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Endogenous Immigration Policy and Trade Liberalization

Fabien Candau*

This article analyses how trade liberalisation and immigration can potentially affect the welfare of native skilled and unskilled workers and how this expected impact plays on immigration policy. The novelty resides in the attempt to make endogenous immigration restrictions by integrating swing voters in a model of geographical economics with two kind of immobile workers (skilled and unskilled). It is shown that trade liberalization can lead the winner candidate to increase quota on immigration.

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Este artículo analiza cómo la liberalización de intercambios y la inmigración pueden afectar al bienestar de los trabajadores nativos cualificados y no cualificados, y cómo este impacto juega en la política de inmigración. La novedad reside en el intento de hacer endógenas las restricciones de inmigración mediante la integración de los cambios en los votantes, en un modelo de economía geográfica con dos tipos de trabajadores -cualificados y no cualificados-. Se demuestra que la liberalización puede llevar al candidato ganador a aumentar la cuota de inmigración.

Keywords: Economic geography; Immigration policy.

JEL classification: F12; R13.

1. INTRODUCTION

Regarding immigration restrictions and trade liberalization, Hatton and Williamson (2005) have pointed out an interesting dual policy paradox:

“Today’s labor-scarce economies have open trade and closed immigration policies, while a century ago they had just the opposite, open immigration and closed trade policies. Why the inverse policy correlation, and why has it persisted for almost two centuries?” Hatton and Williamson (2005)

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This is a paradox because immigration policy designed to protect unskilled can be undone by free trade (and *vice versa*).

To study this question, economists have two theoretical tools. On the one hand, perfect competition models –the Heckscher-Ohlin and Mundell (1957) model– from which the dual policy paradox has been built. On the other hand, models with increasing returns from the New Economic Geography (NEG) literature. This literature is the sole to treat simultaneously immigration and trade in general equilibrium models with imperfect competition and thus represents an interesting analytical tool. But if the NEG has investigated many public economics issues¹, it has totally neglected immigrations restrictions by focusing its attention on regional migration (Fujita et al. (1999, Part II)). Thus all models in the field use the assumption of *laissez faire* concerning migration.

To fill this gap and to analyze trade liberalization and immigration policy, we build a model on Krugman (1991) and Forslid and Ottaviano (2003), where individuals are mobile between countries according to real wages (there is no public goods).² Only a fraction of skilled workers are mobile and urban costs are introduced. Then, in contrast with the NEG literature we obtain a model where individuals have not a trivial point of view regarding migrations. Indeed in Krugman (1991) immobile workers in the Core are always in favour of immigration. More migrants in the increasing returns activities generate a decrease in prices, and thus lower costs of living for natives. Moreover because these natives work in a different sector than migrants (a traditional one under perfect competition) their nominal wages are not affected by immigration. These two effects make migration and agglomeration unambiguously desirable for them. Neary (2001) rightly criticizes this result.³

In the present work, the impact of migration is not so clear, the intro-

¹ Baldwin et al. (2003) devotes an entire book on economic geography and public policy.

² This is obviously a reduction of the reality since various determinants of migration are occulted among which unemployment, opportunities of good job, public services. However this simplification can be justified by some empirical studies on European migration such as those of Fouarge and Ester (2007), Bonin et al. (2008) and De Giorgi and Pellizzari (2006) who tend to show that wages and costs of living are significant factors of migration in comparison to welfare payments or better public services.

³ With its usual elegance, Neary has pointed out that “the model turns Sartre’s “Hell is other people” on its head”. See also Candau (2011) and Gagné (2007).

duction of urban features implies that migration affects land rents and commuting costs and thus impacts negatively on the costs of living in the Core. Concerning the link between migration and political choice, we propose a swing voter's model à la Lindbeck and Weibull (1987)⁴, the votes of floating voters are considered to be “up for grabs” and play a significant part in elections.⁵

We show that trade liberalization can lead the winner candidate to raise quota on immigration. Indeed the welfare of unskilled native workers can be improved by migration, if and only if the migration flow is small enough. In the opposite case, trade liberalization and migration increases urban costs and reduces the welfare of unskilled. Concerning immobile native skilled workers, the public policy that consists to open borders can be attractive for these voters but the level of trade integration matters a lot. Lastly we show that depending of trade costs, quotas are not always fully utilized, in particular when dispersion is a stable equilibrium for migrants i.e for low and high trade costs. However around free trade, quotas are too restrictive from the point of view of southern skilled workers.

