The rhetoric of closed borders: quotas, lax enforcement and illegal migration*

Giovanni Facchini† and Cecilia Testa‡

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Abstract

Despite restrictive migration policies, large numbers of undocumented migrants reside in many destination countries. If official migration targets are not enforced, why are they devised? To address this puzzle, we develop a political agency model with uncertainty about the supply of migrants, where an elected official can either have preferences congruent with the majority of his electorate, or desire a larger number of migrants. In the latter scenario we show that the incumbent might find it optimal to set a binding migration quota to be re-elected, and strategically relax its enforcement, or choose an ineffective instrument like border control.

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†Erasmus University Rotterdam, Universita' degli Studi di Milano, CEPR, CES-Ifo, IZA, LdA and Tinbergen Institute; facchini@ese.eur.nl.

‡Royal Holloway University of London, LdA and Tinbergen Institute; email: cecilia.testa@rhul.ac.uk.

"The single most critical issue to protect our nation is the securing of our borders and our ports. (...) At the same time, 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]

1 Introduction

Recent estimates suggest that in January 2009, 11 million individuals lived in the United States as undocumented aliens, representing approximately 3.5 percent of the total residents. Other major immigrant destinations also host large numbers of undocumented foreigners (see Table 1, taken from Dustmann and Frattini 2011). Hence, while governments typically try to limit the inflow of foreign workers, the observed large number of illegal immigrants indicates that the enforcement of official policies is often problematic.

A possible explanation is that the destination countries are simply unable to effectively implement their official migration stance. At the same time, Hanson and Spilimbergo (2001) and Fasani (2009) – amongst others – have argued that the pressure applied by those sectors that intensively use illegal immigrants might be responsible for suboptimal policy enforcement. In particular, underfunding has been a chronic issue in the United States, the United Kingdom[2] and other countries. Furthermore, the limited resources available are often employed on less effective policy tools like border enforcement.[3]

This evidence begs an important question. If governments are not willing to enforce their official migration policies, why do they set them in the first place? The purpose of this paper is to address this apparent puzzle by developing a political economy model that – to the best of our knowledge – is the first to endogenize both the setting of an official *immigration quota* and the extent of its *enforcement*. In particular, we show that an elected official might find it optimal to

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

[2]In the United States, the final report of the Select Commission on Immigration and Refugee Policy instituted by the Carter administration strongly supported "... increased funding for the immigration and naturalization service" (Briggs 1982). A more recent immigration reform proposal (Reid et al. (2010)) continues to highlight the need for more investment in migration policy enforcement. In the UK, a recent report by the House of Commons Home Affairs Committee has pointed out that the resources available to the enforcement agency are grossly inadequate. See House of Commons, Home Affairs Committee (2011).

[3]In 2003 the US authorities devoted more than fifty times more man-hours to "line-watch" (i.e. border) enforcement than to worksite enforcement, a strategy that "...appears ill-suited to curtail unauthorized entry in a country that shares a 2000-mile long land border with a poor neighboor" (Hanson 2006). More generally, several observers have suggested that the Department of Homeland Security might employ its resources ineffectively for *strategic* motives (Cornelius et al. 2004). Italy has recently implemented tighter border controls, even if this is unlikely to have the desired effects. As pointed out by Triandafyllidou (2009) 'Although Italy is sadly famous for the images of clandestine immigrants landing on the shores of its Southern coasts, official records show that migrants arrived via boats represent only a small fraction (4%-16% in the period 2000-2006) of the existing stock of undocumented residents. Indeed, between 2000 and 2006, the Italian Ministry of Internal Affairs estimated that around 65-70% of the undocumented migrants currently residing in Italy are overstayers'.

	As a % of total population		As a % of immigrant population	
	Min	Max	Min	Max
Austria	0.22	0.65	2.2	6.5
Belgium	0.82	1.24	9.4	14.2
Germany	0.24	0.56	.27	6.3
Denmark	0.02	0.09	0.3	1.7
Spain	0.62	0.78	6.1	7.7
Finland	0.15	0.23	6.6	9.9
France	0.28	0.63	4.9	11
Greece	1.53	1.86	9.1	19.2
Ireland	0.68	1.41	6.7	13.8
Italy	0.47	0.77	9.5	15.7
Netherlands	0.38	0.80	9.1	19.2
Norway	0	0	0	0
Portugal	0.75	0.94	18.4	23
Sweden	0.09	0.13	1.6	2.4
UK	0.68	1.41	11.4	23.6
EU15	0.46	0.83	6.6	11.9
USA	3.50		28.4	

Table 1: Minimum and maximum estimates of the stock of undocumented immigrants in 2009 (Dustmann and Frattini, 2011).

strategically set a migration target to please a majority of voters, while relaxing its enforcement to pursue a different objective, like maximizing social welfare or pleasing pro–migration interest groups.

We consider a small country, populated by a continuum of individuals, which produces a single good combining labor and capital. Each native supplies one unit of labor, and different amounts of capital. To keep the analysis simple, immigrants are assumed to be endowed only with labor, whereas their presence gives rise to a congestion cost. As a result, richer natives will support a more open immigration policy than their poorer counterparts, and since under typical wealth distribution the median voter is poorer than the average, he will prefer less immigrants than the average voter. The migration policy involves the choice of a *target* (quota) and an *enforcement* level. This setting has two important implications. First, illegal immigration can only arise if the target falls below the number of migrants willing to enter the country (i.e. in the absence of binding restrictions, there would be no notion of *illegal alien* as such). Second, the migration target is not simply an announcement but a policy that – by defining the number of migrants to be admitted legally – bears real consequences for the number of those entering illegally, if the target is not perfectly enforced.

To capture the role of electoral incentives in shaping policy, we develop a simple two–period

model.[4] A randomly appointed politician, facing uncertainty on the supply of foreign workers, chooses a migration policy at the beginning of the first period, and runs for election at its end. The incumbent can be either *populist*, in which case his preferences are perfectly aligned with those of the median voter, or *benevolent*, if his preferences coincide with those of the average citizen. Importantly, the public does not know the politician's type, but only the distribution from which it is drawn. At the end of the first period, they also observe the official target and the actual number of foreign workers which have entered the country. Based on this information, they update their beliefs on the type of the incumbent and decide whether to re–elect or replace him with a challenger drawn from the same distribution. In the second period, the uncertainty on the supply of foreign workers is resolved, the elected politician chooses again the number of immigrants to be admitted and the world ends.

Uncertainty on the supply of foreign workers implies that during the first period perfect enforcement of the target is not possible: ex post, enforcement activities are either excessive (the actual number of migrants is lower than the target) or inadequate (the migration level is above the target). Yet, if the policy maximizing the expected social surplus is chosen, the resulting migration level will be "constrained–efficient" and the (possibly positive) difference between the number of migrants that have entered the country and the target represents constrained–efficient *illegal immigration*. In this way, our model is able to capture the possibility that governments might be unable to enforce their official policy because of uncertainty on the immigrant supply.

How do re-election incentives affect this outcome? Interestingly, we show that they might *increase* illegal immigration above the constrained-efficient level. In fact, an incumbent whose preferences diverge from those of the median voter faces the following trade–off. On the one hand, he wants to admit a larger number of migrants than the median; on the other, by doing so he will not be re–elected. As a result, he might find it optimal to set a target that responds to the median voter's preferences, while *underinvesting* in its enforcement to *de facto* admit more foreign workers. The combination of uncertainty on the supply of migrants and asymmetric information between the policy maker and the electorate on the extent of enforcement imply that the incumbent may be successful in his attempt to win elections even if he admits a number of immigrants exceeding the level preferred by the majority of voters. Thus, our model on the one hand explains illegal immigration as the result of limits in the government's policy tools (i.e. imperfect enforcement due to the uncertainty on the supply of foreign workers); on the other, it emphasizes that the very large number of undocumented foreigners observed in many destinations is likely to be the result of strategic under–investment driven by electoral concerns.

As shown in Table 1, illegal immigration is not only sizeable and widespread, but its importance

[4]Note that as argued in the literature (see Coate and Morris 1995 and Harrington 1993 among others), a two-period model is the simplest finite horizon set-up in which the incentives provided by elections can be studied.

differs substantially across countries. For example, while 3.5 percent of the US residents in 2009 were illegal immigrants, the corresponding figure for Germany was no larger than 0.56 percent. Our model suggests three possible explanations for the observed cross–country heterogeneity in illegal immigration.[5] First, while it is intuitive that larger shocks in immigrant supply are likely to generate more legal and illegal immigration (Hatton and Williamson 2008), we show that, in presence of re–election concerns, more *volatility* in the supply of migrants is likely to further increase the number of illegal immigrants. Second, we show that higher income inequality makes strategic under-investment more likely because the related electoral gains increase with the differences in preferences between the average and the median voter. Our third possible explanation focuses on the influence exercised by the median voter on policy making, captured by the politician's probability of being a *populist*. Our model suggests that in societies where politicians are more likely to be populists, an equilibrium with under–investment emerges more often.

As argued before, migration policy enforcement typically involves the use of multiple instruments, and much debate exists on their comparative effectiveness. In particular, many observers have pointed out that governments often choose to invest in border control, even if it is well known that workplace enforcement would be more cost effective (Cornelius et al. 2004). Why does this happen? In a final extension we consider the case in which a government has multiple enforcement technologies at its disposal and study if and when it is desirable to use a less effective tool like border enforcement, rather than a more effective one, i.e. domestic enforcement. Our results indicate that the latter is preferable when the supply of foreign workers is low, because the two technologies generate the same number of migrants, but domestic enforcement uses less resources. On the other hand, when the supply is high, devoting a larger budget to a less effective instrument may bring the number of migrants closer to the benevolent politician's preferred target. If this last effect dominates, border enforcement will be adopted in equilibrium.

The remainder of the paper is organized as follows. Section 2 discusses the related literature, whereas section 3 presents the economic environment. Section 4 introduces the political game and section 5 characterizes the policy choice. Section 6 analyzes the choice between border and domestic enforcement and section 7 concludes.

