Transit Country's Role in Migration Management

Mariya Aleksynska,[*] Marcos Poplawski Ribeiro[†]

January 6, 2010

Abstract

This paper develops a model of optimal migration management by destination and transit migration countries. When the only migration management tool available to both final destination and transit countries is the entry-restriction border control policies, they can either rival or cooperate regarding the policies they set with respect to the sending country. We show that when direct and transit migration are among available feasible options for nationals of the sending country, both countries will race up in their border enforcement spending. However, when only transit migration is available, no unique migration management equilibrium between a final destination and a transit country exists. This case raises opportunities for cooperation, under which transit and destination countries may improve their welfare. Theoretical predictions of this model are taken to the country evidence from Ukraine and Morocco.

JEL classification: *F22, J24, J31, O31*

Keywords: International migration, migration management, border enforcement

1   Introduction

Effective migration management recently has become one of particularly topical issues of political, social, and academic discourse. Since many migration roots lie through third, transit, countries, it has been realized that a transnational perspective, involving also these countries, towards achieving effective migration management is needed. With such perspective in mind, this paper aims to offer a theory of migration management embracing destination, sending, and transit migration countries.

While there has been an increased debate on how to set effective migration-management policies, most of the academic research in the area mainly addressed optimal migration control by destination countries alone (Epstein and Nitzan, 2005; Ethier, 1986; Garcia, 2006), occationally relating it to cooperation with sending countries (Stark et al, 2007). To our knowledge, with the only exception of Benhabib (2007), who looks at the optimal migration that maximizes the world's welfare, little research has been done at the level of several countries.

This paper is trying to fill the gap by offering a basic model of migration management by a (final) destination country when two sending countries exist, one of which can also be a transit country. The sending country is assumed to always play a passive role in managing migration in a sense that it cannot restrict the exit of its nationals. Migration policies available to other countries in this paper are entry-restriction border controls. We first examine a benchmark case, in which transit country can send its nationals to the final destination country but is passive in migration management, and is thus similar to the sending country, and only the destination country can set up migration management policies. We then further develop the model to empower the transit country to set up entry controls. When both final destination and transit countries are able to implement entry-restriction policies, they can either rival or cooperate regarding the policies they set with respect to the sending country. The rivalry or cooperation outcome in our model depends on the possibility of direct migration from the sending country towards the final destination country. We show that when direct and transit migration are among available feasible options for nationals of the sending country (for example, this is the case of immigrants from Byelorussia and Ukraine to the EU), both countries will race up in their border enforcement spending. However, when only transit migration is available (such as for migrants from Sub-Saharan Africa who are trying to reach the EU through North African countries), no unique migration management equilibrium between a final destination and a transit country exists. This case raises opportunities for cooperation, under which transit and destination countries may improve their welfare.

Theoretical developments of this paper are most closely related to the literature on migration management by destination countries. For example, Ethier (1986) focuses on two types of policies pertaining to migration control: border enforcement and domestic enforcement in a form of random inspections of firms. He studies the way these two forms of control interplay with each other, and what their implication is for the national welfare, control of unskilled labour employment rate, and the number of immigrants. While ackowledging the importance of both forms of migration management, which are also considered by Djajic (1999) in a dynamic setting, in this paper we focus only on the first form, i.e., border enforcement, as to allow tracktability of the analysis in the three-countries setting. We also closely follow the one-country set-up of Garcia (2006), who analyses political outcomes in countries where rival political parties are concerned

2

with issues of taxation and efficiency of border enforcement. Moreover, this paper is close in spirit to Stark et al (2007), who offer a theoretical framework for optimal migration management by destination and sending countries simultaneously, in which formation of migration policies is linked to incentives to adjust the level of human capital to the possibility of migration. Using migration quotas as a migration policy tool, they show the situations in which policy-setting power can rest either with a sending or with a destination country. Such framework is particularly stimulating for this paper, as it offers situations in which a destination country enforces its preferred migration quota, while a sending country has to comply with its sub-optimal status. Introducing a third, transit, country into this setting allows examining whether the destination country is still able to enforce its preferred policy.

The multi-faceted approach to tackling migration problem is motivated by the growing pressure from the European Union to enforce borders of Eastern European and North African countries with the EU and with their other neighbours, as to prevent transit migration through these countries, and, as a consequence, to reduce the pressure of illegal migration through the direct border with the EU. These trends have been documented by Arando and Martin (2005), Sandell (2005), Braichevska et all (2004), Malynovsky (2000), as well as in the ILO Migration Report (2002) and Mediterranean Migration Report (2005), to name a few. Considering that progressively the world is developing and more and more countries start being involved into migration experience that constantly evolves (Skeldon, 1997; Zelinski 1971; Haas, 2005), the world offers many examples of countries that are simultaneously sending and transit ones, and that start being actively involved into migration management.

2 The Model

Consider a world composed of three countries: sending (S), destination (D), and a third country which may serve as a transit country (T) for individuals from S who want to move to D. Each country is characterised by its labor force; wages are different across countries and are given exogenously. In particular, in average terms, $\overline{w}^D > \overline{w}^T > \overline{w}^S$. These wage differences motivate migration of individuals from S towards D as a first choice, or, of individuals from S towards T as a second choice, if migration from S to D is not feasible. At the same time, natives of T are also willing to migrate to D. We assume that migration takes place at no individual cost[1].

The populations of countries S and T are represented by those individuals who do not wish to migrate (stayers), those who wish to migrate and do it legally (regular movers), and those who wish to migrate but cannot do it in a legal way and thus have to reserve to other ways

---

[1]I also disregard smuggling of humans. For an analysis of the latter see, for instance, Guriev and Griebel, 2006.

(irregular movers). While it is the wage differential between countries that stimulates migration, we do not put any assumption on whether it is richer or poorer individuals who stay versus those who leave[2].

Denote by Y^j continuous mass of all those individuals who are willing to migrate but cannot do so legally, that is, who are potential irregular migrants, with $j = S, T$. In case when there are no border controls, all those who want to migrate will be able to do so, that is, if there are no border controls between D and S, the number of immigrants from S to D is the whole (irregular) migration pressure Y^S.

When border controls are in place, only a fraction I^{ij} succeeds in the attempt to migrate irregularly from country j, $j = S, T$, towards country i, $i = T, D$, such that $I^j < Y^j$. In case of transit migration, I^{DTS} denotes successful (irregular) migration from S to D through T.

If a country wants to prevent entry of immigrants, because of, for instance, the reasons related to reduction of congestion or security concerns, it can do so at the cost of migration control, which equals country's spending E^{ij} on border protection policies, where $E^{ij} \geqslant 0$. For example, E^{DS} denotes spending of country D on migration management of the border with S. Such policies are considered to be the only tool of migration management in this paper[3]. In addition, we will assume that countries are able to control entry to, but not exit from their territories. This will be particularly relevant for country S, which will be assumed to always play a passive role in migration management (no exit control); as well as for country T, which will be able to control the entry of S migrants, but not their exit, and neither the exit of its own natives towards D. While this is an obvious simplification that helps to avoid overloading the model, it also finds support in the real world. For instance, some countries may be too poor to finance exit-restricting measures and policies, or their geography may be such that it may be difficult to effectively control the exit through rivers, sea shores, deserts, or mountains. In contrast, there certainly are (and were) countries where exit is (or was) restricted for political reasons, such as the former Soviet Union countries. However, after the collapse, one of the first migration policies that was implemented by the republics was abadoning of the requirement to seek an official permit to leave the country[4]: in this sense, the exit was eased.

Accomplished irregular migration is assumed to decrease with the rising spending on border enforcement E^{ij}, and to increase with the migration pressure Y^j, and can be expressed as

---

[2]For a discussion on who migrates, see, for instance, Borjas, 1994; Borjas and Bratsberg, 1994; Tassinopoulos and Werner, 1999; Hatton and Williamson, 2002; De Haas, 2005.

[3]Another potential tool of migration management is internal enforcement policies, such as random inspection of the firms. For an analysis of internal enforcement policies independently from and in combination with border controls, see Ethier (1986).

[4]See, for instane, the Law of Ukraine "On the Order of Exit from Ukraine and Entrance to Ukraine for the Citizens of Ukraine", 1994.

$I^{ij}(Y^j, E^{ij})$, where $\partial I^{ij}/\partial E^{ij} < 0$, $\partial I^{ij}/\partial Y^j > 0$. The derivative of the number of immigrants who succeeded in entering the country of their destination with respect to the border enforcement effort of that country $\partial I^{ij}/\partial E^{ij}$ can be interpreted as efficacy of border enforcement policy (Garcia, 2006)[5]. As explained before, $I^{ij}(Y^j, 0) = Y^j$.

3 Migration Management by Destination Country:

One Country of Origin

As a starting point, consider the case when migration happens only between two countries, S and D[6]. Country S plays a passive role in migration management process and is characterised only by its natives willing to migrate, Y^S. In contrast, migration management rests with D.

Native workers in D derive their utility from their consumption, and their disutility from the number of illegal immigrants from S, say because of security issues, congestion, or perceived social tensions that may arise due to their presence (see Dustmann and Preston, 2000, and Card, Dustmann and Preston, 2005, for an analysis of the EU citizens's responses to questions about attitudes towards immigrants). Following Garcia (2006), we assume the following functional form of the objective function of a representative native:

$$U^D(c, I^{DS}) = c^D - \beta I^{DS} \tag{1}$$

where c^D is individual consumption of a native in D, and β is a disutility parameter from having

more immigrants from S. Note that $\beta < 0$ implies that natives may want to have more (irregular) immigrants. Natives' consumption is determined by wages they receive minus personal income taxes:

$$c^D = w^D(1 - t^{DS}) \tag{2}$$

The government uses taxes fully to finance protection policies on its DS border. Assuming that government's budget constraint is always balanced, and denoting by N^D the number of natives in D, government D's spending on protecting its DS border is given by:

$$E^{DS} = t^{DS}w^D N^D \tag{3}$$

---

[5] I also assume a negative cross derivative $\partial I^{ij}/\partial E^{ij}\partial Y^j < 0$ which implies that efficacy of the border enforcement policy is decreasing with the rising migration pressure.

[6] In this section, I follow closely the setting of Garcia (2006).

The optimal spending on migration management is defined by the level E^{DS*}, which maximizes natives' utility given individual and the balanced government budget constraints. This level is given by the solution to the following problem:

$$\max_{E^{DS}} \ U^D(c, I^{DS}) = c^D - \beta I^{DS}(E^{DS}, Y^S) \ \ s.t. (2) and (3)$$

From the first order conditions,

$$\partial I^{DS}/\partial E^{DS} = -\frac{t^{DS} w^D}{\beta E^{DS}} \tag{4}$$

This condition defines the optimal spending on border enforcement by country D, E^{DS*}, as well as the corresponding number of irregular entrants $I^{DS*}(E^{DS*}, Y^S)$ for a given migration pressure. For $E^{DS} = 0$ the country reaches its minimum level of border protection efficacy, thus allowing for the highest potential entry. In contrast, when migration spending approaches its maximum, i.e., $E^{DS} = \infty$, the marginal effect of an extra monetary unit on reducing the undesirable entry is zero, for a given migration pressure Y^S.