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2. THE FRAMEWORK

2.1. THE SPATIAL ECONOMY

There is two nations called North and South (no superscript for the North and a star “*” for the South). The space in each nation is described by countryside and by a monocentric city. In the countryside the background sector Z produces the homogenous good under Constant Returns to Scale (CRS) in a perfectly competitive environment using a labour force (L_Z) which is totally immobile. The homogenous good is taken as the numeraire, its output is freely traded; so that its price is 1 in both countries. In

⁴ This kind of setting has already been use by Robert-Nicoud and Sbergami [2004] to study how swing voters impact on the level of subsidies given to mobile capital. Here we analyse how swing voters impacts on immigration policies.

⁵ That was for instance the case in France with the “Sarkozy-Lepenniste” voters. Indeed during the campaign 2002, Le Pen a right extremist reach the second round of the presidential election. But this electoral strength was not sustainable in the long run because composed of swing voters, who have changed their mind for the Sarkozy candidate and its campaign on security and immigration policy which led him to the victory in 2007.

the city the manufacturing sector M produces the differentiated product under increasing returns to scale (IRS) in a monopolistically competitive environment *à la* Dixit and Stiglitz (1977). This sector uses workers in the mainland and another kind of workers (denoted h) who reside in city. These workers h differ along one dimension: mobility. Some of them are mobile from one city to the next (h_M) while others (h_I) are not. All workers of type h reside in a monocentric city and, therefore, have to pay commuting costs and land rents *à la* Alonso (1964).

Workers of type h are spread along a segment which represents the city. Immobile workers h_I are close to the middle of this segment, called the Central Business District (CBD), while migrants are located after them. The city grows by urban sprawl i.e. each new workers expand the city (the segment) by a unit of land. All jobs are located in the CBD thus every workers need to commute. These commuting costs have a direct impact on their labour force. As each of them owns one labour unit, the total amount supplied by a worker who lives on the fringe of the CBD (i.e. at location x , the CBD being at location 0 by convention) is:

$$s(x) = 1 - 2\theta|x|$$

where θ is workers' commuting cost level, $|x|$ measures distance to CBD. Furthermore, as the number of workers in one city is the sum of mobile and immobile, the total labour supply net of workers' commuting cost in one city is equal to:

$$S = \int_{-(h_I+h_M)/2}^{(h_I+h_M)/2} s(x)dx = (h_I + h_M)(1 - \theta(h_I + h_M)/2)$$

As land rent at both edges of the segment is normalized to zero, if w is the wage near the CBD, then wage net of commuting costs earned at both edges is:

$$s((h_I + h_M)/2)\omega = s(-(h_I + h_M)/2)\omega = (1 - \theta(h_I + h_M))\omega$$

Workers who live on the fringe of the city receive such a low net wage but pay no land rent. On the contrary, workers who live near the CBD do not pay significant commuting costs, but the price of the services yielded by land is higher in this location. Thus, the increase in real wage near central places offsets land rent. A move from the suburb to the CBD

implies a decrease in commuting and therefore an increase in net wage. In other terms, the following condition must be verified:

$$s(x)\omega - R(x) = (1 - \theta(h_I + h_M))\omega$$

where $s(x)$ is the total amount supplied by an entrepreneur who lives on the fringe of the CBD, $R(x)$ is the land rent prevailing at x , while the right-hand side represents the wage net of commuting costs earned at both edges. Finally the Aggregate Land Rent (ALR) is given by:

$$ALR = \int_{-(h_I+h_M)/2}^{(h_I+h_M)/2} R(x)dx = \frac{\theta(h_I + h_M)^2 \omega}{2}$$

Non salaried income is given by:

$$\frac{ALR}{h_I + h_M} = \frac{\theta(h_I + h_M)\omega}{2}$$

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This framework has been used (among many) by Krugman and Livas (1996), Murata and Thisse (2005) and Behrens and Robert-Nicoud (2008). Lastly Thisse (2010) also calls for more urban micro-foundations in the NEG. However we do not integrate this monocentric city just for academic or scholastic reasons, but because agglomeration of migrants are much more meaningful at the urban level because it impacts on price and wages.