2 Related Literature

A large body of work has developed to study the desirability – from the point of view of the destination country – of immigration in general and, more specifically, of illegal immigration. For a small country, Berry and Soligo (1969) have shown that free migration is the welfare maximizing

[5]We abstract here from the important role played by immigration amnesties that by their very nature affect the status of undocumented workers, as argued for instance by Casarico, Facchini, and Frattini (2011).

policy. At the same time, in a world with heterogenous agents, even policies that maximize aggregate welfare might lead to the creation of winners and losers, as has been argued for instance by Borjas (1995) and Hatton and Williamson (2006). The working of political economy forces, unleashed by the distributional effects of immigration, has resulted in the widespread use of restrictions to the free mobility of labor (Facchini and Mayda 2010) and several papers have developed models which explain the formation of policies towards overall migration (Benhabib 1996, Facchini and Willmann 2005 and Epstein and Nitzan 2006). Naturally, if immigration policies are binding, large numbers of potential migrants are not allowed to legally enter their desired destination. Some will be discouraged and decide not to emigrate, but others will try to enter illegally.

Several papers have considered the policies that should be implemented by a welfare maximizing government to limit the inflow of undocumented foreigners. In his pioneering contribution, Ethier (1986) develops a small country model to analyze the effectiveness of different instruments towards this end, considering both domestic and border enforcement. The focus in that paper is on who carries the burden of enforcement under the two instruments, whereas we are more interested in capturing the comparative efficiency of border and domestic enforcement. Bond and Chen (1987) have extended Ethier's work to a two country setting, allowing also for the possibility of capital mobility. Woodland and Yoshida (2006) have relaxed the assumption that the potential migrants are risk–neutral, to analyze the effects of different attitudes towards risk. Chau (2001) develops instead a model in which the use of immigration amnesties might be optimal in an environment in which border and domestic enforcement suffer from a credibility problem, i.e. they are time inconsistent. 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, a factor that – as shown by Hanson and Spilimbergo (2001) and Fasani (2009) is likely to play an important role.

Several papers have developed political economy models of illegal immigration from the point of view of the host country. In an early contribution, Diajic (1987) looks at the level of enforcement which will be chosen by a government as the result of lobbying expenditure in a reduced form model a la Findlay and Wellisz (1982). 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's employers is represented by undocumented foreign workers. Hanson and Spilimbergo (2001) and Fasani (2009) develop a similar, simple reduced form lobbying model. Hillmann and Weiss (1999) focus instead on the sectoral dimension of immigration policy.

In particular, they show that, even if the median voter in the destination country would prefer no migration at all, if illegal immigration has taken place, and domestic enforcement makes illegal immigrants a "sector specific" input, ex post illegal immigrants will be tolerated and further inflows will be allowed.

In our paper, we also study the political economy forces driving the presence of illegal immigration, but differently from the existing literature, in our model the phenomenon arises endogenously as the result of the migration policy chosen by the government (i.e the combination of an official quota and its enforcement). In our set-up, illegal immigration emerges whenever the number of foreign workers entering the country is higher than the official quota and the number of illegals depends on the migration quota itself and on the investment in enforcement undertaken by the government.

To show how voter's imperfect information may lead to an inefficient policy, our analysis is carried out within a political agency framework, where the role of re-election incentives can be explicitly analyzed.[6] In political agency models, the voter (principal) uses elections to both provide incentives and select the best type of politician (agent). However, when information is imperfect, moral hazard and adverse selection arise. In other words, the voter might not be able to discipline the politician and retain what is, from his perspective, the best "type" of elected official. The contribution of our model to this literature is to propose a framework where the implementation of a given policy is costly because it requires an enforcement activity, and the policy itself as well as the investment in enforcement may be subject to strategic manipulation. Thus, our paper is also related to the literature on enforcement of laws and regulations. Research in this tradition (Stigler 1970 and Polinsky and Shavell 2007 among others) focuses on the optimal amount of resources to be used and the enforcement mechanisms to be chosen, with a particular attention to the working of those agencies responsible for detecting and sanctioning violators, and their potential to misbehave (Mukherjee and Png 1995, Banerjee 1997 and Pagano and Immordino 2010). Alongside this literature in economics, which analyzes the behavior of bureaucrats, several scholars in political science have stressed the influence of elected officials on regulatory policy. In particular, 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).[7] In our analysis we also embrace the view that elected politicians are "powerful", in the sense that they control both the setting of the policy target and its enforcement, and we provide a micro–foundation for the strategic behavior of officials facing rational voters in an asymmetric information setup. Thus, while our focus is on the design

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

[7]For a recent review of this literature, see Moe (2012).

and enforcement of migration policy, our model has implications for a broad variety of economic environments in which elected officials set both standards and the corresponding enforcement level.

3 Economic Environment

Home is a small open economy producing a single good according to a production function $Y = F(K, E)$, where K is the stock of capital assumed to be exogenously given, and E is total employment.[8] The economy is populated by a continuum of native individuals indexed by $i \in [0, 1]$, and the population size is normalized to unity (i.e. $N = 1$). Every individual i supplies the same exogenously given amount of labor, and is endowed with a fraction $\lambda_i > 0$ of the overall capital stock K, with $\int \lambda_i di = 1$.[9] Furthermore, let the domestic wage under autarky be larger than the wage prevailing in the rest of the world. Thus, abstracting from relocation costs, foreign workers will find it desirable to migrate into the domestic economy.

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.[10] To constrain the inflow of immigrants, a cost is sustained which depends on the supply of foreign workers $\widehat{I}$ and the target I chosen by the government. Let the enforcement cost be $\eta(\widehat{I}, I)$, where $\eta(.)$ is an decreasing linear function of the chosen migration target I (i.e. $\frac{\partial \eta(.)}{\partial I} < 0$, $\frac{\partial^2 \eta(.)}{\partial I} = 0$). Hence, for any given $\hat{I}$, the smaller is the number of migrants I allowed to enter (i.e. the more restrictive the migration policy), the larger is the enforcement cost. Moreover, for any chosen target, a larger supply $\hat{I}$ of migrants has a positive effect on both the total and marginal cost of enforcement (i.e. if $\overline{I} > \underline{I}$, $\eta(\overline{I}, I) > \eta(\underline{I}, I)$ and $\mid \frac{\partial \eta}{\partial I}(\overline{I}, I) \mid > \mid \frac{\partial \eta}{\partial I}(\underline{I}, I) \mid$). As a result, the supply of foreign workers $\widehat{I}$ can affect the optimal migration policy.[11] We begin by considering the case where there is only one enforcement technology and illustrate the basic mechanism through which inefficient enforcement may arise in this set-up. In section 6 we extend our discussion to analyze the more complex scenario where the politician can choose between two enforcement technologies, one of which is more effective than the other.

The supply $\widehat{I}$ of foreign migrants is stochastic, and depends on the state of the world s, which can be either low (L) or high (H). In particular, let $\hat{I}(L) = \underline{I}$ and $\hat{I}(H) = \overline{I}$, where $\overline{I} > \underline{I}$. The

[8] We are assuming that $F'(E) > 0$, $F''(E) < 0$ and $F'''(E) = 0$.

[9] We are assuming that the distribution of factor ownership is atomless i.e., that every agent only owns a tiny fraction of the total supply of capital. Notice that if we denote with K_i the supply of capital by agent i, $\int_I K_i di = K$. Since population size is normalized to 1, K is also the average supply of capital 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 capital by agent i relative to the population average.

[10] We also assume that $c'''(I) = 0$.

[11] An example of an enforcement cost function satisfying the above properties is given by $\eta(\hat{I}, I) = \hat{I}[a - I] - I$ where $a > \overline{I}$.

probability that the state of the world is H (L) equals q $(1-q)$. Hence, the utility of a native individual i, for a given state of the world s, can be written as follows

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

It is easy to show that

Lemma 1 *As long as the utility function is concave, the number of immigrants $I_i^*(s)$ maximizing individual i's utility under the state of the world s is an increasing function of λ_i and of the supply of foreign workers $\widehat{I}$.*

Proof. The first order condition for the maximization of equation 1 is given by

$$u_i'(I) = -\lambda_i L F''(I) + F''(I) - c' - \eta' = 0 \tag{2}$$

which implicitly defines a function $g(I^*(\lambda_i), \lambda_i) \equiv u_i'(I) = 0$. Applying the implicit function theorem, we have that

$$\frac{dI_i^*}{d\lambda_i} = -\frac{\frac{dg}{d\lambda_i}}{\frac{dg}{dI}} \tag{3}$$

Given that the utility function in equation 1 is concave, $\frac{dg}{dI} < 0$. Notice that $\frac{dg}{d\lambda_i} = -LF'' > 0$, which implies the result. Moreover, since the marginal cost of enforcement η' is increasing in $\widehat{I}$, if the supply of foreign workers increases, for the first order condition to be satisfied, the optimal number of migrants must increase. ■

The previous lemma implies that individuals with a higher share of capital prefer to admit a larger number of foreign workers, as this will raise the return to capital. In particular, since their preferences are single peaked in I, domestic residents can be ranked according to their most preferred number of migrants. Hence, there exists a continuum of citizens distributed according to their migration preferences, and we denote by $i = p$ the median of this distribution, and by λ_p his share of the overall capital stock. Typical wealth distributions imply that $\lambda_p < 1$, i.e. that the median voter owns a share of the capital stock in the economy which is below the average (Alesina and Rodrik 1994 and Dutt and Mitra 2002).

By aggregating individual preferences, social surplus can be expressed as follows:[12]

$$S(I) = \pi(E) + w(E) - c(I) - \eta(\widehat{I}(s), I) \tag{4}$$

[12]In particular

$$S(I) = \int_I \lambda_i \pi(E) + w(E) - c(I) - \eta(\hat{I}(s), I) = \pi(E) + w(E) - c(I) - \eta(\hat{I}(s), I)$$

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

where $\pi(E)$ is the return to immobile capital, $w(E)$ is the wage and $E = N + I$.

Note that individual i's utility and aggregate welfare differ only for the value taken by the parameter λ_i, which in the case of aggregate welfare is given by $\lambda_i = 1$, as the latter coincides with average welfare. As $\lambda_p < 1$, we know from lemma 1 that, under the state of the world s, the number $I_b^*(s)$ of migrants maximizing aggregate welfare must be larger than the number $I_p^*(s)$ of migrants maximizing the median voter's welfare.