4 Migration Management by Destination Country:

Two Countries of Origin

Consider now a case when there are two countries from which migration flows can originate, S and T, and that for the time being both countries play a passive role in managing migration in a sense than none of them implements border control policies. The questions asked in the next two sub-sections are what implication this has for an optimal migration policy of a destination country D, and how D divides its border enforcement effort between the two countries.

4.1 No Transit Migration

As a benchmark, we first develop a case in which migration pressure from S and from T is independent from each other, that is, both S and T can send migrants to D, but S cannot send its migrants to D through T, in other words, there is no transit migration.

As before, natives in D derive utility from private consumption, and disutility from the presence of immigrants, who now originate from two countries:

$$U^D(c^D, I^{DS}, I^{DT}) = c^D - \beta I^{DS}(E^{DS}, Y^S) - \alpha I^{DT}(E^{DT}, Y^T) \tag{5}$$

where α is a disutility parameter from having more immigrants from country T. Natives of D may have different disutilities from immigrants that they receive from a transit and a neighbouring country for different socio-economic, historical, cultural, or ethnic reasons.

While the government in D runs two migration control policies, we assume that there is only one general tax levied on natives, t^D, and that the budget is split between financing the two programs, E^{DS} and E^{DT}. In other words, two programs come out of the same pool of revenue with the aggregate rate of taxation being constant. This is also equivalent to assuming that there are two separate taxes that yield two separate streams of spendings, but that the derivative of one tax with respect to the other is -1[7]. The assumption is motivated by the fact that it can be politically and administratively difficult for the government to raise separately two taxes on migration management, and additional expenditure on border protection with one country should come at the expense of the lower border protection with another country. Given this,

$$c^D = w^D(1 - t^D), \qquad E^D = t^D w^D N^D = E^{DS} + E^{DT} \qquad (6)$$

The common budget constraint for the two policies implies

$$t^D = \frac{E^{DS} + E^{DT}}{N^D w^D} \qquad (7)$$

And natives' optimisation problem becomes:

$$\max_{E^{DS}, E^{DT}} \quad U^D(c^D, I^{DS}, I^{DT}) = c^D - \beta I^{DS}(E^{DS}, Y^S) - \alpha I^{DT}(E^{DT}, Y^T) \quad \text{s.t. (6)} \qquad (8)$$

Summary 1 *Efficacy of D's border enforcement with respect to S and T, or the marginal immigration levels from S and T, are related through the disutility that natives of D derive from having more immigrants from S or from T:*

$$\alpha \frac{\partial I^{DT}}{\partial E^{DT}} = \beta \frac{\partial I^{DS}}{\partial E^{DS}} \qquad (9)$$

Proof. Straightforward from optimisation. ∎

What this summary tells is that given the same pool of government D's revenue, D will be willing to marginally allocate more resources on controlling the border with that country,

---

[7]See Glomm and Kaganovich, 2002, for more details as well as for an example of non-linear budgetary competition.

whose irregular immigrants provide higher disutility to the natives of D, provided the migration pressure from both countries is the same. It also tells that if D's natives are indifferent between immigrants from S or T, i.e., if $\alpha = \beta$, then marginal spending of D on border protection with both countries should be the same.

4.2 The Case of Transit Migration

As a next step, we move to the scenario when all those who are willing to migrate from S can move to D either directly, or through T, that is, transit migration is allowed. Natives of T can also move to D, and we continue assuming that D is the only country that sets migration policies. We also assume that D's protection efforts at the DT border are effective for preventing unwanted entry of migrants originating both from T and S.

The fact that transit migration is allowed means that migration pressure on the DT border is no longer given solely by the number of T's natives willing to migrate, Y^T, but that it is also additionally comprised of all those natives of S who were not able to reach D due its restrictive border controls, but who were able to enter T since the latter does not have entry restrictions:

$$Y^{DT} = Y^T + (Y^S - I^{DS}(E^{DS})) \tag{10}$$

We assume that individuals from country S who move to T will try to reach D afterwards, rather than stay in T, since they will still be attracted by higher wages in D as compared to T. We also rule out the possibility of $T \rightarrow S \rightarrow D$ migration, that is, transit migration through S of all those in T who were not able to reach D.

Two possible situations can be distinguished here. The first one is the case in which individuals from S, who were not able to move to D in the first place, migrate to T and become similar to natives of T. As both ethnic groups then move to D, the pool of S-migrants is undistinguishable from the pool of T-migrants at the DT border. This example may sound more realistic if we consider origin countries such that what matters for the destination country is the total number of people who cross each border rather than the number of representatives of a particular ethnicity. For example, this may be the case of ethnically and economically similar countries, such as Byelorussia and Ukraine, in which case the natives of EU member countries would be relatively indifferent between having more, say, Byelorussians rather than more Ukrainians, but would be concerned if more Ukrainians and Byelorussians would start crossing the EU-Ukraine border.

As shown in Appendix 1, the resource allocation in D in this case will be determined by the following rule:

$$\alpha\frac{\partial I^{DT}}{\partial E^{DT}} = \beta\frac{\partial I^{DS}}{\partial E^{DS}} + \alpha\frac{\partial I^{DT}}{\partial E^{DS}}$$

This rule suggests that the optimal policy response of D is to have lower marginal border control spending on the DS border, and to have higher marginal border control spending on the DT border. Comparing this equation to the benchmark case given by equation (9), there is an additional term $\alpha\partial I^{DT}/\partial E^{DS}$ which measures the disutility D natives have from more immigrants that cross the DT border as a result of higher border spending on controlling the DS border (i.e., this is the number of S ethnics that cross the DT border). If $\partial I^{DT}/\partial E^{DS} = 0$, that is, if higher spending on enforcing the DS border does not result in transit migration and consequent higher level of crossing the DT border, then this equation reduces to (9), or the case of no transit migration. What this last term measures is the size effect of increased migration pressure on the DT border. However, this effect is due not to the simple increase of the number of T's natives, but to the increase of S natives in country T, a direct result of higher spending on enforcing the DS border. It thus also captures the trade-off that the D country has when considering how much to spend on protecting its borders with S and with T in the wake of transit migration.

More realistically, however, regardless of whether the nationals of S manage to migrate to D directly or through T, their nationality is usually visible to the natives of D (stated differently, natives of D care where migrants originate from). Thus, the migration pressure from T is still given by equation (10), however, the optimization problem (8) becomes:

$$\max_{E^{DS}, E^{DT}} \quad U^D(c^D, I^{DS}, I^{DT}, I^{DTS}) = c^D - \beta I^{DS}(E^{DS}, Y^S)$$
$$-\alpha I^{DT}(E^{DT}, Y^T) - \beta I^{DTS}(E^{DT}, (Y^S - I^{DS}(E^{DS}))$$
$$s.t.(6) \ and \ (7) \tag{11}$$

where I^{DTS} is the number of immigrants from S who come to D in transit through T (in addition to those who come directly). This number depends on the residual migration pressure $Y^{DS} = (Y^S - I^{DS}(E^{DS})$ which is affected by the D's spending on the DS border, as well as on D's spending to protect its DT border. Optimization results in the following condition which defines optimal border control spending by D on both its borders, when transit migration is a possibility and both sending countries play a passive role in migration management:

$$\alpha\frac{\partial I^{DT}}{\partial E^{DT}} = \beta\frac{\partial I^{DS}}{\partial E^{DS}} + \beta\left[\frac{\partial I^{DTS}}{\partial E^{DS}} - \frac{\partial I^{DTS}}{\partial E^{DT}}\right] \tag{12}$$

9

Comparing this to the benchmark case (9), an additional term appears in equation (12). The first term in brackets is the number of irregular immigrants from S who reach D via T, which is affected by the D's spending on DS border, and the second term in brackets is the number of succeeded immigrants from S who reach D via T, which is affected by the D's spending on DT border. The two derivatives have different signs: $\frac{\partial I^{DTS}}{\partial E^{DS}} > 0$, since as spending on DS border protection increases, less migrants can enter D directly from S, and more are able to enter indirectly through the DT border for a given E^{DT} level. In contrast, $\frac{\partial I^{DTS}}{\partial E^{DT}} < 0$: tighter DT border protection decreases the number of succeeded S transit entrants to D. Depending on which effect dominates, it will be optimal for D to tighten or to loosen border control with S and with T.

Summary 2 *In case when both direct and transit migration are possible, when migration management power rests only with the destination country D, and natives of D are able to distinguish between nationals of S and of T who cross the DT border, the optimal migration policy of D is:*
- not affected by the possibility of transit migration and is like in (9),
if $\left|\frac{\partial I^{DTS}}{\partial E^{DS}}\right| = \left|\frac{\partial I^{DTS}}{\partial E^{DT}}\right|$, that is, if marginal spending on either DT or DS border enforcement results in the same efficacy of restricting transit migration from S towards D;
- to spend marginally more on protecting DT border, and less on protecting DS border,
if $\left|\frac{\partial I^{DTS}}{\partial E^{DS}}\right| > \left|\frac{\partial I^{DTS}}{\partial E^{DT}}\right|$, that is, if marginal spending on DS border enforcement is more effective in restricting transit migration from S towards D than marginal spending on DT border enforcement;
- to spend marginally more on protecting DS border, and less on protecting DT border,
if $\left|\frac{\partial I^{DTS}}{\partial E^{DS}}\right| < \left|\frac{\partial I^{DTS}}{\partial E^{DT}}\right|$, that is, if marginal spending on DT border enforcement is more effective in restricting transit migration from S towards D than marginal spending on DS border enforcement.

Proof. Straightforward from equation (12). ∎

5   Migration Management by Destination and Transit Countries

Up till now we have been considering situations in which the transit country T does not have migration management power. However, the real world practices tell that this is not the case, and that, increasingly, transit countries engage into restricting migration flows, too. This is because

natives in transit countries also experience certain disutility associated with those immigrants from S who are unable to further to move to D and thus settle down in T[8] and also because final destination countries D may put pressure on T to enforce their borders, in order to help reducing the migration pressure on DT borders. In what follows, we am going to examine optimal migration management entry-restriction policies by both D and T countries when both have the power to implement them, and when irregular migrants from T still are able to move to D.