2.2. PREFERENCES

Tastes for a typical individual take a Cobb-Douglas form in which he spends a share μ of its income on a composite good M and the remaining share on the homogenous good Z . The composite good M comes in N different varieties m . Tastes over the different varieties are captured by a CES, “love-for-variety”, functional form, with an elasticity of substitution σ between any pair of varieties. Utility is given by:

$$U_h = M^\mu Z^{1-\mu}$$

where

$$M = \left[\int_0^N m_i^{\frac{\sigma-1}{\sigma}} di \right]^{\frac{\sigma}{\sigma-1}}$$

with the budget constraint given by:

$$PM + p_Z Z = Y,$$

where p_Z is the price of the agricultural good and P the price index of those varieties:

$$P = \left[\int_0^N p_i^{1-\sigma} di \right]^{\frac{1}{1-\sigma}}$$

which is a decreasing function of the number of varieties produced. p_i is the price of a typical variety i . The impact of N on the price index is influenced by the elasticity of substitution. The more differentiated the product varieties, the greater the reduction in the price index. The maximization problem yields the following uncompensated demand for agriculture and manufactures:

$$M = \mu \frac{Y}{P}, \quad A = (1 - \mu) \frac{Y}{p_a},$$

$$m_i = \mu \frac{Y}{P^{1-\sigma}} p_i^{-\sigma}$$

Taking into account commuting costs and land rent, the northern income is given by:

$$Y = (h_I + h_M) \left(1 - \frac{\theta}{2} (h_I + h_M) \right) \omega - L_Z \omega_Z$$

All the income earned by migrants is spent locally, remittances are not considered here (and to our knowledge have never been introduced in the NEG). Since we are interested by the analysis of the Northern political process, this is not a crucial point because North-South's remittances are a small amount of the Northern economy. In contrast for Southern economies, remittances can represent a significant amount of GDP (an introduction of them may be an interesting road of research for the NEG).

2.3. PRODUCTION

Concerning the cost function, we assume that the production of a typical variety of manufactured goods involves α workers h as a fixed cost, and the use of b units of workers L_Z for each unit of output produced. Thus

the total cost of producing q units of a typical manufactured variety is:

$$TC = \alpha\omega + \beta\omega_Z q$$

Thus there is no discrimination in the industrial sector, firms hire indifferently natives h_I or migrants h_M , and pay them at the same rate ω . Furthermore the modelling of the variable cost which is in essence an assumption of convenience turns out to be justifiable on empirical grounds,⁶ indeed I implicitly assume that workers h perform service tasks in the city and that production is being conducted in suburban or main-land area where immobile factors are located. This slicing up of the supply chain at the national level is costless, but can easily be generalized by introducing communication costs (and also by considering that the outsourcing is lead at the international level).⁷

Because each firm produces a distinct variety, the number of firms is also the number of varieties consumed. Thus each firm is a monopolist on the production of its variety and by maximizing its profit, sets the following price:

$$p = \beta\omega_Z \sigma / (\sigma - 1)$$

Prices are thus constant and independent of workers wage in services. Thus migrant do not impact on the price of industrial varieties.⁸

Under free entry, profits are always equal to zero and give the level of output:

$$q = (\sigma - 1)\omega / \beta\omega_Z$$

As we have already noticed previously, the homogeneous good is the numeraire. It is costlessly traded so that its price is 1 in both regions. This yields $\omega_Z = 1$ because of CRS in the agriculture.

In equilibrium the total demand of labour is α_n . As worker' labour

⁶ I thank Frédéric Robert-Nicoud for this justification.

⁷ See Fujita and Thisse (2006) and Robert-Nicoud (2006) for contributions along this line.

⁸ Cortes (2008) shows that the effect of immigration on price are small, for USA cities a 10% increase in immigration reduces the price of immigrant-intensive services by 2%.

supply is S , the equalization gives the number of varieties produced in the North:

$$n = S/\alpha$$

The number of varieties produced is then proportional to the workers force.