Knowing the probability of each state of the world, the optimal number of migrants for individual i is the one that maximizes his expected utility. Looking at the average citizen we obtain the expression for expected social surplus, which is given by:

$$E[S(I)] = q[\pi(E) + w(E) - c(I) - \eta(\overline{I}, I)] + (1-q)[\pi(E) + w(E) - c(I) - \eta(\underline{I}, I)]$$

Under the assumption that $\eta(\hat{I}, I)$ is linear in I, the welfare maximizing number of migrants is then given by:

$$I_b^* = (1-q)I_b^*(L) + qI_b^*(H) \tag{5}$$

where $I_b^*(H)$ and $I_b^*(L)$ are respectively the social surplus maximizing number of migrants under the high and low state of the world. The corresponding policy enforcement cost is represented by:

$$E_b(\eta) = (1-q)\eta[\underline{I}, I_b^*(L)] + q\eta[\overline{I}, I_b^*(H)] \tag{6}$$

Notice that ex–post, given the realized supply of foreign workers, this enforcement level is sub–optimal in the sense that the actual number of migrants, denoted by $I_b(s)$, is different from $I_b^*(s)$. To understand this point, consider figure 1, where we represent the enforcement costs corresponding to any given level of immigration under the two possible states of the world. If the state of the world is high, to obtain the desired immigration level $I_b^*(H)$, the government should spend $\eta[\overline{I}, I_b^*(H)]$. Hence, having spent only

$$E_b(\eta) \equiv (1-q)\eta[\underline{I}, I_b^*(L)] + q\eta[\overline{I}, I_b^*(H)] < \eta[\overline{I}, I_b^*(H)] \tag{7}$$

the actual number of migrants $I_b(H)$ entering the country is higher than the level I_b^* set ex ante by the government because the government faces uncertainty on the supply of foreign workers. At the same time, given the information constraint, I_b^* maximizes expected social social surplus. Hence, the difference $I_b(H) - I_b^*$ represents the *constrained-efficient* number of *illegal immigrants*. On the other hand, if the state of the world is low, the government will have overinvested in enforcement, and the number of immigrants actually entering the country ($I_b(L)$ in figure 1) is lower than the government's own target.

More generally, if we maximize the expected utility of any individual i, we obtain the optimal

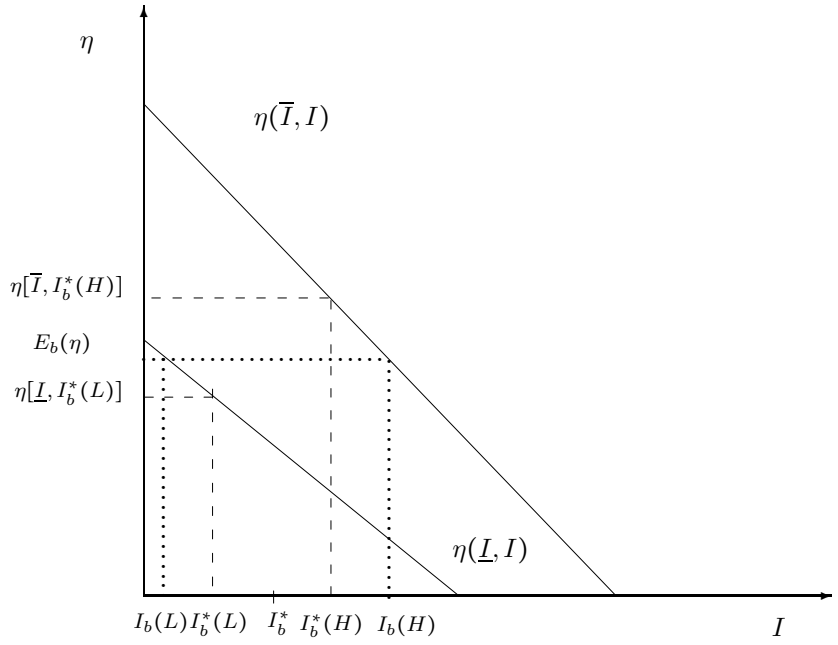

Figure 1: Illegal immigration

number of migrants $I_i^* = (1-q)I_i^*(L)+qI_i^*(H)$ and the corresponding enforcement cost $E_i(\eta) = (1-q)\eta[\underline{I}, I_i^*(L)]+q\eta[\overline{I}, I_i^*(H)]$. Hence, if we consider the median voter, it is again straightforward to see that the number of migrants maximizing his expected utility, denoted by $I_p^\star$, is smaller than the social surplus maximizing one, I_b^*, whereas spending on enforcement is higher (i.e. $E_p(\eta) > E_b(\eta)$), as it is shown in figure 2.

4 The game

Having presented the main features of the economic environment, we describe now the policy making process by outlining the political game, which leads to the determination of the migration policy.

4.1 Players, strategies and beliefs

Individuals in this economy live for two periods $t \in \{1,2\}$. Initially, nature draws the state of the world $s \in \{L,H\}$, which determines the supply of foreign workers $\widehat{I}(s)$)and the type g of the incumbent politician. There are two possible types of politician, independently drawn from an identical distribution. The first, which we will refer to as the "populist"($g = p$) has preferences perfectly aligned with those of the median voter, while the other, the "benevolent"

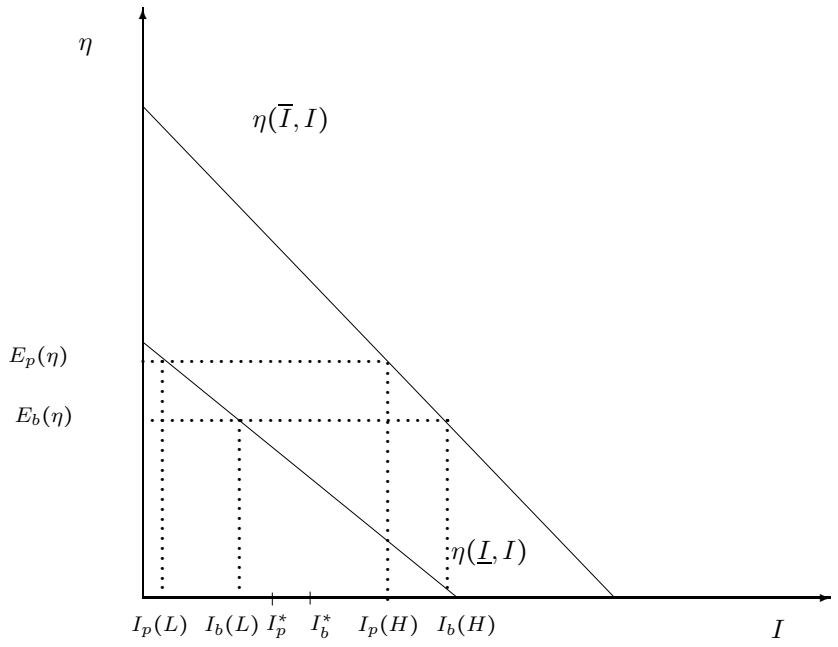

Figure 2: The median and the average voter

($g = b$) maximizes social surplus, thus preferring a higher level of immigration. The probabilities that the politician is a populist or a benevolent are denoted by μ and $1-\mu$ respectively. The type of the politician is only known to himself, whereas the distribution of types is common knowledge. The supply of foreign workers $\widehat{I}(s)$ is not observed neither by the politician nor the public, but they both know its distribution.

The incumbent g chooses in period $t = 1$ the *migration policy* (which constitutes the politician's strategy), prescribing a target I_g and enforcement $\eta(.)$ for that period and, at the end of $t = 1$, he faces an election. Voters, having observed the target I_g and the actual number of migrants $I(s)$, but neither their true supply nor the amount of resources spent on enforcement, revise their beliefs on the type of the incumbent according to Bayes rule, and choose whether to re–elect or replace him with a challenger. The median voter is decisive in determining the outcome of the election. In the second period, the state of the world s is revealed, i.e. everybody observes the actual supply of foreign workers $\widehat{I}(s)$, the elected politician chooses again the number of immigrants to be admitted in $t = 2$,[13] and the world ends.[14]

We denote by $P[g = p|I_g, I(s)]$ the ex-post probability that the incumbent (g) is a populist (p)

[13]Notice that in the second period, knowing the actual supply of immigrants, the politician will choose his first best policy. This assumption is needed to create an incentive for the official to be reelected and it is more natural, in our framework, than a standard ego–rent from office. Of course, adding an ego rent, or any other perk from office, would only strengthen the effect of the electoral incentives in our analysis.

[14]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.

when the observed number of migrants is $I(s)$ and the target is I_g. In carrying out our analysis, we focus on *monotonic beliefs* which have the following property:[15] whenever the median voter observes a migration target and a number of migrants coinciding with his most preferred one, he does not revise downward the probability that the incumbent has his same preferences, and viceversa. In other words, a "good outcome" cannot result in more pessimistic beliefs, and a "bad outcome" cannot result in more optimistic ones.

The above structure defines a game of incomplete information between voters and politicians that can be solved by backward induction. A perfect Bayesian equilibrium of this game consists of a migration policy, a voting rule and set of beliefs such that (a) voters' beliefs are generated by Bayesian updating, (b) the voting rule is optimal given the voters' beliefs and the politicians' strategies and (c) the incumbent's strategy is optimal given the voters' beliefs and the opponent's and voters' strategies.

4.2 Equilibrium

In the second period, because there are no further elections, the incumbent chooses the policy maximizing his own utility. Moreover, because he can observe the supply of foreign workers, he chooses the optimal amount of enforcement (i.e. there is no illegal immigration).

In the first period, the policy choice is more complex because of re-election concerns, and it crucially depends on voters' beliefs. Since beliefs are monotonic, a populist incumbent will always choose the policy maximizing the expected utility of the median voter because, by doing otherwise, he cannot strengthen his reputation of being a populist, and hence increase his chances of re-election. As a result, following the logic outlined in section 3, he chooses the migration target $I_p^* = (1-q)I_p^*(L)+qI_p^*(H)$ and the enforcement cost $E_p(\eta) = (1-q)\eta[\underline{I}, I_p^*(L)]+q\eta[\overline{I}, I_p^*(H)]$ shown in figure 2. The same logic does not apply to the benevolent type though. In the first period, if he chooses the migration target I_b^* and the enforcement cost $E_b(\eta)$ that maximize expected social surplus (*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. Hence, if there is a strategy that allows him to pool with the populist, he may find it optimal to follow it. Given the assumption of monotonic beliefs, in order to "pool", the benevolent politician must (i) set the median voter's most preferred target I_p^*; and (ii) choose a level of enforcement that allows him to replicate the same number of migrants admitted by a populist at least under some state of the world.[16]

Three strategies, denoted by σ, allow a benevolent incumbent to achieve this goal, and we

[15] As in Coate and Morris (1995), we focus on monotonic beliefs implying that a "good" politician (in our case the populist) will not have incentives to distort the policy. An alternative assumption leading to the same equilibrium outcome would be that the populist does not behave strategically. This avenue is followed for instance by Besley and Smart (2007), who assume that one of the two types of politicians is not strategic.

