A Note on Endogenous skill acquisition and the political
economy of immigration*

Gabriel J. Felbermayr

March 2003

Abstract

The present note proposes a simple OLG framework in which young agents decide whether or not to invest into education, thereby turning themselves from low-skilled workers into high-skilled. Skill classes are imperfect substitutes in production and agents are heterogeneous with respect to their direct costs of education. Surprisingly and in contrast with the literature, this framework implies that endogenous skill formation exacerbates political resistance against immigration of low-skilled workers if the actual inflow and voting occur in the same period. If voting occurs with one period lead, resistance might be weakened, but this outcome generally is time-inconsistent. The paper also rationalizes cyclical adjustment to demographic shocks as observed in US data inter alii by Katz and Murphy (1995).

Keywords: Human Capital Formation; International Migration; OLG model; median voter.

JEL classification: F22; J24; D72

---

*European University Institute, Economics Department. Vie della Piazzuola 43, 50033 Firenze, gfelberm@iue.it, ++43 664 43 12 123. Thanks to Giuseppe Bertola, Willi Kohler, Omar Licandro, Rick van der Ploeg and Julien Prat for helpful discussion, comments, and suggestions. The author acknowledges financial support from the Austrian Science Fund grant no. P14702.
1 Introduction

Over the last decade, under the pressure of popular resistance, most countries have considerably tightened their immigration policies. Indeed, legal immigration of low-skilled workers, motivated on economic rather than humanitarian grounds has come close to a standstill in most OECD countries. The SOPEMI (2003) report illustrates the fact that quotas allocated to job-seeking immigrant workers account for less than 20 percent of inflows in Scandinavian countries, France or the US, the remaining immigrants enter the host countries under family reunification programs or as refugees / asylum seekers. More detailed statistics for the US and the UK (US Dept. of Justice, 2002, and Mallourides and Turner, 2002) show, that the majority of worker immigrants hold seasonal employment permits only or are high-skilled. At the same time, prospective immigrants are in their large majority low-skilled and the trend points towards an ongoing deterioration in their average human capital. If the tightening of immigration laws is the outcome of a politico-economic process, it seems important to understand in detail how the well-being of different groups of economic agents is affected by immigration. This paper undertakes an attempt in this direction and stresses the importance of the demographic structure, the timing of political decisions and the nature of immigration flows (one-shot versus permanent) in assessing the political outcome.

Using data from the 1992 to 1996 U.S. National Election Studies surveys, Scheve and Slaughter (2001) show that the best single predictor for resistance against immigration is an individual’s educational achievement, measured in years, or alternatively, the individual’s occupational wage. In particular, they demonstrate that increasing a given agents’ years of schooling from the mean to the maximum reduces the probability to support restrictionist immigration policies by 0.126. In contrast, and somewhat counter intuition, an individual’s age does not significantly affect anti-immigration attitudes in most of the specifications tried by the authors. The estimated coefficient comes with a negative sign in 1992 and with a positive sign in 1996. This is startling as young agents are clearly better positioned to escape wage pressure caused by low-skilled immigrants.

While simple neoclassical models of labor migration are well suited to rationalize the crucial role of educational attainment in understanding immigration-policy preferences, they typically ignore dynamic issues and cannot shed light on the generational dimension. In the standard, one-sector model, immigration lowers the wage rate of closely substitutable native workers, and increases the earnings of fixed complementary factors, such as physical or human capital. If owners of fixed factors and workers are two distinct groups, the policy outcome depends on whether the median voter belongs to the first or the second group, that is, whether she is a substitute or a complement to immigrants (Venables, 1999). If shares in the earnings of fixed factors are distributed randomly over voters, a relatively capital poor median voter will favor immigration if and only if the immigrant inflow is relatively capital rich, and resist immigration if and only if the inflow is relatively capital poor (Benhabib,
Clearly, if physical capital and homogenous labor were the only factors of production, any one-shot inflow of labor can be matched by an endogenous adjustment of the capital stock. Indeed, in an infinite-horizon, Ramsey-type model with a constant returns to scale aggregate production function, the economy converges back to its initial steady state and does so relatively quickly. However, on the adjustment path, the politico-economic arguments sketched above continue to hold, as long as there is some discounting. Moreover, in the case of a small open economy, any labor inflow would be immediately neutralized by an offsetting capital inflow, keeping the capital / labor ratio and hence the wage rate tied to the exogenous interest rate. Thus, all natives, irrespective of the distribution of fixed factor ownership should be indifferent to immigration.\(^1\)