5.1 Optimal Migration Policies by Destination and Transit Countries when both Direct and Transit Migration are Feasible

Let us first look at the example when both direct and transit migration is available to the natives of S on their way to D. This case corresponds to the experience of several Eastern European countries, such as, for instance, Ukraine and Russia, when Russians can move to the Schenghen zone directly or through Ukraine, and when Ukrainians can also directly move to the Schenghen zone.

This setting presumes that if D decides to protect its borders at all, it should protect DT and DS borders simultaneously. This is because protecting only DS border will not prevent full migration of S's natives through T, while protecting only DT border will result in full direct migration of S's natives to D as well. Given this, country T does not need to implement any border control policy on its TS border if D keeps its DS border open (as there will simply be no individuals willing to cross it), and considers initiating the TS border protection only if it knows that D will enforce controls at the DS border, as the latter will stimulate transit migration undesirable for T.

Figure 1 depicts the normal form of the simultaneous-move game between T and D. The payoffs are given in terms of (dis)utility that natives of both countries receive from having to pay for border enforcement, and from having irregular immigrants for a given level of border protection. Here, E^j is the total spending of a country on border enforcement, $j = D, T$, and I^j is the total number of irregular immigrants it receives for a chosen level of border protection. For example, the first cell describes payoffs in case when both countries choose open-border policies: D has zero spending on border controls, but receives all potential mass of immigrants from both T and S; T spends zero on border protection as well, but has no migrants (as those who come from S can move towards D with no constraint)[9].

From the figure, if D chooses to keep its borders fully open, it is most reasonable for T

---

[8]As well as with those who are just in transit through their territory.

[9]In principle, if the borders are open, it is not strictly correct to say that I^j represents irregular migration, since all migration is regular in this case. Here, I^j is the number of all potential entrants.

to keep its border open as well, as regardless of whether T sets up border controls at a cost E^{TS} or not, all individuals from S are able to move to D directly, avoiding T, so that the T's border control represents a loss for this country. If D spends a non-negative amount on border protection, however, T has to choose between two options. The first option is to stay open and receive all residual mass of immigrants from S, given by $(Y^S - I^{DS})$ less the migrants I^{DTS} who will be able to transit into D despite the border control. The second option is to enforse its borders too, and as a result, receive only a part of migrants, I^{TS} but at a cost of border controls, E^{TS}. Note that in the latter case, the number of migrants I^{DTS}' who will be able to transit into D is smaller than the corresponding number in case when T stays open. This is because the migration pressure on DT border by transit immigrants is smaller, thus, succeeded transit migration is smaller as well. Depending on what option provides highest utility to T's citizens (open borders with many entrants, or restricted borders at a cost), T will stay open or with enforced borders. In its turn, D will prefer to enforce its borders in this game, as long as receiving the full mass of immigrants from T and S gives higher disutility than receiving a chosen number of immigrants at a cost of border enforcement.

To summarize, in the case when both direct and transit migration are feasible options for individuals from S on their way to D, in a simultaneous move scenario the equilibrium outcome for both D and T is to protect their borders as long as the disutility from receiving the mass of all potential entrants is higher than the disutility from the number of immigrants these countries choose to receive at a cost of protecting their borders (and to keep their borders open as long as the reverse is true). In particular, both T and D prefer to protect their borders as long as

$$
\begin{aligned}
U^T(E^T &= E^{TS}, I^T = I^{TS} - I^{DTS\,'}) > U^T(E^T = 0, I^T = Y^S - I^{DS} - I^{DTS}) \quad and \quad (13) \\
U^D(E^D &= E^{DS} + E^{DT}, I^D = I^{DS} + I^{DT} + I^{DTS}) > U^D(E^D = 0, I^D = Y^S + Y^T)
\end{aligned}
$$

Note that in some cases when T stays open it may still be optimal for D to keep its borders protected. Such cases are defined by the range of values for the utility functions of T and D such that:

$$
\begin{aligned}
U^T(E^T &= E^{TS}, I^T = I^{TS} - I^{DTS\,'}) < U^T(E^T = 0, I^T = Y^S - I^{DS} - I^{DTS} \quad and \\
U^D(E^D &= E^{DS} + E^{DT}, I^D = I^{DS} + I^{DT} + I^{DTS}) > U^D(E^D = 0, I^D = Y^S + Y^T)
\end{aligned}
$$

Thus, as long as countries have higher utility from protecting their borders and, consequently, receiving less immigrants, rather than from being fully open and receiving the full pool of potential entrants, their optimal strategies are to enforce the borders. One thus can easily expect to see the protect-protect equilibrium.

Figure 1: Normal Form Representation of the Game with Transit and Direct Migration

T

	Open	Protect
Open	D: $E^D = 0$, $I^D = Y^S + Y^T$ T: $E^T = 0$, $I^T = 0$	D: $E^D = 0$, $I^D = Y^S + Y^T$ T: $E^T = E^{TS}$, $I^T = 0$
Protect	D: $E^D = E^{DS} + E^{DT}$, $I^D = I^{DS} + I^{DT} + I^{DTS}$ T: $E^T = 0$, $I^T = Y^S - I^{DS} - I^{DTS}$	D: $E^D = E^{DS} + E^{DT}$, $I^D = I^{DS} + I^{DT} + I^{DTS'}$, T: $E^T = E^{TS}$, $I^T = I^{TS} - I^{DTS'}$,

D

Payoffs are given in terms of spending on border enforcement, E^j, j=D,T, and in terms of total number of immigrants received, I^j, j=D,T.

$I^{DTS'} < I^{DTS}$, *because more migrants can come through T if T is open*

As we have seen, the whole question of setting up entry border controls between T and S arises only when there are border controls between D and S. Hence, in a non-simultaneous setting, D country is a natural leader in setting migration policies, and T is a natural follower, both racing up in their spending on border enforcement.

Indeed, the latter scenario can be analysed in more detail in a dynamic setting for predicting how much both countries will actually spend on protecting their borders. Country T takes into account D's spending on the DS border protection when it chooses its own level E^{TS}, since D's spending will have a direct implication for the potential mass of immigrants willing to enter T instead of D. We assume that the information is fully available to both players. Since D knows that T takes its actions into account, D is able to solve for T's optimal spending and account for it when setting its own migration policy. This game $à-la$ Stackelberg is solved by backward induction, and its extensive form is depicted in Appendix 2.

First, we calculate the best-response function for the follower T, for an arbitrary migration policy E^{DS}. Assuming that natives in T have a symmetric structure of utility function and government budget constraints, optimisation problem is similar to the one-country migration management case:

$$\max_{E^{TS}} \quad U^T(c, I^{TS}) = c^T -$$

$$- \gamma \left[I^{TS}(E^{TS}, (Y^S - I^{DS}(E^{DS}, Y^S)) + I^{DTS}(E^{DT}, I^{TS}(E^{TS}, E^{DS})) \right]$$

$$s.t. \ c^T = w^T(1 - t^T)$$

$$E^{TS} = t^T w^T N^T \tag{14}$$

where γ is a disutility that natives of T receive from having more immigrants from S; I^{TS} is succeeded migration through the TS border, which depends on border-protection spending E^{TS} and on $(Y^S - I^{DS})$, a migration pressure on TS border comprised of all natives of Y who were not able to migrate to D. The last term in the utility function represents the number of immigrants from S who manage to migrate to D through T (we assume that the transit per se does not cause disutility for T's natives), and it is a function of D's spending on border enforcement with T, E^{DT}, which can be expressed as $E - E^{DS}$, where E is the total spending of D on protection of its borders, as well as the mass of all transit migrants.

From the first order conditions,

$$\frac{t^T w^T}{E^{TS}} = \gamma \frac{\partial I^{DTS}(E^{DS}, E^{TS})}{\partial E^{TS}} - \gamma \frac{\partial I^{TS}(E^{DS}, E^{TS})}{\partial E^{TS}}$$

and rewriting,

$$E^{TS} = \frac{t^T w^T}{\gamma \left[\frac{\partial I^{DTS}(E^{DS}, E^{TS})}{\partial E^{TS}} - \frac{\partial I^{TS}(E^{TS}, E^{DS})}{\partial E^{TS}} \right]} = R_{E^{TS}}(E^{DS}) \tag{15}$$

Equation (15) is a reaction function of T on the D's spending to protects its DS border. Both derivatives in the denumerator are negative, however, the size of the second one is larger than the size of the first one, because the marginal number of immigrants from S to T is larger that the marginal number of immigrants from S to T who succeed to further migrate to D for the same marginal decrease of E^{TS} border enforcement. Thus, the overall E^{TS} spending is positive. As shown in Appendix 3, the slope of the reaction function in (15) is positive: higher E^{DS} spending leads to higher E^{TS} spending. Since D's budget is always balanced and $E = E^{DS} + E^{DT}$, a corresponding reaction function of T on the D's spending to protect its DT border can also be derived.

In its turn, the best-response of country D with respect to the T's actions is presented by a pair of response functions: best reponse in terms of E^{DS} and corresponding best-response in terms of E^{DT}. These are derived by reconsidering the optimization problem (11) and substituting the optimal spending of T on its border protection, E^{TS*}. Taken together, the following two conditions define D's best-response functions:

$$\alpha \frac{\partial I^{DT}}{\partial E^{DT}} = \beta \frac{\partial I^{DS}}{\partial E^{DS}} + \beta \left[\frac{\partial I^{DTS}(E^{TS*})}{\partial E^{DS}} - \frac{\partial I^{DTS}(E^{TS*})}{\partial E^{DT}} \right] \tag{16}$$

$$E = E^{DS} + E^{DT} \tag{17}$$

These conditions determine optimal spending on DS and DT border enforcement taking into account T's spending. The slope of the $R_{E^{DS}}(E^{TS})$ reaction function is positive, while the slope of the $R_{E^{DT}}(E^{TS})$ is negative, as explained in Appendix 3. These conditions can also be compared to those when T does not have power to set migration policy, i.e., when T does not have power to set migration policy, i.e., to Summary results (1) and (2). In particular, Summary result (2), i.e., the case when country T has no migration policy ($E^{TS} = 0$), can be viewed as a special case of conditions (16-17) which account for possible T's migration policy.

Figure 2 depicts reaction functions of countries T and D and their mutual behaviour. In the (E^{TS}, E^{DS}) space, the reaction function of T, $R_{E^{TS}}(E^{DS})$, as well as the reaction function of D, $R_{E^{DS}}(E^{TS})$, are both upward-sloping. The $R_{E^{TS}}(E^{DS})$ has (0,0) as its origin point: for a given open-door policy of D, such that $E^{DS} = 0$, T will stay open as well. However, from conditions (16-17), the origin point of D's reaction function is (0,$E^{DS'}$),where $E^{DS'}$ is some non-negative value, i.e., when T is fully open, D does not have to be, and it can be spending a non-negative amount on protecting its borders. The intersection of these two reaction functions is the sub-game perfect Nash outcome of the Stackelberg game between T and D. Note also that there are two limiting schedules in this panel, both defined by condition (13). The horizontal schedule is the maximum amount that natives of T are prepared to spend on protecting the TS border, and it is defined by the total (dis)utility that they derive from having non-protected borders and receiving potential mass of immigrants from S. Once this limit is reached, the T country is no longer willing to protect its borders, and prefers to open up. A corresponding limiting condition for D is shown as a vertical schedule.