[16] In particular, (i) and (ii) imply that he will never choose a policy $(I_p^*, E_b(\eta))$.

denote by $I_g^{\sigma}(s)$ the number of migrants actually entering the country when politician g chooses strategy σ and the state of the world is s.[17] The first strategy, that we name *mimicking* ($\sigma = m$), requires the benevolent politician to choose the same target I_p^* and the corresponding level of enforcement $E_p(\eta)$ adopted by a populist. The second is an *under–investment* strategy ($\sigma = u$), that allows the benevolent politician to "pool" with the populist only if the state of the world is low. To do so, the benevolent official sets the same target I_p^* as the populist, but strategically under-invests in enforcement choosing an amount $\eta_u < E_p(\eta)$ such that, if the state of the world is low, the resulting level of migration is the same one generated by a populist type under the high state of the world, i.e. $I_b^u(L) = I_p(H)$. In other words, we assume that there always exists a level of enforcement spending $0 \leq \eta_u < E_p(\eta)$ such that, by spending η_u, the benevolent politician admits $I_b^u(L) = I_p(H)$ migrants. With this type of "pooling" strategy the benevolent incumbent tries to exploit his informational advantage concerning his own type, together with the uncertainty on the state of the world, in order to be re-elected. If the state of the world is low, the incumbent may have a chance to achieve his objective, because he generates the same number of migrants that a populist would admit under the high state. On the other hand, if the state of the world is high, the number of foreign workers entering the country will be higher than the upper-bound obtained by the populist, i.e. $I_b^u(H) > I_p(H)$, and he will not be re–elected. Notice that the amount of resources spent in the under–investment scenario depends on the preferences of the median voter. In particular, the larger is the share of capital owned by the median voter, the higher is his preferred level of immigration (under both states of the world), and therefore the lower is the amount η_u necessary to replicate the outcome $I_p(H)$ when the state of the world is low.

A similar logic applies to the third strategy we consider, where the benevolent politician sets the target I_p^* and *over-invests* ($\sigma = o$) by spending an amount $\eta_o > E_p(\eta)$ to "pool" with the populist only if the state of the world is high. If the state of the world is instead low, the number of migrants entering will be lower than the lower-bound obtained by the populist i.e. $I_b^o(L) < I_p(L)$ and he will not be re–elected.

We are now ready to describe the process of updating voters' beliefs. Given that a populist politician always chooses the migration target and the enforcement level preferred by the median voter, whenever the median voter observes a target different from I_p^* or a level of migration different from either $I_p(H)$ or $I_p(L)$, he concludes that the incumbent is benevolent. On the other hand, denoting by γ_L the probability that a benevolent incumbent admits a total number I of migrants when the state of the world is *low*, and by γ_H the probability that he generates the same number if the state is *high*, then if voters observe the target I_p^* and the outcome $I_p(H)$, the ex-post

[17] Notice that our assumption of monotonic belief implies that any other strategy, which would not allow pooling under some state of the world, is dominated.

probability that the incumbent is a populist can be computed as follows:

$$P[g = p|I_p^\star, I_p(H)] = \frac{\mu q}{\mu q + q(1-\mu)\gamma_H + (1-q)(1-\mu)\gamma_L}$$

where μq is the probability that $I_p(H)$ is generated by a populist, $q(1-\mu)\gamma_H$ is the probability that it is generated by a benevolent type mimicking the populist, and $(1-q)(1-\mu)\gamma_L$ is the probability that it is generated by a benevolent type under-investing in enforcement. In the remainder of our analysis, to save on notation, we will drop the target $I_p^\star$ from the definition of the conditional probabilities, as the target is the same under all three types of strategy we consider.

If mimicking is the strategy chosen, then $\gamma_H = 1$ and $\gamma_L = 0$, which implies that $P[g = p|I_p(H)] = \mu$, i.e. the ex-post probability of the incumbent being populist is equal to the ex-ante probability. On the other hand, if under–investment is chosen , i.e. $\gamma_H = 0$ and $\gamma_L = 1$, then:

$$P[g = p|I_p(H)] = \frac{\mu q}{\mu q + (1-q)(1-\mu)}$$

Note that $\frac{\mu q}{\mu q+(1-q)(1-\mu)} > \mu$ if and only if $q > \frac{1}{2}$. 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 benevolent incumbent (i.e. q is sufficiently large). This is because the larger is q, the higher is the probability that by under-investing he will end up revealing his type.

We can similarly compute the voters' beliefs when $I_p(L)$ is observed. In this case:

$$P[g = p|I_p(L)] = \frac{\mu(1-q)}{\mu(1-q) + \gamma_L(1-q)(1-\mu) + (1-\mu)q\gamma_H}$$

where again, if $\gamma_H = 0$ and $\gamma_L = 1$, we have that $P[g = p|I_p(L)] = \mu$, whereas $\gamma_H = 1$ and $\gamma_L = 0$ imply that $P[g = p|I_p(L)] = \frac{\mu(1-q)}{\mu(1-q)+q(1-\mu)}$. Hence, with over-investment, the ex-post probability that the incumbent is a populist exceeds the ex-ante one if and only if $q < 1/2$.

Given this structure of beliefs, the sequentially rational voting rule for the median voter is to retain the incumbent if and only if, having observed the actual number of migrants, he believes that the ex-post probability that the incumbent is a populist is strictly larger than the ex-ante probability, i.e. $P[g = p|I(s)] > \mu$.[18] Based on the voting strategy described above, mimicking

[18]If $P[g = p|I] > \mu$, then for the median voter it is clearly not optimal to replace the incumbent with a challenger that has a lower probability of being populist, and the opposite is true if $P[g = p|I] < \mu$. Finally, if $P[g = p|I] = \mu$ we can show that dismissing the incumbent is optimal. First, when $P[g = p|I] = \mu$, dismissing the incumbent is a credible punishment because the median voter is indifferent between keeping him and replacing him with somebody with the same probability of being a populist. As it turns out, this punishment is also optimal. If a benevolent incumbent plays mimicking - and thus $P[g = p|I] = \mu$ - this voting strategy implies that the voter will not re-elect him. As a consequence, the incumbent will be better off by choosing his most preferred policy in the first period and lose elections, rather than choosing the policy preferred by the median and loose elections anyway. The politician will thus prefer to reveal his own type, rather than mimicking the populist, and the median voter will only re–elect a populist politician, and dismiss a benevolent one.

cannot be optimal for a benevolent incumbent because in this case (i.e. $\gamma_L = 1$) the ex-ante and ex-post probabilities of being a populist are the same, $P[g = p|I_p(H)] = \mu$. This implies that the incumbent will not be re-elected, because the median voter always prefers to replace him with a challenger. For the same reason, if $q \geq 1/2$, over-investment cannot be optimal, and the same is true for under–investment if $q \leq 1/2$. This allows us to establish the following:

Lemma 2 *If $q = 1/2$, then a benevolent incumbent plays sincere.*

On the other hand, if $q > \frac{1}{2}$, a benevolent incumbent may find it optimal to under-invest rather than play sincere and lose elections. If the incumbent decides to under-invest, the number of migrants entering the country will be $I_p(H)$ if the state of the world it low, and $I_b^u(H)$ if it is high. Moreover, if the supply of migrants is low, the incumbent will be re-elected, and in the second period he will be able to choose his most preferred number of migrants $I_b^*(L)$. On the other hand, if the state of the world is high, he will be replaced by a challenger who is populist with probability μ and benevolent with probability $1 - \mu$. Suppose that the incumbent is benevolent and let $U(under)$ denote the expected payoff from *under–investment*. Then the incumbent's total payoff can be written as:

$$U(under) = (1-q)u[I_p(H)] + qu[I_b^u(H)] + (1-q)u[I_b^*(L)] + q\{\mu u[I_p^*(H)] + (1-\mu)u[I_b^*(H)]\}$$

On the other hand, if the benevolent incumbent chooses his most preferred policy in the first period, he will be replaced by a challenger in the second period. The incumbent's payoff from playing sincere, $U(sincere)$ is then given by:

$$\begin{aligned} U(sincere) &= (1-q)u[I_b(L)] + qu[I_b(H)] + \\ &+ \mu\{qu[I_p^*(H)] + (1-q)u[I_p^*(L)]\} + (1-\mu)\{qu[I_b^*(H)] + (1-q)u[I_b^*(L)]\} \end{aligned}$$

Hence, under–investment will be preferred when $U(under) > U(sincere)$. Some additional notation will be useful to characterize the under–investment equilibrium. Let $\Delta_H^1 U(under) = u[I_b^u(H)] - u[I_b(H)]$ be the first period utility difference from under–investment when the state of the world is *high* - i.e. the difference between the utility from under–investment and the utility that the benevolent incumbent would obtain playing sincere. Similarly, let $\Delta_L^1 U(under) = u[I_p(H)] - u[I_b(L)]$ be the first period utility difference when the state of the world is *low*. Finally, $\Delta^2 U(under) = u[I_b^*(L)] - u[I_p^*(L)] > 0$ denotes the second period utility gain from being in power, when the state of the world is low as compared to being replaced by a populist challenger.

Under–investment is preferred to the social surplus maximizing policy if the following holds:

$$-[q\Delta_H^1 U(under) + (1-q)\Delta_L^1 U(under)] < (1-q)\mu\Delta^2 U(under) \tag{8}$$

The left-hand side of the inequality represents the first period expected utility loss from under–investment: since the maximization of the one-period expected utility requires an enforcement level $E_b(\eta) > \eta_u$, by under-investing the benevolent incumbent incurs a utility loss given by $[q\Delta^1_H U(under) + (1-q)\Delta^1_L U(under)] < 0$. The right hand side represents the expected second period gain from under–investment: if the state of the world is low (which happens with probability $1-q$), the benevolent incumbent will obtain his most preferred level of migration in the second period. Note also that, by under-investing he gains $\Delta^2 U(under)$ with probability $(1-q)$, whereas by playing sincere he could obtain the same gain with the lower probability $(1-q)(1-\mu)$. As a result, the expected gain is given by $(1-q)\mu\Delta^2 U(under)$.