The note aims to extend these arguments to a dynamic OLG framework of a small open economy\(^2\) in which young agents endogenously decide whether they want to become high-skilled or not. This helps to understand the effects of human capital and demographic structure on immigration-policy preferences. Several assumptions relating to the timing of decisions and the nature of the immigrant inflow have to be made. First, the focus lies on low-skilled immigration only. However, qualitatively, all the arguments continue to hold if the immigrant inflow is strictly less skill-intensive than the skill-composition of the incumbent labor force. In light of the empirical evidence surveyed by OECD (2003) or Boeri et al. (2002), such an assumption seems innocuous. One reason for the relatively low rates of high-skilled immigration observed in the data might be that cross-country wage inequality is largest at the low-ends of the skill distribution.

Second, the interaction of demographic structure and the natives’ adjustment possibilities have to be specified. The literature typically assumes that workers can upgrade their human capital instantaneously (Fuest and Thum, 2001, Razin and Sadka, 1995, 1999, Razin et al., 2002). This is clearly a valid simplification when the focus of the analysis lies on understanding the implications of immigration on a pay-as-you-go pension system. However, it abstracts from the fact that old workers find it very hard to adjust their human capital in response to changes in the economic environment. As we will see, besides its realism, limiting educational adjustment to young workers introduces interesting dynamic issues and allows to understand, under which conditions the mixed evidence on the effect of age on immigration-policy preferences can be reproduced in a simple model.

Third, one can make different assumptions concerning the demographic structure and the nature of the immigrant inflow. Not only are immigrants assumed to be low-skilled,

\(^1\)Davis and Weinstein (2002) argue that the US are attracting foreign labor and capital in proportions that keep the capital intensity fairly unchanged. Thus immigration affects native well-being only through an adverse terms-of-trade effect and does so in a Hicks-neutral way.

\(^2\)The economy is assumed to take the international interest rate as given and capital flows adjust within one period to undo the effects of immigration on the domestic return to capital.
using the wording of the analysis below, immigrants are ‘old’ when they arrive, i.e. they cannot change their skill class upon arrival in the host economy. Whether, at the end of their economic (working) life, immigrants simply return home without leaving descendents in the host country, or whether their children remain but take educational decisions just like natives, does not make any difference. In contrast to this, it makes a crucial difference whether the inflow is one-shot, that is, taking place during one period only, or the inflow is repeated in every future period. In the major part of this paper, I assume that the inflow of immigrants comes to a standstill after one period. This is not unrealistic as the length of one period amounts to half of an individual’s economic life. Moreover, if immigration (or other factors) lead to cross-country convergence of wages, positive flows cannot persist for ever. Nevertheless, the paper addresses the issue of permanent immigration inflows as it represents an interesting benchmark case.

Fourth, the note assumes that the political outcome is determined by majority voting. This is a standard assumption (Benhabib, 1996) which has received some criticism over the last years since anti-immigrationist attitudes seem to have existed for years but have found their way into real policy making only since the mid nineties (Borjas, 2002). While lobbying activities and other forms of political powerplay are without any doubt important in shaping immigration policy, in most OECD countries, the issue of immigration has been extremely important in recent elections. Whereas the assumption of majority voting is maintained throughout the paper, it is interesting to study variations in the degree of synchronization of the date of the inflow and the timing of the election.

Intuitively, and in line with static models that allow for instantaneous skill formation, one would expect that endogenous skill formation should attenuate resistance against low-skilled immigration as it is possible that the median voter escapes from wage competition. However, this only holds if natives can adjust their human capital before the immigrant inflow actually occurs. If voting on immigration and the actual arrival of immigrants take place in the same period, resistance against immigration can be expected to be even larger under the possibility of endogenous skill adjustment. As will be established more formally, this seemingly paradoxical outcome is a consequence of finite lives. Allowing for a lag between voting and actual immigration, can restore the intuition but will generally be time inconsistent.