The (E^{DS},E^{DT}) space shows the budget constraint of D. The last section of the graph, the (E^{DT},E^{TS}) space, depicts reaction functions $R_{E^{TS}}(E^{DT})$ and $R_{E^{DT}}(E^{TS})$, which can be derived from the corresponding $R_{E^{TS}}(E^{DS})$ and $R_{E^{DS}}(E^{TS})$ functions, using the assumption that D's budget is split between financing two border-enforcement programs at the same time.

Definition 3 *The triple ($E^{TS*}, E^{DT*}, E^{DS*}$), defined by conditions 15-17, constitutes the opti-*

Figure 2: Reaction Functions in Case of Direct and Transit Migration
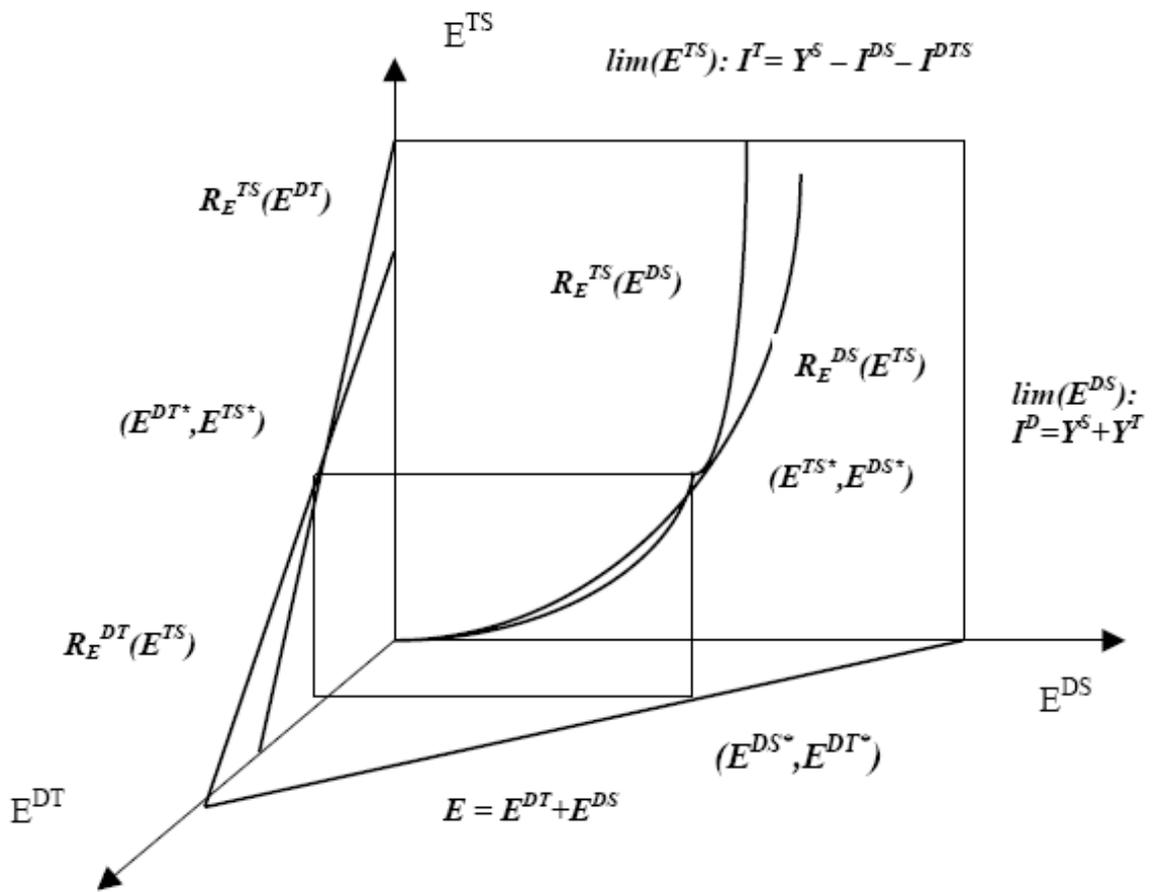
Figure 3: Normal Form Representation of the Game with No Direct Migration

where $I^{DTS'} < I^{DTS}$, because more migrants can come through T if T is open

mal migration spending on border enforcement by countries T and D in the wake of transit and direct migration.

5.2 Optimal Migration Policies by Destination and Transit Countries when Only Transit Migration is Feasible

We now turn to analyzing the case when only transit migration is available to the natives of S on their way to D. This case follows the experience of Magreb and Sub-Saharian countries, when direct illegal migration from Sub-Saharian countries to the Schengen zone is not feasible (air travel being too expensive and airport documentiation checks blocking illegal entry), and only trasit migration is an option.

The normal form representation of the simultaneous-move game for this type of countries is depicted in Figure 3. As before, payoffs are given in terms of (dis)utility that natives in T and D receive from having to spend on border protection and from the number of potential undesirable irregular entrants.

If country T chooses to finance entry-restriction migration policies (protect), country D may just stay open, as no direct migration from S can take place, and the immigrants that D will receive are only direct immigrants from T and those few transit migrants from S who were able to enter T despite the restrictions. However, it is not in the best interest of T to introduce migration restrictions, as T's social planner knows that all migrants from S will transit through T towards D as long as D is open, and so T has an incentive to stay open. If T stays open, D's response is to protect its borders, leaving all migrants from S as well as natives of T in T. If T knows that D may start protecting its border, it should protect its border too. But this brings us back to the example above, when, if D anticipates that T protects illegal entry, D prefers opening up.

17

Thus, in case when D and T decide simultaneously on their optimal migration policies, and if citizens from D get a sufficiently low disutility from receiving T's irregular migrants (Y^T), the absence of the possibility of direct migration from S leads to the absence of equilibria in pure strategies. If T chooses to stay open and let all migrants from S enter T on the way to D, D protects its borders; however, before the migration starts, and $D's$ border is open, T does not have an incentive to protect its borders. The only incentive for D to protect its borders when T protects is to prevent the entry of migrants from T, and not from S. When this incentive is not strong enough, the game has equilibrium(a) only in mixes stategies.

Summary 4 *When only transit migration of nationals from country S is possible on their way to country D, and when the following condition holds:*

$$U^D(c^D(E^D = 0); I^D(I^{TS} + Y^T)) > U^D(c^D(E^D = E^{DT}); I^D(I^{DTS} + I^{DT})) \qquad (18)$$

no pure strategy equilibrium in a game of setting optimal migration policies between countries T and D exists. The precise probability of choosing open/protect policies in a mixed strategies equilibrium would depend on the functional forms of $U^D, U^T, I^{DT}(E^{DT}, Y^T)$ and $I^{TS}(E^{TS}, Y^S)$, as well as on the values Y^S, Y^T, w^D, and w^T. If this condition does not hold, both T and D will choose to enforce their borders.

Proof. See Appendix 4. ■

One can also consider the game described in Figure (3) as a sequential-move scenario. Note, that unlike the previous section, D is no longer a natural leader. As before, if D initiates border protection, T will follow up, too. However, the novely here is that if D knows that T will definitely protect its border, D may prefer leaving the leading role in initiating border controls to T, because no direct migration to D can occur, and transit migration will be partly blocked by T. Thus, either T or D can be the first mover in this game. Extensive form representation of both cases is depicted in Figure 4.

From Panel A of Figure 4, if D moves first and chooses protective policies, the best response of T is to do the same, and hence the outcome is again the equilibrium in which both countries protect their borders[10]. The actual level of border-enforcement spending by both countries and the resulting number of entrants can be calculated as in the previous section.

Things are more interesting when T is the first to decide on migration management policies. From Panel B, if condition (18) holds, it is optimal for country D to stay open while T protects its borders.

---

[10]It can be easily verified that this equilibrium is achieved in case of transit and direct migration regardless of which country, D or T, moves first.

Figure 4: Extensive Form Representation of Sequential Game with No Direct Migration

Panel A. D is the First Mover

<u>D's payoff</u>   <u>T's payoff</u>

open $Y^S + Y^T$ 0

T   protect

open $I^{TS} + Y^T$ E^{TS}

open $E^{DT}, I^{DT} + I^{DTS'}$ $Y^{TS} + I^{DTS'}$

D

protect   T

protect $E^{DT}, I^{DTS} + I^{DT}$ $E^{TS}, I^{TS} - I^{DTS}$
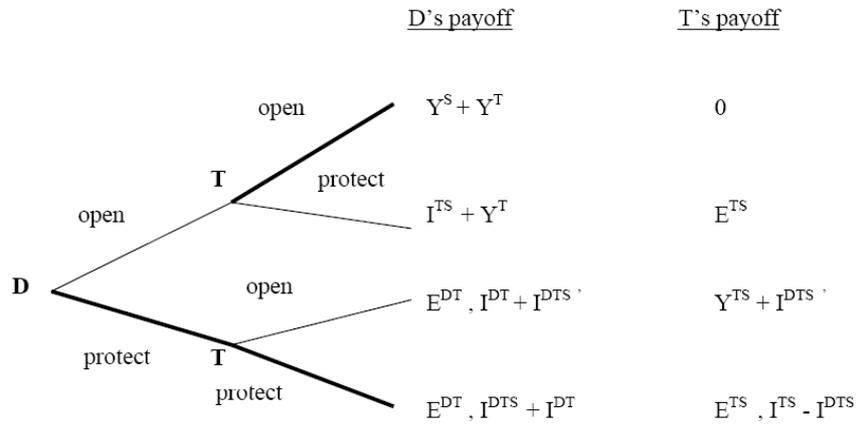
where $I^{DTS'} > I^{DTS}$, because more migrants can come through T if T is open