Industrial varieties are exchanged between countries under transaction costs which take the form of iceberg trade costs denoted ϕ . The assumption of iceberg costs implies that firms charge the same producer price in both regions, the distance does not imply “discrimination”, and “mill pricing” is optimal.

From the market clearing one obtain nominal wages:

$$\omega = \frac{b^2 S^* L(1 - \phi^2) - bL(P^*)^{1-\sigma} - bLP^{1-\sigma}\phi}{b(S^* P^{1-\sigma} + S(P^*)^{1-\sigma}) + b^2 SS^* (\phi^2 - 1) - P^{1-\sigma} (P^*)^{1-\sigma}}$$

$$\omega^* = \frac{b^2 SL(1 - \phi^2) - bLP^{1-\sigma} - bL(P^*)^{1-\sigma}\phi}{b(S^* P^{1-\sigma} + S(P^*)^{1-\sigma}) + b^2 SS^* (\phi^2 - 1) - P^{1-\sigma} (P^*)^{1-\sigma}}$$

with $b = \beta\mu/(\sigma-1)$ and where price index are given by:

$$P^{1-\sigma} = \frac{\beta\sigma}{\sigma-1} [n + \phi n^*]$$

$$(P^*)^{1-\sigma} = \frac{\beta\sigma}{\sigma-1} [\phi n + n^*]$$

From these equations, one can demonstrate that two opposite forces drive relative nominal wages : on the one hand an increase of workers in one city exacerbates the local competition among them, this triggers a slump in the price index which reduce nominal wages (market crowding effect). But on the other hand, as the income generated by the new workers is spent locally, sales and operating profits increase and under the “zero profit condition” this implies a higher nominal wage (the market access effect).

2.4. POLITICAL GAME

The political game is a probabilistic voting model *à la* Lindbeck and Weibull (1987). Also called swing voters model, this kind of setting has already

been use in the field of the NEG by Robert-Nicoud and Sbergami (2004). These authors however use this framework in a different way since they consider North and South as two regions of a same nation and study how swing voters in each regions impact on the level of subsidies given to mobile capital.

We borrow the swing voters model to Robert-Nicoud and Sbergami (2004) but we focus on the North country (then we only consider South-North migration⁹) and we study people migration. Southern migrant does not have the right to vote in the North. Immobile workers votes according to economic considerations and with an orthogonal political preferences over two candidates A and B who belong to distinct political parties. This political preference is a common feature of probalistic voting model analyzing swing voters who will vote across party lines.

These candidates compete to maximize their chance of election (numbers of vote). They declare their position concerning migration by choosing the level of h_M they are going to accept once elected (one may think of quotas). Candidates play a Nash game and choose simultaneously their immigration policy by taking as given the strategy on its competitor. Lastly individuals chose their candidate. But their choice is not only related to their real wage but also to an idiosyncratic preference of intensity ε_i for either candidate, where ε_i is positive if the individual i prefers the candidate B and negative at the reverse. Then, individual i 's welfare of type $j = h_i$ is $V_j(h_M^B) + \varepsilon_{ji}$ if candidate B wins and $V_j(h_M^A)$ otherwise. Hence an individual is indifferent between the two candidates if, and only if, $V_j(h_M^A) - V_j(h_M^B) = \varepsilon_{ji}$. Concerning the distribution of ε_i it is assume that there is no aggregate uncertainty, i.e the preference intensities comes from a symmetric, with mean zero cumulative distribution function denoted $F_L(\varepsilon)$ in the country side and $F_{hl}(\varepsilon)$ in the city which are known to anybody. Immobile workers in the country side can be more or less heterogeneous concerning their idiosyncratic preference than workers in the cities. This is translated by a different dispersion of the cumulative distribution around the mean, i.e ψ_L is the variance of $F_L(\varepsilon)$ and ψ_{hl} the variance of $F_{hl}(\varepsilon)$. Thus the ratio ψ_{hl} / ψ_L measures the relative political variance of urban workers. According to all this assumption, candidate A's program is:

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⁹ Due to the symetry of the model, the same result hold if one want to analyse North-South migration.

$$\max_{h_M^A} W(h_M^A, h_M^{B*}) = L F_L [V_L(h_M^A) - V_L(h_M^{B*})] + h_I F_{hl} [V_{hl}(h_M^A) - V_{hl}(h_M^{B*})]$$

where h_M^{B*} is the political choice regarding immigration of candidate B, considered as given by the candidate A. The candidate B has a symmetric objective which leads to the same choice of h_M at the equilibrium. This maximization gives the first order condition:

$$L f_L(0) \frac{\partial V_L}{\partial h_M} + h_I f_{hl}(0) \frac{\partial V_{hl}}{\partial h_M} = 0$$

where $L f_L(0)$ and $h_I f_{hl}(0)$ represent the mass of swing voters in the country side and in the city.