The proposed OLG model is closely related to Razin and Sadka (1999) and Razin et al. (2002) who model the effect of immigration in an economy where workers are perfect substitutes up to constant Ricardian productivity differences. There are two important differences. First, the proposed model assumes that the educational choice is binary, that skill-formation takes time and that high- and low-skilled workers are imperfect substitutes in production. Second, whereas Razin and Sadka’s focus lies on the implications of immigration in the context of a stylized welfare state, here the key arguments relate to the identity of the median voter and how it changes by the inclusion of endogenous skill formation.
The next section sets up the model, section 3 studies the equilibrium and section 4 contains the main result, which is that endogenous skill formation can exacerbate resistance against immigration. Section 5 discusses the time inconsistency of announced immigration and the political economy implications of a continued inflow. Section 6 concludes.

2 The model

2.1 Setup

The demographic structure of the model is as follows. The economic life of agents falls into two periods. In the first period, workers are ‘young’ and low-skilled (that is, endowed with some basic education only). They face the binary decision problem whether to work immediately, earning the low-skilled wage, or to upgrade their human capital to become high-skilled. In the second period, agents are ‘old’ and supply one unit of labor either as high- or low-skilled workers. At the end of the second period, the old agents are replaced by an equal number of young agents who are indistinguishable from young natives. Labor supply is taken to be perfectly inelastic, so that the only economic decision taken by agents refers to the educational choice in the first period of life. Variables subscripted by a running index denote the calendar period whereas superscripts indicate whether in the current period the agent is ‘young’ (y) or ‘old’ (o). For notational ease, we refer to period t as the time interval $[t, t+1]$.

During any period $t$, total supply of low-skilled workers comprises ‘old’ and ‘young’ workers, so that $L_t = L^o_t + L^y_t$. The supply of high-skilled workers is $H_t = H^o_t$ and the number of students is given by $N_t - L^o_t$, where $N_t$ denotes the size of the generation that enters economic live at time $t$. Clearly, we have that $L^o_t + H^o_t = N_{t-1}$. In what follows, we normalize the mass of agents in any generation to unity, $N_t = 1$ for all $t$, abstracting from population growth.

A young individual $i$ enters economic life with some random level of ability $a_i \in A \subset R^+$. Ability is distributed over agents according to a non-degenerate cumulative distribution function $F(a)$ with standard properties (strictly increasing in $a$, continuous, monotonous and satisfying $\lim_{a \to 0} F(a) = 0$ and $\lim_{a \to +\infty} F(a) = 1$). Agents know their own type and they know the relevant moments of the distribution of types over the entire population. The direct cost of education $c(a) > 0$ depends on the individual’s level of ability and satisfies the following conditions: $-\infty < c'(a) < 0$, $c''(a) > 0$, $\lim_{a \to 0} c(a) = \bar{c} < +\infty$, $\lim_{a \to +\infty} c(a) = 0$; the indirect cost of education comprises foregone low-skilled wage income.

For the sake of simplicity, agents’ utility functions are linear in their own wages, which makes them indifferent with respect to the timing of their consumption flows and rules out altruistic behavior of parents towards children. Thus, the direct cost of education $c(a)$ can either be interpreted as a utility cost or as a monetary cost, such as a tuition fee. However, since the schooling sector will not be modeled explicitly, it is best to think of $c(a)$ as a utility
cost.

Production possibilities are described by an aggregate production function of the form

\[ Y_t = Q \left[ K_t, G (L_t, H_t) \right], \]

where \( K_t \) designates the stock of physical capital invested in the domestic economy and \( Q (\cdot, \cdot) \) and \( G (\cdot, \cdot) \) are both linear homogenous as well as increasing and strictly concave in any of their arguments. As motivated in the introduction, we assume that capital is mobile internationally and that there are no adjustment costs. With a given international interest rate \( r^* > 0 \) and a constant depreciation rate \( \delta > 0 \), the user cost of capital is a constant \( \bar{R} = r^* + \delta. \)

By linear homogeneity of \( Q (\cdot, \cdot) \), the marginal as well as the average productivity of capital depend only on the capital intensity \( K/G. \) The same holds true for the composite labor input \( G. \) With a given user cost, the equilibrium capital intensity \( K/G, \) and thus the marginal as well as the average productivity of \( G, \) all depend on \( \bar{R}. \) We may then rewrite the aggregate production function as

\[ Y_t = A (\bar{R}) L_t g (h_t), \]

where \( A (\bar{R}) > 0 \) is a positive and decreasing function of \( \bar{R} \) and \( h_t \equiv H_t/L_t \geq 0 \) denotes the skill-intensity of the economy. In what follows, perfect capital mobility ensures that the return to capital is not affected by changes in \( h_t \) brought about by immigration.\(^3\) Finally, without loss of generality, we choose units so that \( A (\bar{R}) L_t = 1. \)