Panel B. T is the First Mover

<u>T's payoff</u>   <u>D's payoff</u>

open   0 $Y^S + Y^T$

D   protect

open $Y^S - I^{DTS'}$ $E^{DT}, I^{DTS'} + I^{DT}$

open E^{TS} $I^{TS} + Y^T$

T

protect   D

protect $E^{TS}, I^{TS} - I^{DTS}$ $E^{DT}, I^{DTS} + I^{DT}$
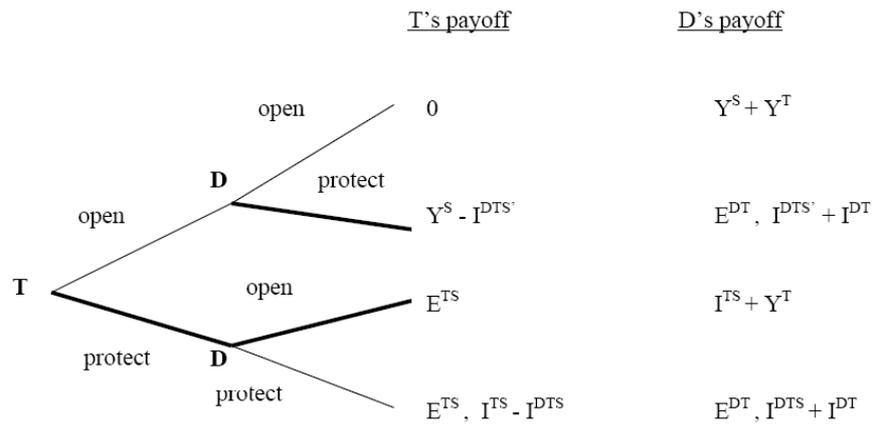
Figure 5: Summary of Potential Equilibrium Outcomes for the Case of No Direct Migration

	Outcomes:	T	D
D is the first mover	Protect/Protect	$E^{TS}, I^{TS} - I^{DTS}$	$E^{DT}, I^{DTS} + I^{DT}$
T is the first mover	Protect/Open	E^{TS}	$I^{TS} + Y^T$

Figure 5 summarizes these results. Clearly, T would be better off in the protect $(T)-$open (D) outcome, as in this case there are no migrants from S who remain in $T,$ since they all move straight to D. For D, though opening up would mean reducing the cost of migration control to zero, the outcome is the pool of all transit migrants from S and of all potential entrants from T. Since no matter how much T spends on protecting its borders with S, the pool of its natives Y^T can still migrate to D, the real question is under which conditions D would prefer opening up completely.

First and foremost, country D will be more prone to open up when the values of Y^T are relatively low. This may happen when, for example, wages in both countries T and D are the same, i.e., $w^T = w^{D11}$, and there is no incentive for individulas from T to migrate to D, in which case Y^T is zero or negligeable. An example of such case is the European Schenghen zone.

Second, country D will also be more ready to open fully if I^{TS} is relatively low. In order to achieve this, country D may be willing to transfer an amount up to E^{DT} to T to help bringing the I^{TS} level down[12], irrespective of wage differences in T and D. However, if wages in T and D are not equal, such transfers by D will be made provided (in return) T prevents sending all its natives, Y^T, to D.

The latter point is best seen when the game in Figure (3) is cast dynamically, in which case at the beginning of each period T and D decide simultaneously whether to stay open or to protect borders. This is not unrealistic, as, even though specific infrastructure for border controls may already be in place, countries still have to decide at the beginning of each year on their migration-prevention budget. In this setting, a prefered policy may be agreed upon, with punishments introduced for deviations from it. For example, while D would never accept an open-open equilibrium, T would never accept to have its borders fully open as long as D protects

---

[11]In practise, it is sufficient that wages are relatively similar, i.e., that the wage differential is not big enough to trigger migration.

[12]Although, so far no assumption has been made regarding the border enforcement technologies of T and D, so at this point it is not possible to say which country will be more efficient in reducing this indicator.

its borders. In the long run, a protect(T)−open (D) eqilibrium may be agreed upon[13], in which it may be optimal for D to open up, rather than to protect its borders forever, even at a cost of making potential transfers to T to help improving T's border enforcement capacity. This may be especially true if T agrees to prevent sending all of its potential migrants, Y^T, to D. Since this latter equilibrium is not stable, and T would have an incentive to renege on its promise not to send the Y^T pool, and in addition to open up its borders, D can introduce punishment periods, when it would close its borders for a few periods of time, or for ever. The decision on the number of punishment periods, as well as the choice of the long-run equilibrium, will, again, depend on the values $Y^T, Y^S, I^{TS}, w^T, w^D$, as well as on discount factors. In some sense, this would be similar to transition provisions of the EU with regard to the new member states, when during seven years after accession old member states may apply safeguard clauses if their labour markets are affected by particularly high inflows of immigrants from new member states as a result of opening up.

What this case of "no direct migration" shows is why it may be difficult, and not always obvious, to establish optimal migration policies by destination and transit migration countries. There is clearly scope for cooperation, but it is not stable, and the preferred policies need to be thoroughly controlled and reviewed on a regular basis, to insure that prefered equilibrium in the long run is sustained.

What this case also shows is that if country D is able to enforce its borders, then it will be the one deciding which policies both D and T will set, thus having a position of dictating its conditions to country T. The only thing country T can do is to threat to send all of its nationals to D if D stays open. This threat is credible, and for this reason country D may never agree to open up its borders. If realized, this threat may invoke the period of long, if not eternal, punishment, from country D, in a form of its borders being fully shut.

6 Comparative Analysis of Migration Management in Morocco and Ukraine

Morocco and Ukraine are among the countries who have recently became direct neighbours of the European Union. Having very different histories of relationship with the European Union countries, as well as different migration histories, they are recently facing similar migration phenomena: while there are high out-migration rates of the natives of these countries towards the European Union, there is also a considerable transit migration of third country nationals

---

[13]It does not make sense to agree explicitly on a protect-protect equilibrium, as there would be no diviations from it.

through their terriotries. Both countries have recently started forming a tier between Europe and other sending countries, creating a "buffer zone" between them. This case-study compares and contrasts migration situations in both countries, the features of migration policies, and relationships with the European Union with respect to this situation, relating them to the predictions of the theoretical part of the paper.

6.1 Overview of Migration Situation in Ukraine

The modern history of migration out, through, and towards Ukraine starts mainly in the early 1990-es, when the country opened up its borders after the collapse of the Soviet Union. In the first years following the independence, Ukraine faced massive migration flows. Thousands of individuals moved towards Europe (labour migration) but also towards Russia and other former Soviet Union countries (labour, cross-border family reunification, and ethnic migration). In return, Ukraine also received considerable inflows into its territory, mainly also from the former Soviet Union Republics (family reunification, ethnic migration, and repatriation of individuals repressed or expelled from Ukraine during the totalitarian regime).

In addition to these migration processes which seemed to be natural after many years of closed borders, very soon Ukraine started facing immigration of so-called "nontraditional" migrants from non-Soviet Republics, of Asian and African origin, including such previously inexistent categories as refugees, asylum seekers, and irregular migrants. Braichevska et al (2004) distinguish three periods of immigration from Asia and Africa to Kyiv: prior to 1991, between 1991 and 1998, and after 1999.

Immigrants from African and Asia who arrived in the first period were coming mostly as students or workers under the agreements between their countries and the Soviet Ukraine, and have stayed after the collapse of the Soviet Union. Those who arrived in the second period came mostly legally in search of employment and better living conditions. In addition, after the collapse of the Soviet Union, Ukraine found itself with deteriorated border protection. This was due to the fact that internal borders between the Soviet republics were only administrative, and non-protected. Immediately after the independence, eastern and northern borders of Ukraine remained open for foreigners. Delays in creation of the proper border controls, as well as deficiencies in the legislative framework, in the immigration policy and in visa regimes, made Ukraine a large transit point for immigrants from Asia and Africa, mainly on their way to other European countries (Malynovsky, 2000). Even up till now, Ukraine contines having "assymetric borders": it has a strongly protected border on the west, notably with the European Union countries, and it has much weaker borders on the south and on the east, with the former Soviet Union republics and along the shoreline (ICMPD, 2005).

The period of immigration to Ukraine that started after 1999 is characterized by a decreased

inflow of foreigners, mainly due to significant improvements in the border controls, a new visa regime, and policies against illegal immigration. However, currently, Ukraine started facing the challenges of new phenomena: in 2007, Ukraine became a direct neighbour of the European Union. The new types of migration that it faces nowadays are no longer related to settlement, but primarily to transit towards the European Union. This situation requires creating and implementing new approaches towards migration policies with the European Union regarding Ukraine's own nationals and the nationals of other countries, as well as migration policies with third countries.

Several authors (Malynovska, 2006; Oliynik, 2006; Ivakhniuk, 2006) distinguish the following flows of migrants in Ukraine:

1) nationals from the CIS (notably Byelorussians and Russians of Chechen origin);

2) nationals from other Asian countries (predominantly from China, India, Afghanistan, Pakistan, Syria, Vietnam, Bangladesh, Iraq, Iran, and Somalia);

3) Ukrainians themselves, who move mostly towards the European Union.

According to Futo, Jandl, and Karsakova (2005), as well as the Yearbook on Illegal Migration, Human Smuggling and Trafficking in Central and Eastern Europe (2003), almost half of all border violators are Ukrainians themselves. Figure 5 shows the distribution of border violators by main countries of origin. Ukrainians are followed up by Moldavians and Russians, all other major violators come from Asian countries.

In addition to those apprehended, even more people are rejected at the border: over twenty thousand persons in the year 2002, and over twenty three thousands in the year 2003 (see Figure 6). According to the ICPS/ISP Report (2006), these official numbers represent at best five to ten per cent of the actual figure. Moreover, according to Malynovska (2006), in 2005, additional 25,000-28,000 irregular migrants are identified by internal control.

6.2 Overview of Migration Situation in Morocco

In words of Hein de Haas (2005), Morocco is "an outstanding example of an emigration country". Its emigration history to France started during the colonial times and the First World War, when Moroccans were recruited as soldiers and laborers in France (Castles, 2007). The main period of modern emigration starts in the 1960-es and 1970-es, when governments of France, Germany, Belgium, and the Netherlands conclude bilateral labour-recruiting agreements with Morocco to employ its laborers in sectors which experience labour shortages. As documented by Castles (2007), and Arango and Martin (2005), these guest programs ensured a legal residential and employment status as well as protection of workers. Moroccan government has been an active participant to the programs and highly encouraged guest emigration, both to

Figure 6: Persons Rejected at the Border of Ukraine, by Main Countries of Origin (Source: Yearbook on Illegal Migration, Human Smuggling and Trafficking in Central and Eastern Europe 2003)

Citizens of the following countries in 2002	Number of rejected persons in 2002	Citizens of the following countries in 2003	Number of rejected persons in 2003
Azerbaijan	1 867	Russia	2 139
Russia	1 576	Moldova	1 682
Moldova	1 539	Tajikistan	943
Tajikistan	1 168	Azerbaijan	882
Turkey	551	Turkey	877
Germany	475	China	626
Bulgaria	404	Germany	500
Kyrgyzstan	401	Uzbekistan	420
China	397	Kazakhstan	410
Italy	311	Armenia	382
Total (of any country of origin)	20 710	Total (of any country of origin)	23 101

provide employment opportunities to its natives, to use remittances as contributions to the economics development of the country, and to encourage politically less desirable individuals to leave (de Haas, 2005). These agreements were terminated (unilaterally) by the receiving states in the early 1970-es, however, contrary to the expectations, the vast majority of Moroccans has stayed abroad. Moreover, family reunifications stimulated further emigration, and even nowadays second and third generation emigrants still marry in their ancestral land, thus perpetuating emigration. Currently, Morocco is the largest emigration country of North Africa, with about 2.6 million emigrants in Europe alone, which equals about ten per cent of its population, and with an annual outflow at about 100,000 (Castles, 2007, de Haas 2007).