The resolution of this equation gives the migration policy adopted by the winning candidate. Thus in order to fully study this expression, we need to analyze the welfare impact of migration on northern immobile workers. Such an analysis is done in the next section.

3. MIGRATION, WELFARE AND RESTRICTIONS

Firstly the impact of migration on welfare is analyzed and then the political game is used. It is considered that the government analyses the potential impact of migration on residents to take its decision regarding migration (it does not consider the desire of migrant to come in the country¹⁰), that gives the demand side of migration (how many migrants are welcome?). In the last subsection, the supply of migration is analyzed (how many migrants want to go in the North?) and confronted to the choice of government. This allows analyzing how migration evolves according to trade liberalization.

3.1. WELFARE

Individual welfare are given by indirect utility:

$$V_{hl} = \frac{c(1 - \theta(h_I + h_M)/2)\omega}{P^\mu}$$

and

$$V_L = \frac{c\omega_Z}{P^\mu}$$

¹⁰ Despite its growing importance (at least in Europe), applications for asylum is not analysed here.

with $c = \mu^\mu (1 - \mu)^{1-\mu}$ a constant depending on μ . In the rest of the text we drop this term without loss of generality. Let's first analyze the impact of migration on price index. We get:

$$P = \left(\frac{\beta\sigma}{(\sigma-1)\alpha} \Delta \right)^{\frac{1}{1-\sigma}}$$

with

$$\Delta = (h_I + h_M)(1 - \theta(h_I + h_M)/2) + \phi(h_I^* + h_M^*)(1 - \theta(h_I^* + h_M^*)/2)$$

and by considering to simplify that $h_I = h_I^*$ and $h_M^* + h_M = 1$ one obtains:

$$\frac{\partial P}{\partial h_M} = -\frac{\beta\sigma}{(\sigma-1)^2\alpha} [1 - h_I\theta(1-\phi) - \phi(1-\theta) - h_M\theta(1+\phi)] \Delta^{\frac{\sigma}{1-\sigma}}$$

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Thus without commuting costs migration always generates a decrease in price index¹¹ and then increases welfare of immobile workers of both types. But the existences of urban costs change the deal, indeed if the number of migrant is higher than a critical level given by

$$\frac{1 - h_I\theta(1-\phi) - \phi(1-\theta)}{\theta(1+\phi)}$$

then price index increases in the North. Since the welfare of immobile in the country side is affected by migration only by this channel, the welfare of immobile workers in the countryside decreases. Before this critical point, immigration is beneficial for immobile workers because migration entails a growth of the industrial sector and the price of varieties decreases since less goods are imported. These results are illustrated by Figure 1.¹² In these numerical simulations commuting costs are low thus for a wide range of trade liberalization agglomeration in the North is beneficial for northern provincial workers. In particular Figure 1.a shows that trade liberalization and open immigration policies are complementary to improve provincial welfare.

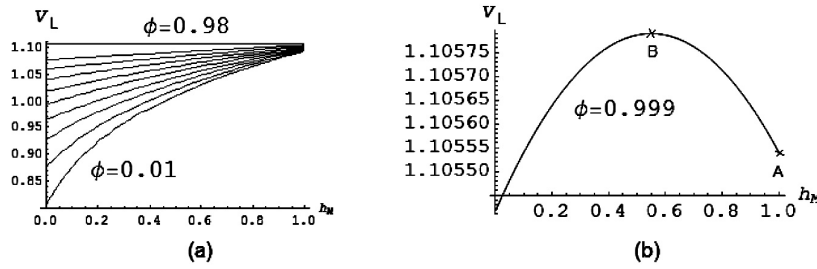
¹¹ Indeed $\left. \frac{\partial P}{\partial h_M} \right|_{h=0} = -\frac{\beta\sigma}{(\sigma-1)^2\alpha} (1-\phi) \Delta^{\frac{\sigma}{1-\sigma}} \leq 0$ because $\phi \leq 0$.