### 2.2 Educational choice

Young agents face the binary choice of whether to earn the wage rate for low-skilled labor in both periods of their economic life, or to forego first period labor income and pay a type dependent cost \( c (a) \) in order to earn the greater high-skilled wage rate in their second period of life. With the above assumptions on \( c (a) \) the return on schooling increases with ability so that for any \( t \) there will be a unique cut-off point \( \tilde{a}_t \) which partitions the population of young agents into students and low-skilled workers. Note that \( \tilde{a}_t \) is the key state variable of the model.

Any young agents’ educational choice involves comparing the present value of becoming high-skilled

\[ PV_{H,t,t} = -c (a_t) + w^0_{H,t+1} / (1 + \bar{r}) \]

and the present value of remaining low-skilled

\[ PV_{L,t} = w^H_{L,t} + w^0_{L,t+1} / (1 + \bar{r}), \]

\(^3\) The distribution of financial assets over the population does not matter for evaluating the direction and size of the welfare effects of immigration. The change of an agent’s income is uniquely determined by her ability level while the agent’s share in capital income only determines the level of income.
where $w^y_{L,t}$ is the low-skilled wage at time $t$ (when the agent is young), $w^o_{L,t+1}$ is the low-skilled wage when the agent is old, $w^o_{H,t+1}$ is the high-skilled wage next period (when the agent is old) and $\bar{r}$ is the given rate of interest at which the agent can borrow on international capital markets.\footnote{Notice that nothing hinders us from setting $\bar{r} > r^*$ so that international financial transactions collateralized by physical capital entail a lower interest cost than borrowing against future labor income.} Note that the economy adjusts to shocks on $h$ along two lines: as agents change their investment behavior they change the size of the \textit{current low-skilled labor force} and the size of the \textit{high-skilled labor force next period}.

For given wage rates, $PV_{H,i,t}$ decreases in the agents level of ability, while $PV_{L,t}$ is independent from ability. Thus, if $PV_{H,i,t} - PV_{L,t} > 0$, agent $i$ attends higher education, if $PV_{H,i,t} - PV_{L,t} < 0$, she does not. There exists a unique cut-off ability $\tilde{a}_t$ which partitions the young worker population into a set of workers willing to acquire education and the complementary set of those, who do not. This cut-off ability $\tilde{a}_t$ is determined by the requirement that $PV_{H,i,t} - PV_{L,t} = 0$, that is

$$\frac{w^o_{H,t+1} - w^o_{L,t+1}}{1 + \bar{r}} = c(\tilde{a}_t) + w^y_{L,t},$$

which stipulates that the present value of the return on education has to equal the present value of its cost, in terms of foregone earnings $w^y_{L,t}$ and the direct cost of schooling $c(\tilde{a}_t)$.

The crucial assumption underlying equation (1) is that agents can borrow and lend arbitrary amounts of money at that interest rate\footnote{Clearly, the marginal individual is indifferent between investing in education or not. Individuals with ability levels above $\tilde{a}_t$ earn a rent, since their cost of education is smaller and the education decision is discrete. In contrast, ability is of no use for individuals who decide to remain unskilled.}. The marginal worker, characterized by $\tilde{a}_t \in A$, is exactly indifferent between going to school or to work. Not surprisingly, with the assumptions made above, the cut-off level increases with the level of low-skilled wages and with the interest rate, it decreases with the level of next period’s high-skilled wage.