In the past two decades Morocco also started to become a transit country for migrants from Sub-Saharan countries on their way to the European Union. According to various estimates (ILO Report 2002, Wender, 2004, de Haas, 2007), in the year 1999, 12499 migrants were apprehended on Morocco-Algerian border, out of which about 2000 were Algerians. In 2004, total apprehensions by Moroccan border patrols constituted about 27,000 individuals, and about 30,000 in 2005. The vast majority of these migrants come from Mali, Nigeria, Ghana, Senegal, but also from Algeria and from Asian countries. Many of these immigrants are hoping to further go to Europe, thus using Morocco (especially Tanger port) as a transit point. In case when they do not succeed in crossing, they stay and attempt to settle in Morocco, although their continued stay is considered illegal by local authorities.

There are a few peculiarities of the Moroccan case that contribute to the aggravation of

current situation. On the one hand, the borders of Morocco with Maurinatia are fully sealed due to the past conflicts. The border with Algeria is enforced starting from 1994 (ILO Report, 2002), however, its borderline is not fully defined yet. This is one of the reasons why the majority of irregular transit migrants come to Morocco through this border (close to Oujda) and why it is virtually impossible to fully control it. Other entry is possible either through airports or sea. At the same time, there is no visa requirement for entry with eight African countries of origin: Cote d'Ivoire, Congo, Guinea, Lybia, Mali, Niger, Senegal, and Tunisia, thus, there is virtually no legal way to prevent the entry of these nationals into the country.

In recent years, the European Union as a whole, but also individual states, notably Spain, Italy, and France, have expressed strong concerns about high migration rates of Moroccans as well as transit migrants through Morocco (and through other North African countries) that aim to reach Europe. The Gibraltar crossings as well as crossings to Spanish enclaves Ceuta and Melilla have raised particular concern.

6.3 Ukrainian and Moroccan Migration Policies

The changing patterns of migration, and in particular, the rapid transformation of both Ukraine and Morocco into transit migration countries, as well as into destination countries, came as a surprise to their policy-makers. For example, Ukraine is only trying to currently set up its migration priorities and policies. This is complicated by the fact that to date, there has not been a migration strategy developed by its government, and migration issues are dealt with by several governmental bodies and structures, which, due to the absence of a unified strategy, do not always coordinate their efforts or put similar priorities (ICPS, 2006). In their turn, Moroccan authorities choose more often then not to deny or officially silence the fact of facing transit migration (ILO Report, 2002).

It is important to distinguish three sets of migration policies of Ukraine and Morocco:

1) Government policies with respect to own nationals abroad

2) International cooperation in the sphere of border protection, migration management coordination, and readmission

3) Visa regimes and policies with respect to other non-European neighbours

4) Policies regarding the living conditions and human rights of irregular immigrants.

To start with, the State of Ukraine has no specific policies regarding its nationals abroad. The Law of 1994 "On the Procedures for Exiting Ukraine and Entering Ukraine by Ukrainian Citizens" postulates the right of every citizen of Ukraine to enter or exit Ukraine, a big change from the Soviet times, when prior to leaving the country each citizen had to obtain a permit from authorities (Malynovska, 2007). In addition, the Law of 1991 "On Population Employment"

provisions that citizens of Ukraine have the right to work abroad. However, no further steps have been taken by Ukrainian government neither to encourage nor to discourage migration of Ukrainian nationals, nor to benefit from migration.

In contrast, the government of Morocco has long realized its migration potential. Ever since the start of guest programs in the 1960-es it has played an active role in encouraging emigration (though not always for purely altruistic or economic reasons, but also for political ones). Most recently, it has also actively engaged into promoting remittances for development. Morocco sees migration as an important instrument for development, that helps alleviating poverty and unemployment, and increases investment possibilities at home (Hoebink et al, 2005). Following up an epoch of state control over its immigrants, discouraging integration, and stressing the deep links of Moroccans abroad with their motherland, as well as their potential return (de Haas, 2007), in the early 1990-es Morocco has shifted to "soft-control" policies, supporting double citizenship and promoting the rights of Moroccan Residents Abroad[14], celebrating migrants at home as builders of the Moroccan nation, and simplifying administrative procedures for remittances and investments. A special Ministry for Moroccans Abroad was established (later incorporated into the Ministry of Foreign Affairs), as well as The Fondation Hassan II to support cultural and social activities among migrants.

In the past decade the European Union countries have started raising concerns regarding the number of immigrants coming illegally from Morocco and Ukraine, as well as transit migrants coming through their territories. The initial response was to intensify border controls, but very quickly European countries started also 'externalzing' border controls (de Haas, 2007, quotes as is in the original), putting pressure on these countries to engage into border protection and readmission. As a result, Morocco has signed bilateral readmission treaties with Spain in 1992 and with Italy in 1998 (ILO Report, 2002). Importantly, Morocco readmits only its own nationals. Readmissions take place mostly in exchange for development aid, support for border protection, but also to prevent the limitation of temporary work permits granted to the nationals of Morocco.

In comparison, the history of readmissions by Ukraine is very new: its parliament has ratified the readmission agreement with the EU on January 15, 2008. Three differences distinguish this agreement from the agreements signed by Morocco: a) the former was signed between Ukraine and the EU, rather than between Ukraine and individual countries; b) ratification of this agreement was necessary and compulsory to ratify the visa facilitation agreement between Ukraine and the European Union rather than ensure the issue of working permits to Ukrainians who are already abroad; c) Ukraine agreed to readmit both its nationals and the nationals of

---

[14]An official terminology

third countries, who have entered the EU from Ukraine.

The readmission treaty between Ukraine and the EU reflects recent unified approach of the European Union to the migration policy. However, this agreement also implies greater responsibility on the part of Ukraine, especially in the question of readmitting third country nationals. Currently, Ukraine has also signed readmission treaties with Hungary, Poland, Slovakia, Moldova, Switzerland, Latvia, Lithuania, Uzbekistan, Turkmenistan, Bulgaria, Georgia, and Turkey, but not with China, India, Vietnam, Bangladesh, or Pakistan, from which immigrants originate. The main country of origin of transit migrants, Russia, refuses even to initiate readmission talks, claiming that it has no financial possibility to secure its borders and to pay for the legal and transportation support of its nationals. This puts Ukraine into a difficult situation of dealing itself with readmitted third-country nationals.

Morocco opposes similar agreements of readmitting third-country nationals since it would be hard to implement them for political reasons. In addition, it would be hardly possible to prove the origin of transit migrants. In case of Ukraine, it is possible to have physical evidence of trespassing, since migrants are crossing the land border, while transit migrants from Morocco come by sea, thus making it hard to prove their point of departure.

Thus, the next big question for both Morocco and Ukraine is management of the entry (and exit) of third country nationals. As mentioned above, Ukraine still has asymmetric borders: well enforced from the West, on the border with the EU, its borders on the east and north are still the inheritance from the Soviet past, when borders with Russia and Byelorussia were only internal. Currently, these borders suffer from the inadequate control. According to the ICPS (2006) report, the number of border patrol units is one per 30-35 kilometers of the state border, almost twice as low as the European standard. Moreover, even the existing border patrols have inadequate equipment to detect irregular movements. As a result, the main irregular migration flows into Ukraine originate from this part of the border. In addition, Ukraine does not have a visa regime with the nationals Russia and Byelorussia, thus also allowing a legal entry into Ukraine for further illegal attempts to cross the Ukraine-EU border.

For Ukraine, introduction of visa regimes with Russia and Byelorussia is difficult, if not politically impossible, even though the introduction of stricter requirements, such as possession of a valid passport when entering Ukraine from CIS countries, is a pre-condition for a more liberal visa policy of the EU towards Ukraine (ICMPD, 2005).

Improving border protection with these countries is not easy either, and in addition, it is very costly. ICPS (2006) report notes that in 2006 in Ukraine State Budget allocated UAH 924 mln (about EUR 130 mln) to the State Border Service. However, this was enough to cover only 60% of its operational costs. Total international technical assistance from the EU, USA, and international programs of UNDP and IOM reach, on average, about USD 5 mln a year. Budget

Figure 7: Projects Financed by European Commission Budget for Ukraine, millions EUR

Area	2000	2001	2002	2003	2004	2005	Total
Border management	2.70	11.5	14.0	3.0	8.04	16.6	55.84
Asylum and migration	0.18		2.5	5.4	0.50		8.58
Human trafficking			1.9				1.90
Drug trafficking		2.2	2.5	1.5			6.20
Total							72.52

Figure 8: Source: ICPS, 2006

funding for combating illegal migration in Ukraine from the EU has been highly volatile and also low (Figure 7), especially compared to the investment of EUR 60 bln in the years 2001-2006 for the enforcement of the Polish border. It is thus clear that in these circumstances it is up to Ukraine to secure its borders itself, or to face increasing entry of migrants who are not able to cross further to the EU, or who are returned to Ukraine. In face of "fortress Europe" the only choice Ukraine has is to enforce its borders, despite the political and economic difficulties associated with this choice.

To contrast, Morocco does not have visa regimes with eight African countries, and, like in Ukraine, it is extremely difficult politically to initiate them. This is because in the past years Morocco has been trying to invest into expanding its sphere of influence and also developing closer ties with these African countries.

More severe border protection is expensive as well. In 2001, Morocco handed in an official demand to the European Union to divide the burden of migration control. Starting from 2003, Morocco has been patrolling its waters in cooperation with Spain in return of USD 390 mln of aid (de Haas, 2006). It has also implemented new laws postulating severe punishments for illegal migration and human smuggling (Elmadhad, 2004).

The European Union has been increasingly encouraging cooperation in this area, within the European Mediterranean Association Agreements and the MEDA (Mesures d'Accompagnement) program to combat illegal migration and its routes. According to de Haas (2007), for 2000-2006, EUR 426 mln were allocated to Morocco through the latter program, 27 percent of which for control of irregular immigration and rural development programs. Migration also became one of the priorities of the National Indicative Program for the years 2002-2004, for which the

European Commission allocated EUR 45 mln to provide institutional support and support for border protection (Hoebink et al, 2005).