We are now ready to characterize the equilibrium of our game when $q > \frac{1}{2}$:

Lemma 3 *Assume that* $q > \frac{1}{2}$ *and let* $\widetilde{\mu}_u = -\frac{(1-q)\Delta^1_H U(under)+q\Delta^1_L U(under)}{(1-q)\Delta^2 U(under)} > 0$. *Then a benevolent incumbent under-invests if and only if* $\mu > \widetilde{\mu}_u$, *whereas he plays sincere if and only if* $\mu < \widetilde{\mu}_u$.

Proof. under–investment is optimal if and only if equation 8 is satisfied that is if and only if $\mu > \widetilde{\mu}_u = -\frac{(1-q)\Delta^1_H U(under)+q\Delta^1_L U(under)}{(1-q)\Delta^2 U(under)} > 0$. ■

Similarly, if $q < \frac{1}{2}$, a benevolent incumbent may find it optimal to over-invest in enforcement. Let $\Delta^1_L U(over) = u[I^o_b(L)] - u[I_b(L)]$, $\Delta^1_H U(over) = u[I_p(L)] - u[I_b(H)]0$ and $\Delta^2(over)U = u[I^*_b(H)] - u[I^*_p(H)] > 0$. We can then establish the following

Lemma 4 *Assume that* $q < \frac{1}{2}$ *and let* $\widetilde{\mu}_o = -\frac{(1-q)\Delta^1_L U(over)+q\Delta^1_H U(over)}{q\Delta^2 U(over)} > 0$. *Then a benevolent incumbent over-invests if and only if* $\mu > \widetilde{\mu}_o$, *whereas he plays sincere if and only if* $\mu < \widetilde{\mu}_o$.

Proof. For over-investment to be optimal, $U(over) > U(sincere)$. This is true if and only if

$$\mu q\Delta^2 U(over) > -[(1-q)\Delta^1_L U(over) + q\Delta^1_H U(over)]$$

i.e. if and only if $\mu > \widetilde{\mu}_o$. ■

Lemma 3 tells us that - whenever $\mu > \widetilde{\mu}_u$ - the benevolent politician sets a target that is more restrictive than his most preferred one, and under-invests in its enforcement, thus allowing more migrants to enter illegally the country than the number that is accounted for by his lack of information on the true state of the world. In the remainder of the paper we will assume that lemma 3 holds and analyze which factors can explain different patterns of illegal immigration. Using lemmata (3)-(4), we can fully characterize the political equilibrium. Remember that in the second period the equilibrium policy choice is trivial, since there are no elections and the politician knows the supply of foreign workers. Thus, he chooses the policy that maximizes his second period utility. In the first period, on the other hand, re-election concerns shape his choice. Since a populist incumbent always chooses his most preferred policy and is re-elected, we focus on the more interesting case where the incumbent is benevolent:

Proposition 1 *The following holds:*

i.) Let $q > \frac{1}{2}$. Then, if $\mu > \widetilde{\mu}_u$, there exists a pooling equilibrium with under–investment whereby, if the state of the world is low, the benevolent incumbent admits $I_p(H)$ migrants and is re-elected, whereas if the state of the world is high, $I_b^u(H)$ migrants are admitted and the incumbent is voted out of office. On the other hand, if $\mu < \widetilde{\mu}_u$, there exists a separating equilibrium such that $I_b(L)$ migrants are admitted if the state of the world is low, $I_b(H)$ are admitted if it is high, and the incumbent is never re-elected.

ii.) Let $q < \frac{1}{2}$. Then, if $\mu > \widetilde{\mu}_o$, there exists a pooling equilibrium with over-investment whereby, if the state of the world is high, the benevolent incumbent admits $I_p(L)$ migrants and is re-elected, whereas if the state of the world is low, $I_b^o(L)$ migrants are admitted and the incumbent is voted out of office. On the other hand, if $\mu < \widetilde{\mu}_o$, there exists a separating equilibrium such that $I_b(L)$ migrants are admitted if the state of the world is low, $I_b(H)$ are admitted if it is high, and the incumbent is never re-elected.

Proof. The proposition follows from lemma (3) and lemma (4). ■

The first part of the proposition points out that there exists an equilibrium in which the benevolent politician allows on purpose more migrants than the number specified under his official target, by strategically under-investing in the enforcement of the migration quota. We will focus on this case in the following analysis, as it is the relevant scenario for the study of illegal immigration.

4.3 Under–investment, illegal immigration and welfare

What are the implications of this strategic behavior on the number of illegal immigrants entering the country? This question is answered in the following

Proposition 2 *An equilibrium with under–investment always involves the presence of illegal immigration, whereas this is not true for the separating equilibrium. Furthermore, the number of illegal immigrants generated by under–investment is larger than the number generated by the sincere strategy.*

Proof. In an equilibrium with under–investment, the number of illegal immigrants is $I_p(H) - I_p^* > 0$ if the state of the world is low, and $I_b^u(H) - I_p^* > 0$ is the state of the world is high. On the other hand, in the separating equilibrium there are no illegal immigrants if the state of the world is low, as $I_b^* - I_b(L) < 0$. To establish the second part of the proposition, notice that in the high state of the world if the benevolent politician plays the sincere strategy, the number of illegal immigrants is given by

$$I_b(H) - I_b^* \equiv q[I_b(H) - I_b(L)] \tag{9}$$

On the other hand, if he under-invests, then the number of illegal immigrants is given by

$$I_b^u(H) - I_p^* \equiv [I_b^u(H) - I_p(H)] + q[I_p(H) - I_p(L)] \tag{10}$$

Since $E_p(\eta) > \eta_U$ then $[I_b^u(H) - I_p(H)] > 0$. Furthermore, as $E_p(\eta) > E_b(\eta)$ and $| \frac{\partial \eta}{\partial I}(\overline{I}, I) | > | \frac{\partial \eta}{\partial I}(\underline{I}, I) |$, then $[I_p(H) - I_p(L)] > [I_b(H) - I_b(L)]$, thus establishing the result. ■

Proposition 2 highlights the effect of political competition on illegal immigration. A benevolent incumbent, whose preferences diverge from those of the median voter, needs to act strategically in order to have a chance of being re-elected. The result is that he admits more illegal immigrants than the "constrained efficient" level. In other words, electoral incentives raise illegal immigration above the level that would come about purely because of imperfect information on the true supply of foreign workers.

5 Explaining cross–country differences in illegal immigration

The model we have just presented suggests that the desire to win the median voter's support can induce a benevolent politician to 'distort' his migration policy, announcing a binding migration quota to gain the support of the anti–immigration majority, and relaxing its enforcement to pursue his true preferences. As documented in Table 1, illegal immigration is a widespread phenomenon, but important differences exist in its size across destination countries. For instance, while in the United States up to 3.5 percent of the residents in 2009 were estimated to be undocumented aliens, the corresponding figure for Germany was less than 0.56 percent. In this section we will illustrate how our model can help us understanding the substantial heterogeneity in immigration policy enforcement we observe across countries. We start by considering the role of the variance in immigration shocks; we turn next to study the effect of income inequality in the destination country and finally consider how institutional differences can affect the policy outcome.[19]

Countries that are geographically closer to the source of large immigrant flows are more likely to be directly impacted by large fluctuations in their supply. How does the volatility in the immigrant supply affect the equilibrium outcome in our model? We focus on two possible scenarios, that depend on the gap in the supply of immigrants under the two states of the world. If the gap is large, as in the left panel of figure 3, in order to generate the number of migrants $I_p(H)$ when the state of the world is low, the benevolent politician invests η_U in policy enforcement,

[19] 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 benevolent politician. The formal argument is available upon request.

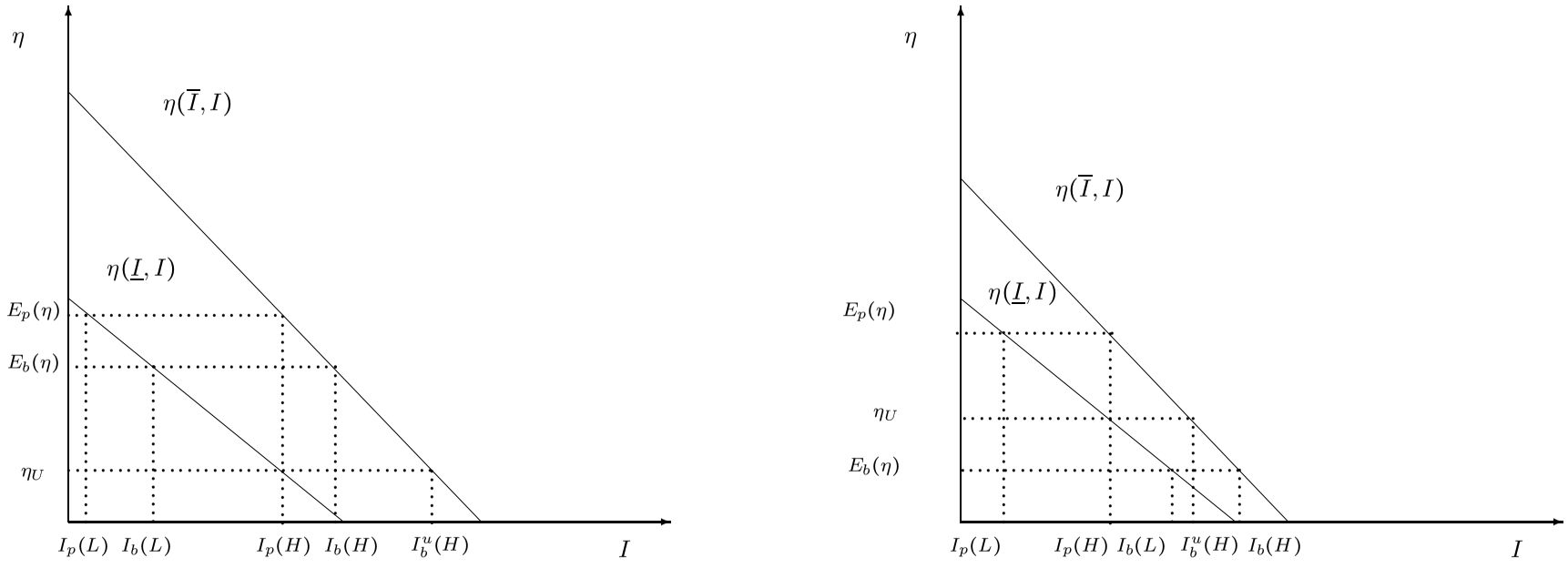

Figure 3: The under–investment strategy

with $E_p(\eta) > E_b(\eta) > \eta_U$. As a result, more migrants will enter in this case than number if the benevolent politician had chosen the sincere strategy. In the second scenario, depicted in the right panel of figure 3, where the gap between the two states of the world is instead small, the under–investment strategy leads to a level of enforcement spending η_U such that $E_p(\eta) > \eta_U > E_b(\eta)$. As a result, less migrants enter the country than if the sincere strategy is chosen, and hence strategic behavior brings immigration closer to the median voter's preferences.