### 3 Equilibrium

At any $t$, the cumulative distribution function $F(\tilde{a}_t)$ gives the fraction of agents in the population of young workers for whom the level of ability lies below the critical value $\tilde{a}_t$. Consequently, a fraction $1 - F(\tilde{a}_t)$ of agents invests into education and ends up being high-skilled in period $t + 1$. Recalling the normalization $N_t = 1, \forall t$, and the fact that only old agents can be high-skilled, the law of motion for the stock of high-skilled labor can be written as

$$H_t = 1 - F(\tilde{a}_{t-1}).$$

Similarly, the stock of low skilled agents is governed by

$$L_t = L^y_t + L^o_t = F(\tilde{a}_t) + F(\tilde{a}_{t-1}).$$
Using equations (2) and (3), it appears that $h_t$ is governed by a second order difference equation of the form
\[ h_t = \phi (\tilde{a}_t, \tilde{a}_{t-1}) = \frac{1 - F(\tilde{a}_{t-1})}{F'(\tilde{a}_t) + F'(\tilde{a}_{t-1})}. \]  
\[
(4)
\]

Whereas last period’s educational choice $(\tilde{a}_{t-1})$ determines the partition of the old labor force into high- and low-skilled workers, current choices $(\tilde{a}_t)$ determine the fraction of young low-skilled workers who are willing to join the labor force, with the complementary fraction attending further education.

Choosing $G(\ldots)$ to be of the Cobb-Douglas type\(^6\), and writing $\beta$ for the output elasticity of low-skilled workers, wage rates are given by
\[ w^y_{L,t} = \beta h_t^{1-\beta}, \]  
\[
(5)
\]
and
\[ w^y_{H,t} = (1-\beta) h_t^{-\beta}. \]  
\[
(6)
\]

Accordingly, at time $t$, wages depend only on the current skill-intensity in the economy, and are also governed by second order difference equations. Substituting equation (4) into (5) and (6) and using this in the indifference equation (1), it turns out that the time path of $\tilde{a}_t$ is governed by a complicated, non-linear, second order difference equation of the form
\[ \frac{1 - \beta}{1 + \beta} \phi (\tilde{a}_{t+1}, \tilde{a}_t)^{-\beta} - \frac{\beta}{1 + \beta} \phi (\tilde{a}_{t+1}, \tilde{a}_t)^{1-\beta} = c(\tilde{a}_t) + \beta \phi (\tilde{a}_t, \tilde{a}_{t-1})^{1-\beta}. \]  
\[
(7)
\]
The crucial state variable in the model, $\tilde{a}_t$, follows complex dynamics, which arise from the interaction of past, current, and future behavior. Even in the case of a uniform distribution of $\tilde{a}$, $\phi (\cdot)$ remains a complicated non-linear object that renders the analytical solution of equation (7) extremely difficult, so that the time paths of $\tilde{a}_t$, and hence those of $h_t$ and the wage rates $w^y_{H,t}$, $w^y_{L,t}$, need to be simulated. It is however possible, to give an analytical characterization of the steady state, that is, establish its existence, uniqueness and stability. Using a simple phase diagram in $(\tilde{a}, h) -$ space, it is then possible to characterize the transition path of the economy towards the stationary state.

Dropping the time index for stationary state magnitudes, equations (2) and (3) determine the economy’s skill intensity at the stationary state as a function $\phi : A \rightarrow R^+$, $h = \phi (\tilde{a})$
\[ \phi (\tilde{a}) = \frac{1}{2} \frac{1 - F(\tilde{a})}{F'(\tilde{a})}. \]  
\[
(8)
\]
This equation is purely mechanical and gives the skill-intensity of the economy for every cut-off level $\tilde{a}$. We refer to this equation as the $\phi -$ locus. The lower $\tilde{a}$, the larger the fraction

---

\(^6\) The arguments of this paper do not depend on this specification. Any neoclassical production function satisfying the Inada conditions would do it. The choice of the Cobb-Douglas form is for simplicity and is approximately consistent with estimates of the elasticity of substitution between high- and low-skilled labor (Katz and Autor, 1999).
of the young population that invests in higher education, and the larger the stationary level of \( h \). The slope of this locus is negative and its elasticity is given by

\[
\varepsilon_\phi = -\lambda(\tilde{a}) \frac{\tilde{a}}{F(\tilde{a})}
\]

where \( \lambda(\tilde{a}) \equiv f(\tilde{a}) /[1 - F(\tilde{a})] > 0 \) is the hazard rate associated to the cdf \( F(a) \). We assume that \( F''(a) < 2F'(a)F'(a) \), which implies that \( \phi(a) \) is a strictly convex function. For common probability distribution functions with support on \( R^+ \), such as the uniform, the exponential or the lognormal distribution, this condition is fulfilled (see Evans et al., 2000).