¹² In all numerical simulations presented in this paper we choose the following parameters: $\mu=0.4$, $\alpha=4$, $L=0.5$, $h_I=0.1$, $\theta=0.01$.

However it is interesting to notice that when trade becomes freer the impact of migration becomes smaller. Indeed, around free trade the impact of migration on welfare is close to zero (see Fig.1.a for $\phi=0.98$. Only a zoom allows observing the bell-shaped curve represented in Fig.1.b). This result goes in the same direction than empirical results that shows a small impact of migrations in the European Union after several stages of economic integration (Zorlu and Hartog (2005), Zimmerman (2005)).

But if the impact of migration becomes smaller, its variation is interesting. Indeed migration generates a small decrease in northern welfare if the number of migrants is too high (if $h_M > \frac{1-h_l\theta(1-\phi)-\phi(1-\theta)}{\theta(1+\phi)}$, i.e after point B in Fig.1.b). Indeed significant migration raises urban costs and then indirectly impacts on welfare of rural consumers because this raises the northern price index. Immigration restriction from A to B imperceptibly improves immobile/rural welfare.

Figure 1



To sum up:

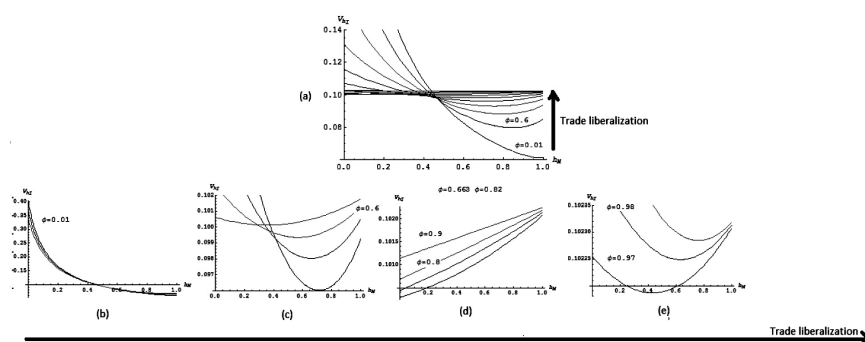
PROPOSITION 1: *The impact of migration on the real wage of provincial workers is a bell-shaped curve if and only if:*

$$\frac{1-h_l\theta(1-\phi)-\phi(1-\theta)}{\theta(1+\phi)} \in [0,1]$$

Thus if migrants are not too numerous such as $h_M < \frac{1-h_l\theta(1-\phi)-\phi(1-\theta)}{\theta(1+\phi)}$ then migration are welfare improving for unskilled natives since the cost of living decrease via the price index effect, on the opposite case, migration becomes detrimental for this group, the price index effect being overtaken by the land market crowding effect.

Things are quite different in the urban area because nominal wages are also affected by migrations. The critical point at which migration improves or deteriorates nominal wages cannot be computed explicitly, thus we turn to numerical simulations to analyze welfare of immobile workers. Figure 2 which plots welfare with respect to migration, shows that competition deteriorate real wage of immobile native. Indeed the market crowding effect depress wages, however after a critical value of immigration, this detrimental effect is compensated by the fact that migrants are also consumers thus sales, profits and wages increase (Figure 2.c). Then the welfare of skilled can follow a U-curve with the numbers of migrants.

Figure 2



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For intermediate trade costs (Figure 2.d) agglomeration forces are the strongest and even a full agglomeration improves immobile skilled welfare's. But this result only holds for particular value of trade costs, for stronger trade liberalization (Figure 2.e) a U-curve emerges again.

Thus the impact of migration on urban real wages can be concave upward for different value of trade costs. However, the forces in action behind the two U-curves are different; the dispersive local competition for high trade costs is replaced by the land market crowding effect for low trade costs.

Lastly one can also notice that the real wage of urban workers is less sensitive to migration when trade is liberalized. Indeed Figure 2.a clearly indicates that the sensitivity of welfare with respect to migration decrease with trade opening.