Interestingly then, if the gap in the volatility in the supply of migrants is large, by behaving strategically a benevolent politician will unambiguously hurt the median voter, because the latter might end up re–electing him (negative 'selection') without inducing him to carry out a level of enforcement that is closer to the median voter's preferences. On the other hand, if the gap in the supply of migrants under the two states of the world is small – even if the median voter faces the same selection problem – 'discipline' works in the desired direction, since electoral considerations force the benevolent politician to choose a level of enforcement that is closer to the median voter's preferred one. Hence, while it is intuitive that larger shocks in immigrant supply are likely to generate more (legal and illegal) immigration – as argued for instance by Hatton and Williamson (2008) – our model highlights that greater volatility in the immigrant supply may have important effects on migration policy via the the political channel. In fact, in the high volatility scenario, our model suggests that benevolent politicians will implement a policy that is further away from the median voter's preferred one than in the low volatility scenario, in an attempt to win electoral support.

To assess the role of changes in income inequality, we need to study how the incentives faced by a benevolent politician to carry out the under–investment strategy change with the share of capital owned by the median voter (λ_p). To this end, let $L_1(\lambda_p) = -[q\Delta^1_H U(under) + (1-q)\Delta^1_L U(under)]$ be the first period expected loss incurred by the benevolent politician by under-investing and let $G_2(\lambda_p) = (1-q)\mu\Delta^2 U(under)$ be the second period expected gain. The latter unambiguously increases when the gap between the median and average share of capital becomes larger: as λ_p decreases, the number of migrants which would be admitted by a populist politician in the second period decreases. As a result, the benevolent politician has more to gain from remaining in office. Hence, $G_2(\lambda_p)$ is a decreasing function of λ_p, which tends to zero as λ_p approaches one, and reaches its maximum level as λ_p tends to zero. As for $L_1(\lambda_p)$, its behavior crucially depends on the difference between the amount of resources spent on enforcement in the under–investment scenario (η_U) and the amount spent when playing the sincere strategy ($E_b(\eta)$). Clearly, if $\eta_U = E_b(\eta)$, then the number of migrants admitted by choosing to underinvest coincides with the one obtained with the sincere strategy under both states of the world, and as a result the expected loss is equal to zero. As we depart from this point (either by increasing or decreasing η_U), the expected loss will increase, because the further away the amount η_U spent on enforcement gets from $E_b(\eta)$,

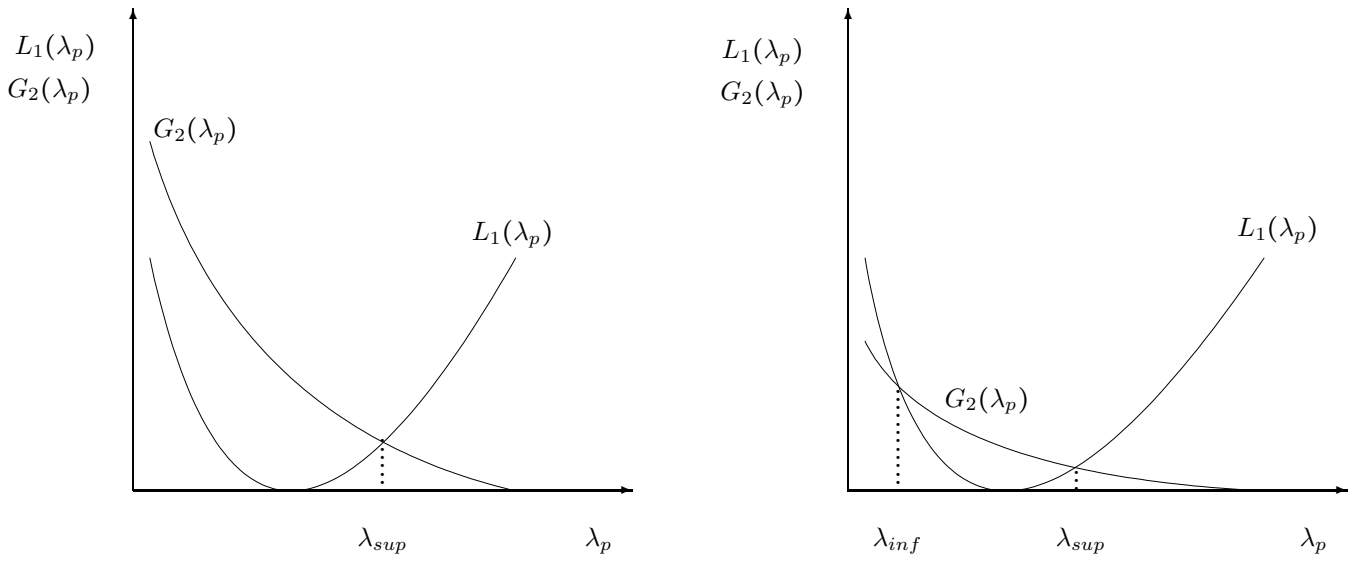

Figure 4: Varying income inequality

the larger becomes the gap between the number of migrants entering the country when $E_b(\eta)$ is spent on enforcement, rather than η_U. Remembering that η_U decreases with λ_p (see figure 3), we can represent on the same diagram the expected loss $L_1(\lambda_p)$ and the expected gain $G_2(\lambda_p)$, 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, then we can see that, if the largest possible gain (arising as λ_p tends to zero) is bigger than the corresponding loss – as illustrated on the left pane of figure 4 – there exists a unique value λ_{sup} of the median voter's capital share such that the two curves intersect. On the other hand, if the largest expected gain from under–investment is smaller than the corresponding expected loss – as illustrated in the right panel of figure 4 – then there are two values of the median voter's capital share (λ_{inf} and λ_{sup}) such that the expected gain from under–investment coincides with the expected loss. As a result, it is immediate to establish the following:

Proposition 3 *Assume that proposition 1 holds. Then, if $\lambda_p > \lambda_{sup}$ a separating equilibrium arises whereby the benevolent incumbent plays sincere and is not re-elected.*

This proposition establishes that the distribution of capital ownership has important effects on migration policy. If the share of capital owned by the median voter is sufficiently close to the average (i.e. $\lambda_p > \lambda_{sup}$), then a benevolent politician whose preferences diverge from those of the median voter 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 $\lambda_p < \lambda_{sup}$. Hence, one interesting prediction of our model is that under–investment with inefficiently high illegal immigration is less likely to occur in countries where there is less inequality in the distribution of assets among the domestic population.

On the other hand, if inequality is sufficiently high ($\lambda_p < \lambda_{sup}$), then the expected gain from under–investment dominates the expected loss, and an equilibrium with under–investment will arise. Notice though that under–investment will not necessarily take place for all values of $\lambda_p < \lambda_{sup}$. As we can see from the left panel of figure 4, on the one hand, if the largest possible gain (arising as λ_p tends to zero) is bigger than the corresponding loss, then the gain from under–investment dominates the loss for all $\lambda_p < \lambda_{sup}$. On the other hand, if the largest expected gain is smaller than the corresponding expected loss (right panel of figure 4), then the expected gain dominates only if the expected loss is sufficiently small, i.e. only if $\lambda_{inf} < \lambda_p < \lambda_{sup}$. Therefore, the following holds:

Proposition 4 *Assume that proposition 1 holds. If* $\lim_{\lambda_p \to 0} G_2(\lambda_p) > \lim_{\lambda_p \to 0} L_1(\lambda_p)$*, then an equilibrium with under–investment arises for all* $\lambda_p < \lambda_{sup}$*. If instead* $\lim_{\lambda_p \to 0} G_2(\lambda_p) < \lim_{\lambda_p \to 0} L_1(\lambda_p)$*, then an equilibrium with under–investment arises if* $\lambda_{inf} < \lambda_p < \lambda_{sup}$*, whereas a separating equilibrium arises if* $\lambda_p < \lambda_{inf}$*.*

Besides analyzing the effect of differences in income inequality, our model allows us also to consider the implications of different institutional settings, as captured by the parameter μ, i.e. the probability that a candidate shares the same preferences of the median voter. In particular, we can think of μ as being a reduced form representation of the degree of influence of the median voter over policy as opposed to the overall population, represented by the average voter. Using the characterization of the gain and loss functions represented in figure 4, it is immediate to see that as μ increases, the expected gain function $G_2(\lambda_p)$ shifts up, leaving the expected loss function $L_1(\lambda_p)$ unaffected. This results in an increase in the range of λ_p values where an equilibrium with under–investment arises. Formally:

Proposition 5 *Suppose that lemma 3 holds. An equilibrium with under–investment is more likely to arise the larger the ex-ante probability* μ *that the incumbent is a populist.*

In other words, when a benevolent incumbent knows that, by losing elections, he will be replaced by an opponent who is more likely to be a populist, he will have more incentives to "pool" by under-investing, and viceversa.