Whereas the \( \phi(\tilde{a}) \) function assigns to each cut-off ability its steady state skill-intensity, substituting the wage expressions (5) and (6) into the indifference equation (1) determines the optimal cut-off level as a function of the economy’s skill intensity.

\[
\frac{(1 - \beta)h^{-\beta}}{1 + \bar{r}} - \beta h^{-\beta} \left( \frac{2 + \bar{r}}{1 + \bar{r}} \right) = c(\tilde{a}).
\]

(9)

In \((h, \tilde{a})\) space, this equation traces out a function \( \eta : A \rightarrow R^+ \), \( h = \eta(\tilde{a}) \), with \( \eta'(\tilde{a}) > 0 \) for all \( t \), and elasticity

\[
\varepsilon_\eta = -\frac{(1 + \bar{r})\zeta c(\tilde{a})}{\beta (1 - \beta) h^{1 - \beta} (2 + \bar{r} + \bar{h} - 1)} > 0,
\]

where \( \zeta < 0 \) is the elasticity of the education cost with respect to ability. Note that \( \eta(\tilde{a}) \) is bounded above as \( \lim_{\tilde{a} \rightarrow +\infty} \eta(\tilde{a}) = \bar{h} = (1 - \beta) / [\beta (2 + \bar{r})] > 0 \). If \( \bar{h} > h \), the left hand side of equation (9) remains positive, otherwise it turns negative which violates equation (9).

If \( h \) were too large, high-skilled wages would be too low to warrant investment in education. If skill upgrading were instantaneous and costless, \( h = (1 - \beta) / \beta \). However, with no direct costs of education \( \tilde{a} \rightarrow +\infty \Rightarrow c(\tilde{a}) \rightarrow 0 \), the fact that education requires time drives a wedge between high- and low-skilled earnings which crucially depends on the interest rate \( \bar{r} \).

Moreover, it must hold that \( h > 0 \) as \( \tilde{a} \rightarrow 0 \). To see this formally, notice that \( h < 0 \) is not feasible and \( h = 0 \) violates equation. The left hand side would diverge to \(+\infty\) whereas, by the assumption made above \( \lim_{\tilde{a} \rightarrow 0} c(\tilde{a}) = \bar{c} < +\infty \) so that the right hand side converges to a positive constant. Consequently, \( \tilde{a} \rightarrow 0 \) implies \( h > 0 \).

The \( \eta(\tilde{a}) \) function is convex for small \( \tilde{a} \) and concave for larger \( \tilde{a} \). This can be seen by studying the limit behavior of \( \varepsilon_\eta \) as \( \tilde{a} = 0 \land h = 0 \) and \( \tilde{a} \rightarrow +\infty \land h \rightarrow \bar{h} \). In both cases, \( \varepsilon_\eta \) tends to zero. Using the implicit functions theorem on (9) it turns out that \( \eta'(\tilde{a}) > 0 \) for all \( \tilde{a} \) and that \( \eta''(\tilde{a}) \) can change size only once. Thus, \( \eta(\tilde{a}) \) has the shape as described above. Notice that this particular shape is driven by the assumption that the direct cost of education is bounded above by \( \bar{c} \) and the fact that \( 0 < h < \bar{h} \).

The intuition behind the S-shaped form of \( \gamma(\tilde{a}) \) is as follows. Along the \( \eta \)-curve the wage gap between \( w_H \) and \( w_L \) exactly offsets \( c(\tilde{a}) \) in present value terms.\(^8\) Consider a point

---

\(^7\)Note that the assumption \( c(a) < +\infty \) ensures that the economy never shuts down, even if \( \tilde{a} \) is arbitrarily small.

\(^8\)The wage gap is \([w_H - w_L (2 + \bar{r})] / (1 + \bar{r})\) and along the \( \eta(\tilde{a}) \) locus must coincide with \( c(\tilde{a}) \).
close to \((0,0)\) on the \(\eta\)–locus. By the Inada conditions, \(w_H\) is almost infinite and \(w_L\) is very low. The same is true for the second derivatives of the production function, \(\partial w_H/\partial h\) and \(\partial w_L/\partial h\). Then, a small deviation \(\Delta h > 0\) produces a large change in the wage gap, which must be off-set by a large change in \(c(\tilde{a})\). Since \(c'(\tilde{a})\) is finite for small \(\tilde{a}\), compared to \(\Delta h\), the change in the cut-off ability, \(\Delta \tilde{a}\), must be large. This explains the steep slope of \(\gamma(\tilde{a})\) close to the origin. As \(h\) grows, the slope levels off since mutually compatible changes in \(h\) and \(\tilde{a}\) on the left- and the right-hand side of the equation exhibited in footnote 3 are of comparable size. In contrast, at a point where \(h\) is close to \(\tilde{h}\) and \(\tilde{a}\) is very large, the wage gap hardly changes any more. Thus, for a small deviation \(\Delta h\) to be optimal, \(\Delta \tilde{a}\) must be very large so that the deviation is worthwhile.