3.2. MIGRATION POLICY AND TRADE LIBERALIZATION

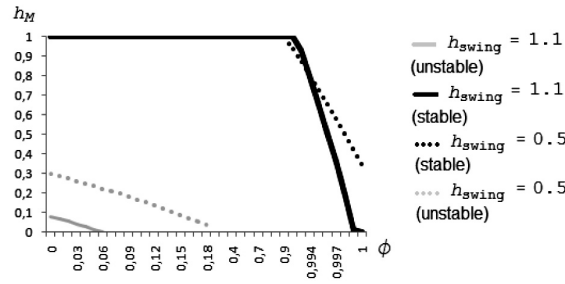
Since the numbers of skilled and of immobile are equal, the political choice concerning migration depends on swing voters. In order to clearly express the weight of swing voters, we note $h_{SWING} = h_I f_{HI}(0) / L f_L(0)$ the relative mass of swing voters in the city¹³ and we rewrite the first order condition by:

$$\frac{\partial V_L}{\partial h_M} + h_{SWING} \frac{\partial V_{HI}}{\partial h_M} = 0$$

Thus with $h_{SWING} > 1$ there is more swing voters in the city than in the rural area. While the reverse is true for $h_{SWING} < 1$.

Since this expression cannot be resolved we turn toward numerical simulations. Figure 3 plots the migration policy adopted by the winner candidate during the process of trade integration.

Figure 3



The dashed line represents a situation where there is more swing voters in the country side, and the regular line the reverse case. In the both case a similar trend is found. Let's first take this Figure from free trade by considering only the case with swing voters in the city (regular line). In that case ($\phi=1$) borders are totally closed to migrants ($h_M=0$). But this result not hold for higher level of trade costs ($\phi \in [0.992, 1[$), where immigration policy is less restrictive. For this range, trade liberalization fosters immigration restrictions. For smaller value of trade freeness there is a

¹³ Notice that it is assumed that $f_L(0)$ and $f_{HI}(0)$ belong to the same set of probability distribution functions, thus the ratio $f_{HI}(0)/f_L(0)$ is equal to the relative political variance of urban workers ψ_{HI}/ψ_L .

race to the top between candidates to open the country, and a no restriction policy is adopted¹⁴. This gives the following result.

PROPOSITION 2: *The process of trade integration can lead the winner candidate to set strongest quota on immigration.*

Concerning the robustness of this result, it is noteworthy that it also holds when swing voters are the unskilled of the Periphery. The sole difference according to the type of swing voters lies in the fact that the immigration policy can be less restrictive for low trade costs (dashed line). This similarity in the trend of the immigration policy means that what matters is not who are the swing voters but the presence of swing voters. Indeed the swing voter's models lead to focus on variation in welfare and since unskilled are the most affected positively by migration and trade liberalization the winner candidate protect this group by opening its borders. On the opposite around free trade migration becomes detrimental and restrictions are set.

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3.3. UNDER UTILIZATION OF QUOTA

As French interior minister, Nicholas Sarkozy said that France needs migrants who brought new skills and has proposed a bill on selective immigration.¹⁵ Thus France wants skilled migrants, but do skilled migrants want to go in France?

We propose here to confront the political solution of our model with the location choice of migrants. Migration stops when real wages are equalized in case of symmetry, or when agglomeration in one city generates a higher relative real wage. Then we denote Ω the relative indirect utility:

$$\Omega = \frac{V_{hM}}{V_{hM}^*} = \frac{\omega}{\omega^*} \frac{1 - \theta(h_M + h_I) / 2}{1 - \theta(h_M^* + h_I^*) / 2} \left(\frac{\Delta^*}{\Delta} \right)^{-\alpha}$$

¹⁴ More precisely for $\phi \in [0.18; 0.992[$ the h_M found is above the unity, and for $\phi \in [0; 0.18[$ the equation gives two solutions, the first one which belongs to $[0, 1]$ is a minimum and thus this equilibrium is unstable (represented by gray line in Figure 3), the winner candidate do not maximize the number of votes. The second solution is a maximum but it is also attained for $h_M > 1$. This means that for $\phi \in [0.18; 0.992[$ the winner candidate ends by a corner solution: $h_M = 1$.