Despite these efforts, in words of Hoebnik et al (2005), it is difficult for Morocco to play the role of the European 'border patroller' (quotes as in the original). Increasing the entry restrictions to Morocco seem to be politically unfeasible, while it becomes increasingly costly to protect the exit. High border controls have lead to the professionalization of smuggling, and to the diversification of routes, rather than to the decrease of migration, as acknowledged by various authors (for example, Lahlou, 2005, Wender, 2007). This leads to the increase in the areas that need to be surveyed in the European Union, too. There is also an important issue of efficacy of such protection. Given the fact that controlling further the entry from Sahara is too costly, knowing how difficult it is to patrol the whole Mediterranean, and also knowing that it is virtually impossible to prove that transit migrants have originated from Morocco, in fact, Moroccans have little interest to stop the exit of transit migrants or to enforce its borders further. Thus, regarding the cooperation efforts, there is little credibility that Morocco will comply with all the agreements. At the same time, while the European Union is considering the creation of the 'common Euro-Mediterranean space', Moroccans also doubt the credibility of these claims as Europe still opposes the large-scale entry of Moroccans.

Thus, relating the case of Morocco to the predictions of the theoretical model in this paper, it is evident that while Europe is not able to fully control entry of transit migrants, Morocco is using this fact to keep its efforts of border protection relatively low. In fact, it even finds itself in a position of demanding aid for combating migration by threatening to send even more migrants to the European countries. As such, it's position in cooperation negotiations is stronger than that of Ukraine.

At the same time, there are indications that Morocco fears the Eastern European integration, as it may decrease emigration potential for Morocco (Hoebnik et al, 2005). Since emigration of its own nationals continues being an important priority for Morocco and for its development, the country continues, at least nominally, to express interest in combating illegal migration.

7   Conclusions

This paper offered a basic theoretical model of migration management when not only final destination, but also transit migration countries are involved into migraton management. It provided examples of several possible georgaphical locations and migration scenarios and suggested why it is so difficult to design optimal migration policies: different equilibria, not all of which are sustainable, can take place. In cases when both direct and transit migration from sending countries is possible to final destination countries, an equilibrium of strongly enforced borders by both

destination and transit countries arises. In contrast, when only transit migration is possible, there may be scope for either an equilibrium in which both destination and transit countries protect their borders, or an equilirium in whcih cooperation between them may take place. Such cooperation is not stable, however, in the long run, it may prove to be more benefitial for destination and transit countries tan non-cooperation.

The predictions of the model were also set against the experience of such transit migration countries as Morocco and Ukraine.

In case of Ukraine and the European Union, currently, an equilibrium is emerging in which both countries are striving to protect their borders.

The majority or transit immigrnats through Ukraine could have used alternative routes, such as coming to the EU through Russia, or Byelorussia. The border between the EU and Ukraine is a land border, and it is relatively easy to secure it, as well as to prove that transit migrants came through Ukraine. This means that the EU is able to efficiently reduce the number of irregular entrants through Ukraine by stopping them at this border and returning them to Ukraine. Given this, the only response of Ukraine to the enforced EU border is to enforce its borders, too, otherwise it risks receiving an increasing number of irregular immigrants. Currently, potential cooperation (such as in terms of easier proceedures for the entry of Ukrainian nationals) is possible only at the expence of readmission of Ukrainians and third country nationals by Ukraine.

In contrast, the case of Morocco is less equivocal, even though currently, its relationship with the EU as an entity, and with several EU countries in particular, is also an equilibrium in which all parties protect their borders. On the one hand, immigrants originating from Sub-Saharan countries have to pass Morocco before they can enter the EU. On the other hand, increased border controls lead to the diversification of migration routes, which now lie also through Alger, Tunisia, and Lybia. In addition, it is much harder for the EU to secure its sea border, and also to prove that transit migrants have originated from Morocco. This makes Morocco much more reluctant than Ukraine to put additional effort to improve its border protection. Compared to Ukraine, which has to comply with the EU demands to combat illegal migration in return for preferential treatment of its coutry nationals, Morocco has more power to demand aid but also to renege on cooperation agreements.

This latter point suggests that, in order to effectively combat illegal migration from Sub-Saharan countries, the European Union has to cooperate simultaneously with all North African countries. More genrally though, it points out to the fact that increased border control will not help solving the problem of illegal migration, but rather, push it further away. Professionalization of migration only increases the area than needs to be secured, without effectively decreasing the number of irregular entrants.Also, importantly, the degree of frontier openness has implications for migration decisions themselves: tighter borders reduce flows but tend to accumulate stocks

of immigrants (Magris and Russo, 2001).

One further insight from the cross-country comparison suggests that differences in technologies of controlling may matter. If, for instance, the destination country does not have the superior technology of controlling migration, the transit country ma take this into account when deciding on its protection efforts. This issue should be investigated in future research. In addition, there is a potential scope for rivalry between transit migration countries for cooperation with the final destination country, which also needs to be addressed in a more systematic way.

Lastly, it is important to remember that the majority of illegal migration stems from the legal entry and consequent overstaying of visas, not from illegal border crossings. More coherent approach, addressing additionally these types of illegal migration, is also needed.

References

[1] Arango J., and Ph. Martin "Best Practises to Manage Migration: Morocco-Spain". International Migration Review. Vol 39 Number 1. Spring 2005: 258-269.

[2] Baroos L., Lahlou M., Escoffier C., Pumares P., Ruspini P. "L'immigration Irrégulière Subsaharienne à travers e vers le Maroc". Cahiers de Migrations Internationalles 54F, ILO, 2002.

[3] Benhabib J., and Jovanovic B. "Optimal Migration: A World Perspective". New York University Working Paper. January 2007.

[4] Borjas, George J., "The Economics of Immigration," Journal of Economic Literature, December 1994, 32, 1667-717.

[5] Borjas, George J. and Bernt Bratsberg, "Who Leaves? The Outmigration of the Foreign-Born," The Review of Economics and Statistics, September 1994, 165-176.

[6] Braichevska O., H. Volosiuk, O. Malynovska, Y. Pylynskyi, N. Popson, and B. Ruble "Non-traditional Immigrants in Kyiv." Comparative Urban Studies Project Report. Woodrow Wilson International Center for Scholars, Washington, D.C. 2004.

[7] Card, D., Dustmann Ch., and Preston I. "Understanding Attitudes to Immigration: The Migration and Minority Module of the First European Social Survey". CREAM Discussion Paper Series. No 03/05. 2005.

[8] Castles, S. "Comparing the Experience of Five Major Emigration Countries". IMI Working Paper No 7, 2007.

[9] Djajic S. "Dynamics of Migration Control". Journal of Population Economics. 1(2): 45-61. 1999.

[10] Dustmann, Ch., and Preston I. "Racial and Economic Factors in Attitudes to Immigration", IZA Discussion Paper, No. 190, 2000.

[11] Elmadmad, K. "La nouvelle loi marocaine relative à l'entrée et au séjour des étrangers au Maroc, et à l'émigration et l'immigration irrégulières." Florence: European University Institute, RSCAS. 2004.

[12] Epstein G., and Nitzan S., "The Struggle Over Migration Policy", IZA PD 1533, March 2005.

[13] Ethier W. "Illegal Immigration – The Host Country Problem", American Economic Review. Vol. 76(1): 56-71. 1986.

[14] Futo P., M. Jandl, and L. Karsakova, "A Survey of Illegal Migration and Human Smuggling in Central and Eastern Europe", in Migration and Ethnic Studies, Vol. 21, No 1-2; June 2005, pp.35-54.

[15] Garcia A. S. "Does Illegal Immigration Empower Rightist Parties?" Journal of Population Economics. 19: 649-670. 2006

[16] Glomm G., and Kaganovich M. "Distributional Effects of Public Education in an Economy with Public Pensions".

[17] Guriev, S. and Friebel G., "Smuggling Humans: A Theory of Debt-Financed Migration". Journal of European Economic Association, December 2006.

[18] Hanson G.H., Robertson R., and Spilimbergo A. "Does Border Enforcement Protect US Workers from Illegal Immigration?", The University of Michigan School of Public Policy DP No 438. February 1999.

[19] Hatton, Timothy J., and Jeffrey G. Williamson, "What Fundamentals Drive World Migration?" NBER Working Paper Series, WP 9159, September 2002.

[20] de Haas H, "Between Courting and Controlling: The Moroccan State and 'its' Emigrants". Centre on Migration, Policy and Society Working Paper No. 54, University of Oxford, 2007.

[21] de Haas H, "International Migration, Remittances, and Development: Myths and Facts". Third World Quarterly, 26(8): 1269-1284.

[22] de Haas H, "Morocco: From Emigration Country to Africa's Migration Passage to Europe" Country Profile, Migration Information Source. 2006.

[23] de Haas H, "The Myth of Invasion: Irregular Migration from West Africa to the Maghreb and the European Union". IMI Research Report, October 2007.

[24] de Haas H, "Migrants Change the Appearance of Morocco". MDR Working Paper No 5. July 2005.

[25] de Haas H., "Morocco's Migration Transition: Trends, Determinants and Future Scenarios", Global Migration Perspectives, No. 28. 2005.

[26] Hoebink, P., Deuss M, de Haas H., and Wagemans G. "The Coherence of EU Policies: Perspectives fromt he North and the South". European Union's Poverty Reduction Effectiveness Programme, Commissioned Study, Brussels, March 2005.

[27] ILO Report "L'Immigration irreguliere subsaharienne a travers e vers le Maroc", Eds. L. Barros, M. Lahlou, C. Escoffier, P. Pumares, P. Ruspini. Cahiers de Migrations Internationales. Geneve, 2007.

[28] International Center for Policy Studies and Institute for Public Affairs. White Paper "Ukraine's Policy to Control Illegal Migration", June 2006.

[29] Ivakhniuk I., "Migration in the CIS Region: Common Problems and Mutual Benefits". International Symposium on International Migration and Development. Turin, Italy, June 2006.

[30] Magris, F., and G. Russo, "Frontier Openness and Optimal Migration Duration". DELTA Working Paper 2001-12, DELTA. 2001.

[31] Malynovska O. "Caught Between East and West, Ukraine Struggles with Its Migration Policy". Migration Information Source. Ukraine Country Profile. January 2006.

[32] Malynovska O. "Migration in Ukraine: Challenge or Chance?" National Institute of International Security Problems Archives, Vol. 5, Spring 2007.

[33] Malynovska O. "The Problem of Illegal Migration and Trafficking in Persons in Ukraine". Scientific Presentation, Kyiv, Centre for Technical Cooperation for Europe and Central Asia – International Organization of Migration. 2000.