Figure 1 exhibits the phase diagram of the model economy, plotting \(\tilde{a}\) on the ordinate and \(h\) on the abscissa. For any \(h_0\), the \(\eta\) curve shows the optimal cut-off ability \(\tilde{a}_0\), which, filtered by the \(\phi\) curve, determines next period’s skill-intensity \(h_1\), and so forth. The diagram has been constructed using the following parameter values: \(\beta = 0.3\) (share of low-skilled labor in GDP), \(r = 0.5\) (interest rate relevant for the length of one period). The cost function has been modelled as \(c(a) = \bar{c}\exp(-\zeta a)\) with \(\bar{c} = 5\) and \(\zeta = 0.5\). Ability is assumed to be distributed over the interval \([0, +\infty]\) following a lognormal distribution law with mean \(\mu_\alpha = e\) (the ‘Euler number’) and variance \(\sigma\ 0.5\) (this implies that the moments of the underlying normal distribution are: 7/8 for the mean and 1.85 for the variance).

**Existence of a steady state.** A steady state \((\tilde{a}^*, h^*)\) exists if and only if the intersection of \(\eta(\tilde{a})\) and \(\phi(\tilde{a})\) is non-empty. Since the cdf \(F(\tilde{a})\), the production function \(g(h)\) and the cost function \(c(a)\) are all assumed to be continuous, the \(\eta(\tilde{a})\) and \(\phi(\tilde{a})\) locuses are trivially continuous, too. Moreover, by the discussion above, they are monotonic in \(\tilde{a}\). Finally, since \(\eta(\tilde{a})\) is an increasing function and \(\phi(\tilde{a})\) takes the abscissa and ordinate of the positive quadrant as its asymptotes, the intersection of \(\eta(\tilde{a})\) and \(\phi(\tilde{a})\) necessarily is non-empty.

**Uniqueness.** As both, \(\eta(\tilde{a})\) and \(\phi(\tilde{a})\) are monotonic functions with opposite slope, they can only cross once. This is sufficient for uniqueness.

Before moving to adjustment dynamics, some comparative statics results are worth mentioning. First, consider the \(\phi\)–curve. Increasing the mean \(\mu_\alpha\) of the ability distribution amounts to a rightward shift of \(\phi\), as a larger fraction of the population exhibits a skill level greater than \(\tilde{a}\), so that the steady state \(h\) is larger for any \(\tilde{a}\).

**Some comparative statics results.** The effect of an increase in the variance \(\sigma_\alpha\) are less clear cut and more interesting. It depends crucially on the shape of the distribution of \(\alpha\). One advantage of the lognormal distribution function is its large degree of flexibility. If the variance of the underlying normal law is small compared to the mean, the lognormal distribution’s median and average get very close and the pdf is very symmetric. Increasing the variance of the underlying normal law redistributes probability mass to the low-ends of the lognormal distribution, thereby increasing average but keeping the median put. The
effects of mean-preserving changes in the variance of the lognormal distribution, have very different implications, depending on the initial gap between the median $\hat{a}$ and the average $\bar{a}$.