6 Border vs domestic enforcement

Having analyzed the main forces inducing a benevolent politician to adopt a strategic behavior when a single enforcement technology is available, we now extend our model to allow the choice between two different instruments. In particular, we are interested in analyzing whether an enforcement technology that is less effective might be chosen in equilibrium. To fix ideas, the first technology – which we call *domestic enforcement* – can be thought of as coinciding with the type of enforcement activity we have analyzed so far. The second one requires instead more resources to enforce any given migration target under both states of the world. Given that in the policy debate, the control of migration flows carried out at the border is often considered to be less effective than work-site inspections (Hanson 2006), we will call our second instrument *border enforcement*. Naturally, our analysis could extend to any other form of inefficient use of enforcement resources.

Formally, let $\eta^B(\hat{I}, I)$ and $\eta^D(\hat{I}, I)$ respectively denote the border (B) and domestic (D) enforcement technology, and let

$$\eta^B(\hat{I}, I) > \eta^D(\hat{I}, I) \forall \hat{I} \in \{\underline{I}, \overline{I}\} \tag{11}$$

To simplify our analysis, we make one additional assumption, i.e. that $\eta^B(\underline{I}, I) = \eta^D(\overline{I}, I)$. In other words, enforcing a given migration target in the low state of the world using the border enforcement technology is as costly as enforcing the same target using the domestic enforcement technology if the state of the world is high. The two instruments are represented in figure 5. Moving from the left to the right, the first line ($\eta^D(\underline{I})$) describes the cost of domestic enforcement under the low state of the world. The second line ($\eta^D(\overline{I}) = \eta^B(\underline{I})$) captures both the cost of domestic enforcement if the state of the world is high, and the cost of border enforcement if the state is low. The last line ($\eta^B(\overline{I})$) displays instead the border enforcement cost under the high state of the world.

As in our previous discussion, at the beginning of the game, neither the politician nor the public observe the supply of immigrants $\hat{I}(s)$, but they know its distribution. At the end of the first mandate, voters observe the number of immigrants in the country, but not the amount of resources spent on enforcement nor how the resources have been employed (i.e. on the more or less effective technology). As a consequence, the government can strategically set not only the budget allocated to the enforcement activities, but also decide how the resources are employed. In particular, a benevolent government can admit the same number of migrants allowed by a populist when the state of the world is high in two alternative ways. First, as before, he can strategically under–invest, spending η_U and obtaining a migration level $I_b^u(L) = I_p(H)$ and $I_b^u(H)$ respectively if the state of the world is low and high (see figure 5). Alternatively, the benevolent politician can spend the amount of resources that would maximize the median voter's welfare ($E_p(\eta) > \eta_U$), but employ them "ineffectively" by adopting border instead of domestic enforcement. Also in this

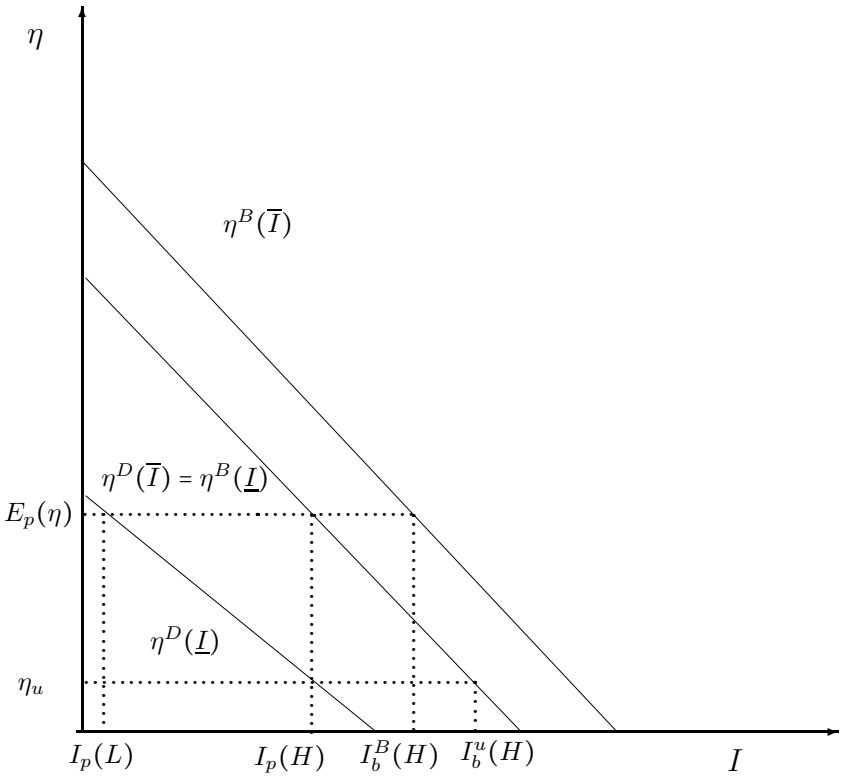

Figure 5: Illegal immigration with domestic and border enforcement

case, if the state of the world is low the number of migrants admitted would be the same chosen by a populist under the high state ($I_p(H)$), implying that the benevolent politician might have a chance to be re-elected. On the other hand, if the state is high, the resulting number of migrants would be $I_b^B(H)$ (see figure 5).

Given the new strategy space, the updating process of the median voter's beliefs becomes richer. Let λ_D and λ_B denote the probability that a benevolent incumbent generates the outcome I by choosing respectively domestic (D) and border (B) enforcement. As before, λ_L denotes the probability that a benevolent incumbent generates an outcome I when the state of the world is *low*, and λ_H the probability that he generates the same outcome if the state is *high*. Then, if voters observe the outcome $I_p(H)$, the ex-post probability that the incumbent is a populist can be computed as follows:

$$P[g = p|I_p(H)] = \frac{\mu q}{\mu q + q(1-\mu)\lambda_H + [(\lambda_D + \lambda_B)(1-q)(1-\mu)]\lambda_L}$$

where μq is the probability that $I_p(H)$ is generated by a populist, $q(1-\mu)\lambda_H$ is the probability that it is generated by a benevolent politician mimicking the populist, and $(1-q)(1-\mu)\lambda_L$ is the probability that it is generated by a benevolent politician, either by under-investing in enforcement (λ_D) or by choosing the ineffective enforcement technology (λ_B).

As in the case with a single enforcement tool, mimicking cannot be optimal since it does not generate any positive updating in beliefs. On the other hand, whenever $q > 1/2$, the adoption of under–investment with domestic enforcement or border enforcement generate the same positive update of beliefs. The next proposition characterizes the optimal choice of a benevolent politician if $q > 1/2$ and both domestic and border enforcement are available. Let $u^j[I(s)] = \tilde{u}[I(s)] - \eta^j[I(s), I]$, with $j = B, D$, where $\tilde{u}[I(s)] = \pi(E) + w(E) - c(I)$ is the component of the benevolent politician's utility function, which does not depend on the enforcement expenditure. Following the notation we have introduced in section 4, let $\Delta_H^1 U(border) = u[I_b^B(H)] - u[I_b(H)] < 0$ be the first period utility difference from choosing border enforcement over the sincere policy when the state of the world is *high*, and $\Delta_L^1 U(border) = u[I_p(H)] - u[I_b^B(L)] < 0$ be the first period utility difference when the state is *low*. $\Delta^2 U(border) = u[I_b^*(L)] - u[I_p^*(L)] > 0$ denotes instead the second period utility gain from being in power when the state of the world is low. Finally, let us define $\widetilde{\mu}_B = -\frac{q\Delta_H^1 U(border) + (1-q)\Delta_L^1 U(border)}{(1-q)\Delta^2 U(border)} > 0$. The following then holds:

Proposition 6 *Let $q > 1/2$ and suppose that $\mu > \widetilde{\mu}_u$. Then, if $\tilde{u}[I_b^B(H)] - \tilde{u}[I_b^u(H)] < 0$, the benevolent politician chooses domestic enforcement with under–investment. If $\tilde{u}[I_b^B(H)] - \tilde{u}[I_b^u(H)] > 0$, then the benevolent politician chooses border enforcement if and only if $q\{\tilde{u}[I_b^B(H)] - \tilde{u}[I_b^u(H)]\} \geq E_p(\eta) - \eta_U$. On the other hand, if $\mu < \widetilde{\mu}_u$, the benevolent politician chooses border enforcement if $\widetilde{\mu}_B < \mu < \widetilde{\mu}_u$, whereas he implements the sincere policy if $\mu < \widetilde{\mu}_u < \widetilde{\mu}_B$ or $\mu < \widetilde{\mu}_B < \widetilde{\mu}_u$.*

Proof. Note that if $\mu > \widetilde{\mu}$, from Lemma 3 we know that under–investment with domestic enforcement is preferred to the sincere policy. Hence, border enforcement is chosen over domestic enforcement if the resulting expected payoff is larger. This is true if and only if

$$q\{\tilde{u}[I_b^B(H)] - \tilde{u}[I_b^u(H)]\} \geq E_p(\eta) - \eta_U \tag{12}$$

Remember that $E_p(\eta) - \eta_U > 0$. Hence, if $\tilde{u}[I_b^B(H)] - \tilde{u}[I_b^u(H)] < 0$, then inequality 12 is never satisfied, whereas if $\tilde{u}[I_b^B(H)] - \tilde{u}[I_b^u(H)] > 0$, inequality 12 is satisfied if and only if $q\{\tilde{u}[I_b^B(H)] - \tilde{u}[I_b^u(H)]\} \geq E_p(\eta) - \eta_U$. Lemma 3 tells us also that if $\mu < \widetilde{\mu}_u$, the sincere policy is preferred to domestic enforcement. Hence, border enforcement is chosen over the sincere policy if the resulting payoff is larger, i.e. if and only if

$$\mu(1-q)\Delta^2 U(border) > -q\Delta_H^1 U(border) - (1-q)\Delta_L^1 U(border) \tag{13}$$

and this is true if and only if $\mu > \widetilde{\mu}_B$. ■

The intuition for the result is as follows. The first part of proposition 6 (i.e. when $\mu > \widetilde{\mu}_u$) highlights the conditions under which *border* is preferred to *domestic* enforcement with under–investment and viceversa. When the state of the world is low, domestic and border enforcement generate the same number of migrants, but the former uses less resources, and for this reason it is preferred. On the other hand, when the state of the world is high, there is a potential gain from using the less efficient technology (border) which arises because, by spending more, the benevolent politician may allow a number of migrants that is closer to his ideal number. When this happens, the utility gain from the policy net of the enforcement cost is positive (i.e. $\tilde{u}[I_b^B(H)] - \tilde{u}[I_b^u(H)] > 0$), thus implying that the less efficient technology can be preferred. In particular, if the expected gain arising under the high state of the world is sufficiently large, the benevolent legislator will choose border over domestic enforcement. This is more likely to happen the larger is the utility gain (net of the enforcement cost) as compared to the difference in enforcement costs $E_p(\eta) - \eta_U$. The second part of the proposition (i.e. when $\mu < \widetilde{\mu}_u$) shows that, even if the sincere policy is preferred to domestic enforcement, border enforcement might still be chosen in equilibrium. In other words, allowing for an additional instrument besides under–investment enables the benevolent politician to sustain a pooling equilibrium in which he can generate "excessive" illegal immigration that could have not been achieved if only under–investment was available.