[34] Mediterranean Migration Report", (Ed) Philippe Fargues, 2005.

[35] Lahlou, M. "Les migrations irregulieres entre le Maghreb et L'Union Europeenne: evolutions recentes", CARIM Rapports de Recherche, 2005.

[36] Law of Ukraine "On the Procedures for Exiting Ukraine and Entering Ukraine by Ukrainian Citizens", 1994.

[37] Oliynik N. "Ukraine as a Transit Country for Irregular Migrants". Paper prepared for the Florence School on Euro-Mediterranean Migration and Development, EUI, Florence, 2006.

[38] Overview of the Migration Systems in the CIS Countires. International Center for Migration Policy Development. Vienna. 2005.

[39] Sandell, R "Where They Pushed Or Did They Jump? The Rise in Sub-Saharan Immigration", Elcano Royal Institute, Demography and Population WP N° 133, 2005.

[40] Skeldon R "On Mobility and Fertility Transitions in East and Southeast Asia". Asian Pacific Migration Journal, Vol. 1 (2): 220-249. 1992

[41] Stark O., Casarico A., and Uebelmesser S. "On an Optimal Selective Migration Policy when Information is Asymmetric and Incentive Count". WP 2007(a).

[42] Stark O., Casarico A., Devillanova C., and Uebelmesser S. "International Migration, Human Capital Formation, and the Setting of Migration-Control Policies: Mapping the Gains". WP 2007(b).

[43] Tassinopoulos, A., and H. Werner, "To Move or Not to Move – Migration of Labor in the European Union," IAB Labor Market Research Topics, 35, 1999.

[44] Wender, A-S. " La Situation Alarmante des Migrants Subsahariens en Transit au Maroc et les Consequences de l'Union Europeenne". Cimade, Paris, October 2007.

[45] Yearbooks on Illegal Migration, Human Smuggling and Trafficking in Central and Eastern Europe. (Eds) Futo P., and Jandl M.. International Centre for Migration Policy Development, Vienna. 2003-2004.

[46] Zelinsky Z. "The Hypothesis of the Mobility Transition". Geographical Review, 61(2): 219-49. 1971.

Appendix 1.   The Case of Transit Migration when Migration Management Rests with Destination Country, and Migrants from S are not Distinguishable from Migrants from T

There may be cases such that individuals from S who were not able to move to D in the first place migrate to T and become similar to natives of T. When both natives of T and newly arrived natives of S then migrate to D, natives of D cannot distinguish the nationality of S, and what matters for them is which border (DS or DT) immigrants crossed, rather than where they are from originall. This implies that the natives of D have the same disutility for the S migrants who come through the DT border, as for the migrants from T. The reason for considering this case is that it allows to understand in a simple manner how the change in the size of migration pressure of one ocuntry affects equilibrium policy outcome given in Summary 1, provided that the size of migration pressure of one ocuntry (T) is affected by migration policies that restrict migration from another country (S).

Given (10), the number of immigrants who reach D from T is given by: $I^{DT}(E^{DT}, Y^T, Y^S, I^{DS}(E^{DS}))$. Substitution of this term into maximization problem (8) and optimization results in the following condition:

$$\alpha \frac{\partial I^{DT}}{\partial E^{DT}} = \beta \frac{\partial I^{DS}}{\partial E^{DS}} + \alpha \frac{\partial I^{DT}}{\partial E^{DS}} \tag{18}$$

Comparing equation (A1) to the benchmark case given by equation (9), there is an additional term $\alpha \partial I^{DT}/\partial E^{DS}$ which measures the disutility D natives' have from more immigrants that cross the DT border as a result of higher border spending on controlling the DS border (i.e., this is the number of S ethnics that cross the DT border). If $\partial I^{DT}/\partial E^{DS} = 0$, that is, if higher spending on enforcing the DS border does not result in transit migration and consequent higher level of crossing the DT border, then (A1) reduces to (9), or the case of no transit migration. However, it is reasonable to suppose that if the transit migration is a possibility, then then $\partial I^{DT}/\partial E^{DS} > 0$: stricter DS border results in lower direct DS crossing but higher transit migration and higher consequent DT border crossing. In principle, since we assumed that those who cross the DT border are ethnically undistinguishable, regardless of whether they are originally from S or from T, $\alpha \partial I^{DT}/\partial E^{DS}$ measures the size effect of increased migration pressure on the DT border.

Summary 5 *In case when both direct and transit migration are possible, when migration management power rests with the destination D country, and when the pool of ethnically S-migrants is undistinguishable from the pool of T-migrants at the DT border, the optimal policy response of D is to have lower marginal border control spending on the DS border, and to have higher marginal border control spending on the DT border.*

Proof. The proof is straightforward from equation (11). Intuitively, by lowering its spending on enforcing the DS border, D allows more nationals of S enter D directly. This also reduces

Figure 9: Extensive Form Representation of the Game with Transit and Direct Migration
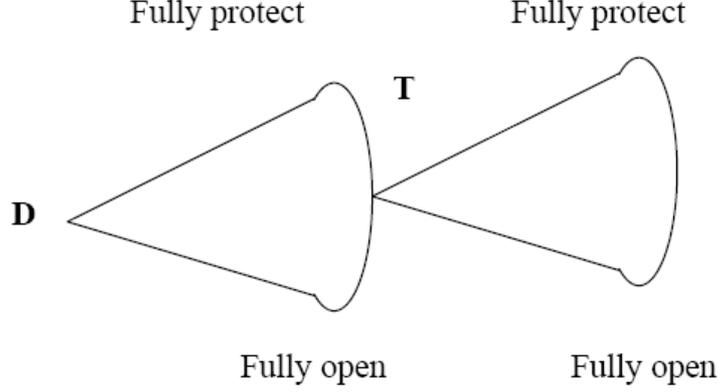
the transit flow and the consequent higher DT crossing by nationals of S. At the same time, since the remaining nationals of S would still try to reach D through T, it is reasonable for D to spend more on enforcing the DT border. ∎

Appendix 2

Appendix 3   To prove the claim that the slope of the reaction function $R_{E^{TS}}(E^{DS})$ is positive, consider the derivative of this reaction function with respect to E^{DS} (keeping in mind that $I^{TS} = f\left(E^{TS}, (Y^S - I^{DS}(E^{DS}, Y^S)\right)$, as in (15)):

$$\frac{\partial E^{TS}}{\partial E^{DS}} = -\frac{t^T w^T}{\gamma \left[\frac{\partial I^{DTS}}{\partial E^{TS}} - \frac{\partial I^{TS}}{\partial E^{TS}}\right]^2} \left[\frac{\partial I^{DTS}}{\partial E^{TS} \partial E^{DS}} * \frac{\partial I^{DTS}}{\partial E^{DS}} - \frac{\partial I^{TS}}{\partial E^{TS} \partial E^{DS}} * \left(-\frac{\partial I^{TS}}{\partial I^{DS}}\right) * \frac{\partial I^{DS}}{\partial E^{DS}}\right]$$

Let us now work through the terms in the brackets of the numerator. The first cross-derivative is a derivative of $\frac{\partial I^{DTS}}{\partial E^{TS}}$, or the efficacy of E^{TS} spending for protecting DT border, with respect to E^{DS}, or spending on the DS border protection. This cross-derivative is negative. This is because an increase in E^{DS} leads to less direct migration from S to D, and more attempted transit migration for a given E^{TS} spending, thus decreasing the efficacy of E^{TS} spending for

protecting DT border from transit migration. This negative term is muliplied by the marginal number of transit entrants with respect to DS enforcement effort, which is positive, since higher spending on protecting direct DS border stimulates higher potential transit, and hence, higher succeeded transit migration. Thus, the whole first term in brackets is negative.

The second term in brackets consists of three parts. The first one has a negative sign analogously to the negative sign of $\frac{\partial I^{DTS}}{\partial E^{TS}\partial E^{DS}}$, however, it is larger in magnitude. This is because for a given amount of E^{TS} spending, efficacy of direct TS border protection is reduced more than the efficacy of the transit DTS border by an increased E^{DS} spending. The second term is positive: more direct DS migration is associated with less TS migration; multiplied by a negative sign the result is negative. The final part is negative by assumption: higher spending on border controls decreases direct entry. Taken together, the last term in brackets is positive, rendering the whole term in brackets negative, and the whole equation positive.

To understand the shape of the reaction function $R_{E^{DS}}(E^{TS})$, consider the following. If $E^{TS} = 0$, E^{DS} does not have to be, and it takes some non-negative value, limited by Remark (5), and defined by equation (21-22) and Proposition (3). The amount of spending E^{DS} accounts for the possible transit migration of S through the DT border. If $E^{TS} > 0$, the potential residual mass of immigrants from S who were not able to migrate to D directly, and who are attempting the DT border crossing is not considerably reduced, since the TS border is no longer open. Thus, D needs to spend less on the DT border protection (which gives a negative slope to the $R_{E^{DT}}(E^{TS})$ reaction function. Consequently, it has more funds to spend on the DS border protection, which gives the positive slope to the $R_{E^{DS}}(E^{TS})$ reaction function.

Appendix 4 The proof is straighforward from Figure (3):

When D is open, T chooses between having a positive spending on border protection, $E^T = E^{TS}$ and zero number of immigrants from S, $I^{TS} = 0$ (since all migrants will be able to transit to D), versus having no spending, $E^T = 0$, and having no immigrants, $I^{TS} = 0$. Clearly, T will prefer to stay open.

When D is closed, T chooses between zero spending on border enforcement, $E^T = 0$ and total residual number of immigrants from S who were not able to accomplish their transit, $I^T = I^{TS} = Y^S - I^{DTS}$ versus a limited number of immigrants $I^T = I^{TS} - I^{DTS}{}'$ but at a cost $E^T = E^{TS}$. Under the initial assumption that some migration at a cost is better than unlimited migration at no cost, T will choose to protect its borders, rather than have the total pool of $S's$ potential migrants on its territory.

If T is open, the choise of D is between the total number of potential entrants from both T and S, $I^D = Y^S + Y^T$, at no cost, or a restricted entry at a cost: $E^D = E^{DT}$, $I^D = I^{DT} + I^{DTS}$,

and the second otcome will be prefered.

Finally, if T protects its borders, D is choosing between costless entry of potential immigrnats from T and those few immigrnats from S who were able to enter T in the first place, versus costly entry of a selection of immigrnats from T and S: $I^D = I^{DT} + I^{DTS}{}'$. If condition (18) holds, $D's$ preference is to open up, which means that the game has no equilibrium in pure strategies. If the condition (18) does not hold, the equilibrium in oue strategies is for both T and D to protect their borders.