-elect the incumbent populist as he does in the sincere equilibrium. On the other hand, if he updates downward the ex-ante probability μ when the quota I_g is observed, then he will not re-elect the incumbent. As a result, if the populist announces a quota $I_g \neq I_p^*$, with some probability he will not be re-elected. Hence a populist incumbent cannot gain from setting a quota $I_g \neq I_p^*$ because this can only worsen his re-election prospects. From the above chain of arguments, a sophisticated voter can exclude that any outcome different from $[I_p^*, I_p(L)]$ and $[I_p^*, I_p(H)]$ is generated by a populist incumbent.

Proof of Proposition 2. We have already shown that under-investment cannot be optimal when $q \leq \frac{1}{2}$. On the other hand, when $q > \frac{1}{2}$, under–investment is optimal if and only $L_1(\lambda_p) + (1-q)\mu G_2(\lambda) > 0$, that is if and only if $\mu > \widetilde{\mu}_u = -\frac{L_1(\lambda_p)}{(1-q)G_2(\lambda)}$.

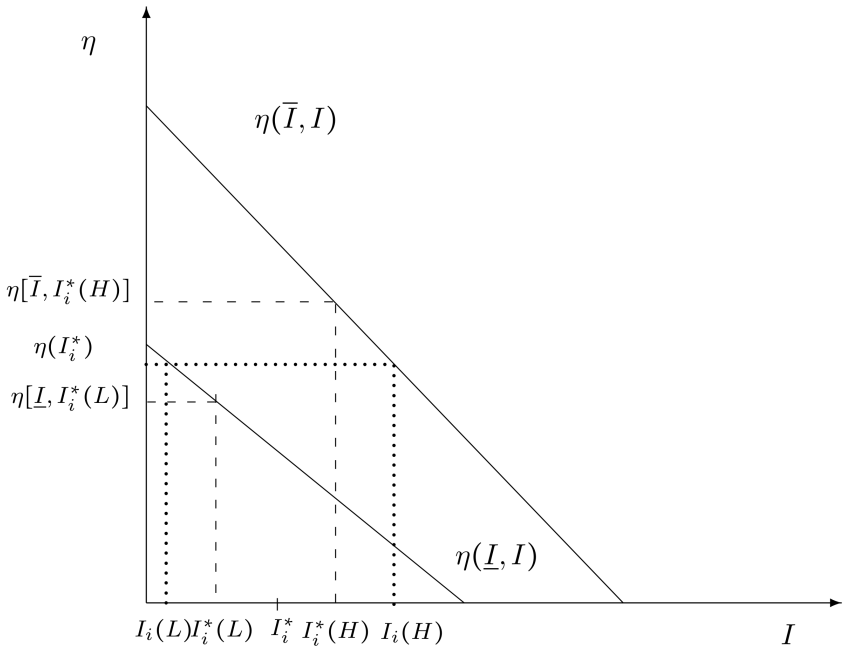

Figure 1: Illegal immigration

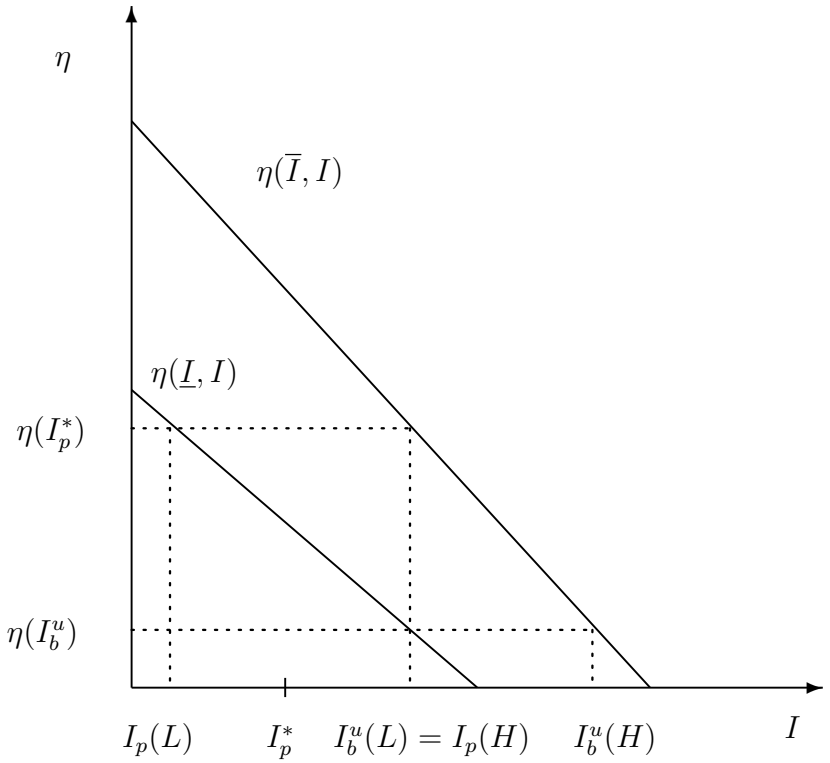

Figure 2: The underinvestment strategy

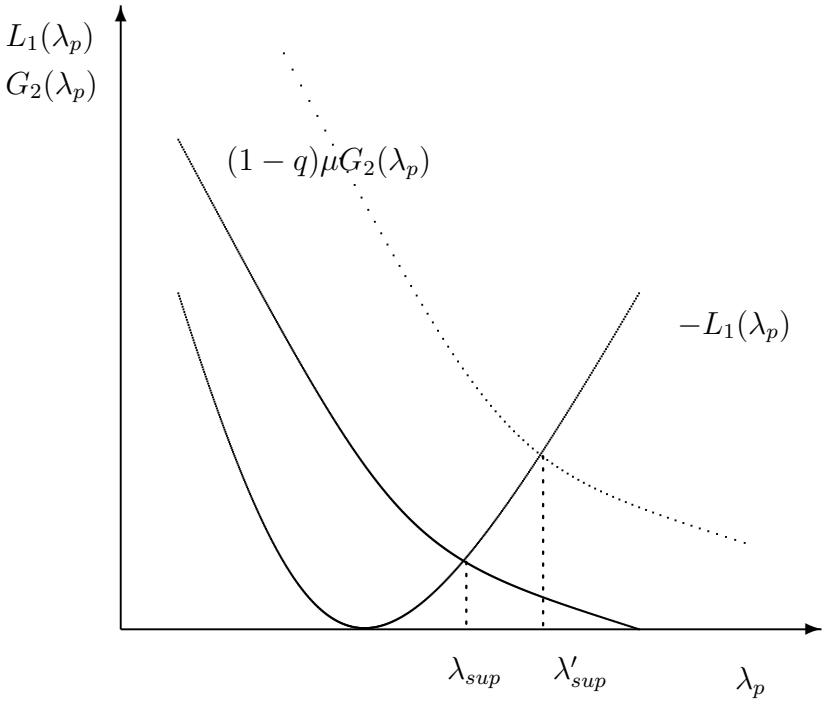

Figure 3: Varying income inequality