In our analysis so far, voters are uninformed both on the amount of resources spent and on the effectiveness of the enforcement technology. After September 11, 2001 migration policy in the US has come under increased scrutiny, and much attention has been focused on the activities of the newly established Department of Homeland Security. In terms of our model, this new

institutional environment can be described by assuming that the electorate might have gained access to information on the size of the enforcement budget. How does this change our results? First note that, when the enforcement budget is known, the under–investment strategy allows the public to perfectly infer the politician's type. As a consequence, an equilibrium with domestic enforcement and under–investment cannot arise. On the other hand, inefficiently high illegal immigration can still occur as a result of an ineffective use of the resources spent on enforcement. In particular, we can show that the following holds:

Corollary 1 *Suppose that the median voter observes the amount of resources spent on enforcement. Then the benevolent politician chooses border enforcement if* $\mu > \widetilde{\mu}_B$*, whereas he chooses the sincere policy if* $\mu < \widetilde{\mu}_B$*.*

Proof. Since the sincere strategy is always preferred to domestic enforcement, then border enforcement is chosen if and only if it delivers an higher payoff than the sincere strategy and this is true if and only if if $\mu > \widetilde{\mu}_B$. ■

Note that, when more information becomes available to the public, domestic enforcement with under–investment can no longer be used by the benevolent politician to "pool" with the populist. As a result, the former will resort more often to the adoption of the sincere policy to admit the constrained social optimal number of migrants.

7 Conclusions

In this paper we have developed a model in which illegal immigration might arise 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 explaining "excessively high" illegal immigration, which result from the use of suboptimal policies. We have considered two sources of policy inefficiency. On the one hand, the government might strategically under–fund migration control operations; on the other, it might strategically use the resources in an ineffective way. We have shown that, 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 set a target pleasing a majority of the electorate, but then strategically relax its enforcement, by either under–investing or using resources ineffectively. Thus, our paper is able to explain both the prevailing political rhetoric of "closed" borders, and the large number of illegal immigrants brought about by a lax policy enforcement.

Our model also suggests three possible explanations for the observed cross–country differences in the stock of illegal immigrants. First, while it is intuitive that larger shocks in immigrant supply are likely to generate more legal and illegal immigration (Hatton and Williamson 2008),

we have shown that re–election concerns imply that more volatility in the supply of migrants is likely to further increase the size of illegal immigration. Second, we have argued that higher income inequality in the host country increases the attractiveness for a benevolent politician to strategically under–investment in enforcement. Third, we have shown that the same is true in societies where politicians are more likely to fall prey of populist tendencies.

We can think of at least two lines along which our analysis could be extended. First, in our model undocumented immigrants do not differ in any way from legal foreign workers. In particular, we have not analyzed the working of a dual labor market, which is important to understand the economics of illegal immigration. Furthermore, we have also abstracted away from considering the interactions between immigrants and the destination country's welfare state system, which may play an important role in shaping policy preferences and the enforcement of official immigration policies (Hanson, Scheve, and Slaughter 2007, Facchini and Mayda 2009 and Casarico, Facchini, and Frattini 2011). An analysis of a richer model which considers both these aspects is left for future research.

Second, the process through which immigration policy enforcement is captured in our paper is rather simple, i.e. it is only the choice of a single elected body. In reality, the implementation of the legislated immigration policy often involves multiple agents. An analysis of the micro–level interactions among the various entities taking part in the enforcement process might provide further important insights to understand some of the immigration policy puzzles we observe.[20]

References

Alesina, A. and D. Rodrik (1994). Distributive politics and economic growth. *Quarterly Journal of Economics 109*, 465–490.

Banerjee, A. (1997). A theory of misgovernance. *Quarterly Journal of Economics 112*, 1289–1332.

Benhabib, J. (1996). On the political economy of immigration. *European Economic Review 40*, 1737–1743.

Berry, R. A. and R. Soligo (1969). Some welfare aspects of international migration. *Journal of Political Economy 77*, 778–794.

Besley, T. (2006). *Principled agents? The political economy of good government*. Oxford University Press.

[20]See Makowsky and Stratmann (2012) for an interesting empirical study of the migration policy enforcement process in the United States.

Besley, T. and M. Smart (2007). Fiscal restraint and voter welfare. *Journal of Public Economics 91*, 755–773.

Bond, E. W. and T. J. Chen (1987). The welfare effects of illegal immigration. *Journal of Development Economics 23*, 315–328.

Borjas, G. J. (1995). The economic benefits from immigration. *Journal of Economic Perspectives 9*(2), 3–22.

Briggs, V. L. (1982). Report of the Select Commission on Immigration and Refugee Policy: A critique. *Texas Business Review 56*, 11–15.

Calvert, R. L., M. J. Moran, and B. R. Weingast (1989). A theory of political control and agency discretion. *American Journal of Political Science 33*, 588–611.

Casarico, A., G. Facchini, and T. Frattini (2011). Spending more is spending less: Migration policy enforcment vs. amnesties. mimeo.

Chau, N. H. (2001). Strategic amnesty and credible immigration reform. *Journal of Labor Economics 19*, 604–633.

Chau, N. H. (2003). Concessional amnesty and the politics of immigration reform. *Economics and Politics 15*, 193–224.

Coate, S. and S. Morris (1995). On the form of transfers to special interests. *Journal of Political Economy 103*, 1210–1235.

Cornelius, W. A., T. Takeyushi, P. L. Martin, and J. F. Hollifield (2004). *Controlling Immigration: A Global Perspective*. Stanford: Stanford University Press.

Diajic, S. (1987). Illegal aliens, unemployment and immigration policy. *Journal of Development Economics 25*, 235–249.

Dustmann, C. and T. Frattini (2011). Immigration: The European experience. LdA WP 326.

Dutt, P. and D. Mitra (2002). Endogenous trade policy through majority voting: An empirical investigation. *Journal of International Economics 58*, 107–134.

Epstein, G. S. and S. Nitzan (2006). The struggle over migration policy. *Journal of Population Economics 19*, 703–723.

Ethier, W. J. (1986). Illegal immigration: The host country problem. *American Economic Review 76*, 56–71.

Facchini, G. and A. M. Mayda (2009). Individual attitudes towards immigrants: Welfare-state determinants across countries. *Review of Economics and Statistics 91*, 295–314.

Facchini, G. and A. M. Mayda (2010). What drives immigration policy? Evidence from a survey of government officials. In I. Gang and G. S. Epstein (Eds.), *Culture and Migration*, pp. 605–648. Chicago: World Scientific.

Facchini, G. and G. Willmann (2005). The political economy of international factor mobility. *Journal of International Economics 67*(1), 201–219.

Fasani, F. (2009). Deporting undocumented immigrants: The role of labor demand shocks. mimeo, University College London.

Findlay, R. and S. Wellisz (1982). Endogenous tariffs, the political economy of trade restricitions and welfare. In J. Bhagwati (Ed.), *Import competition and response*, pp. 158–187. Chicago: University of Chicago Press.

Hanson, G. H. (2006). Illegal migration from Mexico to the United States. *Journal of Economic Literature 44*, 869–924.

Hanson, G. H., K. F. Scheve, and M. J. Slaughter (2007). Public finance and individual preferences over globalization strategies. *Economics & Politics 19*, 1–33.

Hanson, G. H. and A. Spilimbergo (2001). Political economy, sectoral shocks, and border enforcement. *Canadian Journal of Economics 34*(3), 612–638.

Harrington, Joseph E., J. (1993). Economic policy, economic performance, and elections. *The American Economic Review 83*(1), 27–42.

Hatton, T. J. and J. G. Williamson (2006). *Global migration and the world economy*. Bston, MA: MIT Press.

Hatton, T. J. and J. G. Williamson (2008). The impact of immigration: Comparing two global eras. *World Development 36*(3), 345–361.

Hillmann, A. L. and A. Weiss (1999). A theory of permissible illegal immigration. *European Journal of Political Economy 15*, 585–604.

House of Commons, Home Affairs Committee (2011). *The work of the UK Border Agency (November 2010-March 2011*. London: The Stationery Office Limited.

Makowsky, M. D. and T. Stratmann (2012). Politics, unemployment and the enforcement of immigration law. Mimeo, George Mason University.

Moe, T. M. (2012). Delegation, control, and the study of public bureaucracy. In R. S. Gibbons and J. Roberts (Eds.), *Handbook of Organizational Economics*. Princeton University Press, *forthcoming*.

Mukherjee, D. and I. Png (1995). Corruptible law enforcers: How should they be compensated. *Economic Journal 105*, 145–159.

Pagano, M. and G. Immordino (2010). Legal standards, enforcement, and corruption. *Journal of the European Economic Association 8*, 1104–1132.

Polinsky, A. M. and S. Shavell (2007). The theory of public enforcement of law. In A. M. Polinsky and S. Shavell (Eds.), *Handbook of Law and Economics*, Volume 1, pp. 403–454. Elsevier.

Reid, H., R. Durbin, C. Schumer, D. Feinstein, P. Leahy, and R. Menendez (2010). Real enforcement with practical answers for immigration reform (REPAIR) proposal. mimeo.

Stigler, G. J. (1970). The optimum enforcement of laws. *Journal of Political Economy 78*, 526–536.

Triandafyllidou, A. (2009). Clandestino project final report. mimeo.

Weingast, B. R. and M. J. Moran (1983). Bureaucratic discretion or congressional control? Regulatory policymaking by the federal trade commission. *Journal of Political Economy 91*, 765–800.

Woodland, A. D. and C. Yoshida (2006). Risk preference, immigration policy and illegal immigration. *Journal of Development Economics 81*, 500–513.