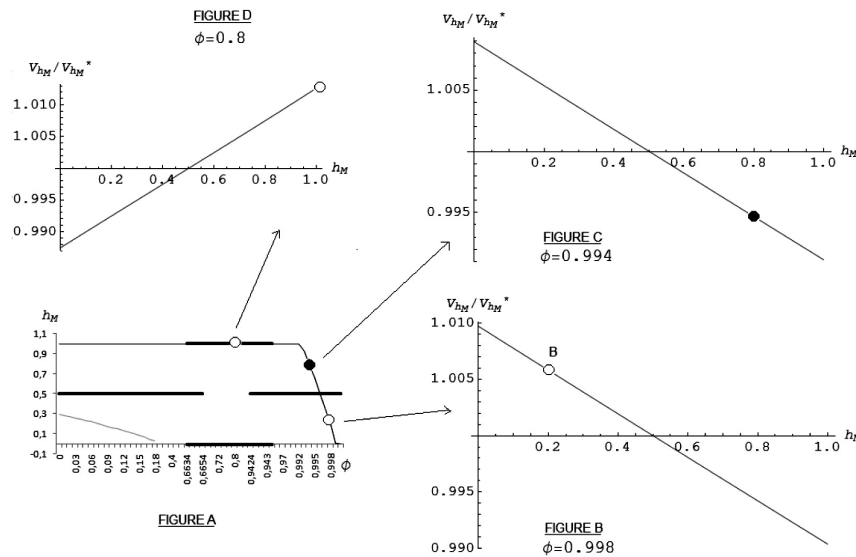
¹⁵ A similar turn also exists in Britain (see Hijzen and Wright (2009)).

where V_{hM} is total real income in the North, including landowner' income. We will have a stable total agglomeration in the North if $\Omega > 1$, and a stable dispersed equilibrium if $\Omega_h(0.5) < 0$.

We present in Figure 4.A (thick line) the spatial equilibria with respect to trade liberalization. In particular we find that dispersion can be obtained for low and high trade costs while agglomeration can be stable for intermediate value. We merge this location equilibrium with the immigration policy with swing voters in the city (Figure 3, regular line), which allows to analyze the utilization of immigration quota.

As we have seen previously, when trade is liberalized, the immigration policy becomes restrictive. This policy is problematic for many southern migrants since 50% of them want to migrate. Indeed it is clear from Figure 4.B, called "wobble diagram" in the NEG jargon, that all deviations from dispersion (i.e 50%) decrease the relative real wage. Then at point B in Figure 4, 20% are accepted¹⁶ but 30% more wants to migrate in the North because real wages are higher there.

Figure 4



¹⁶ See Figure 3; regular line at gives the point B in Figure 4.B.

But “knocking at the heaven door” depends on integration. Indeed for higher costs –see Figure 4.C, black point¹⁷– 80% of the skilled can migrate, but only 50% are interested, dispersion is still the sole stable equilibrium location. In that case there is an under-utilization of immigration quota.

For higher value of trade costs, the immigration policy is fully open, and all the migrant can be attracted by the North, agglomeration in the North is indeed a stable equilibrium (Figure D). Notice however that there is multiple equilibria, depending on history, migrants can also decide to stay in the South¹⁸.

Lastly when trade costs are very high, the quota is only half utilized (see Figure 4A, the wiggle diagram not plotted here looks like Figure 4C).

To conclude:

Proposition 3: *Depending of trade costs, quotas are not always fully utilized, in particular when dispersion is a stable equilibrium for migrants i.e for low and high trade costs. However around free trade, immigration policy is too restrictive from the point of view of southern skilled migrants.*

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4. CONCLUSION

Migration is a very complex, multifaceted process. Any attempt to formalize it inevitably forces one to highlight a particular aspect. Here we have focused on migration led by real wage differential. One of the main goals was to analyze how globalization affects this real wage and thus the political game.

We have seen that the process of trade integration can generate strongest quota on immigration. This result that reflect actual situation in developed countries (Hatton and Williamson (2005)) deserves to our point of view more work on the theoretical and empirical side.

¹⁷ This black point, representing the political equilibrium, is obtained from Figure 3, regular line with .

¹⁸ We do not discuss the case where dispersion and agglomeration are stable equilibria, but the same reasoning holds.

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