First, if in the initial situation $\hat{a}$ is close to $\bar{a}$, any small mean preserving change of the variance of the lognormal distribution (denoted by $\sigma_a$) leads to a clockwise rotation of the $\phi-$ locus around the point $(\hat{a}, 1/2)$, where $\hat{a}$ is the median ability level. This is clear from substituting $F(\hat{a}) = 1/2$ into the definition of $\phi(\hat{a})$ which yields $\phi(\hat{a}) = 1/2$. With mean preserving changes in $\sigma_a$, any $\phi-$ curve with the same median (mean) but different variance passes through this point. Thus, $|\phi'(\hat{a})|$ is decreased for every $\bar{a}$ as $\sigma_a$ increases. Interestingly, the effect of a comparative static increase in $\sigma_a$ on the steady state values $(\bar{a}^*, h^*)$ depends on whether the point $(\hat{a}, 1/2)$ lies to the left or the right of $(\bar{a}^*, h^*)$, or, in other words, whether the median individuals takes part in higher education or not. To understand what is going on, note that any shift of probability mass from the middle of the distribution to the tails has different implications depending on whether the median individual takes part in education or not. If, in the initial situation, the median individual becomes educated, we have that $\hat{a} > \bar{a}^*$. However, redistributing probability mass from the middle to the tails amounts to decreasing $F(\bar{a}^*)$. That is, a smaller fraction of individuals gets educated, leading to a reduction in $h$. The ensuing boost to $w_L$ mitigates this effect somewhat and implies that $\bar{a}$ needs to fall, too.

Figure 1: Phase diagram for equation (7).
In the second case, where the median individual does not become high-skilled, an increase in the variance makes the probability mass beyond $\tilde{a}^*$ larger, leading to an increase in $F(\tilde{a}^*)$ and, hence, in $h$. Again, counterbalancing general equilibrium forces mitigate the effect, resulting in an increase in $\tilde{a}$. Summarizing, if $\tilde{a} \approx \tilde{a}$, a mean-preserving increase in the variance of the ability distribution increases wage inequality if the median agent is educated and reduces it otherwise.

In the second case, where $\tilde{a}$ and $\hat{a}$ differ substantially in the initial situation, a mean-preserving change in the variance of abilities almost always leads to a decrease in both, $h$ and $a$, thus leading to more wage inequality. First, if $\tilde{a} \neq \tilde{a}$, $\phi$ curves with constant mean but different variance do no longer pass through the same point. However, it still holds that a larger variance reduces $|\phi'(\tilde{a})|$ but now the locus also shifts down, towards the origin, leading to a decrease of the stationary state values of $\tilde{a}$ and $h$. The reason for this is that an increase in the variance over-proportionally increases the probability mass at the low end of the distribution. Except in extreme cases, $F(\tilde{a})$ increases and $h$ needs to fall, giving rise to more wage inequality.

The comparative statics of the $\eta(\tilde{a})$ — locus are easy to ascertain. First, if direct education costs decrease faster with ability, that is, if $\zeta$ is larger, the locus is shifted right, leading to higher $h$ for given $\tilde{a}$. Since the $\eta$ locus must remain within unchanged bounds $h \in [0, \hat{h}]$, the change in $\eta'(\tilde{a})$ depends on the level of $\tilde{a}$. In contrast, an increase in $\bar{r}$ lowers $\hat{h}$ and $\eta'(\tilde{a})$. As a consequence, the steady state skill intensity falls as $\bar{r}$ increases. This is, of course, a standard effect working through the opportunity costs of delayed wage income.

Next, let us analyze how the model economy behaves outside the steady state.

**Convergence and transition dynamics.** Convergence of the system to the steady state involves, as usual, a restriction on the slopes, or, equivalently, on the elasticities of $\eta(\tilde{a})$ and $\phi(\tilde{a})$. A sufficient and necessary condition for local stability (and hence convergence) is that the elasticity of $\phi(\tilde{a})$ is lower in absolute terms than the elasticity of $\eta(\tilde{a})$, i.e.

$$|\varepsilon_\phi| < |\varepsilon_\eta|$$

(10)

The steady state is unstable if $|\varepsilon_\phi| > |\varepsilon_\eta|$ and locally indeterminate if $|\varepsilon_\phi| = |\varepsilon_\eta|$. Assuming for the time being that $|\varepsilon_\phi| < |\varepsilon_\eta|$, what can be said about the nature of the transition dynamics? If $|\varepsilon_\phi| = 0$ or $|\varepsilon_\eta| = +\infty$, transition to the steady state would be immediate. Except for these extremes, transition takes time and the economy converges in dampened oscillations to its steady state. Figure 1 shows how the economy converges clockwise from an initial situation $(\tilde{a}_0, h_0)$, passing through $(\tilde{a}_1, h_1)$ towards the steady state.

Note that the model has sufficient degrees of freedom in its parametrization to ensure that condition (10) holds. Since two distinct sets of parameters affect the elasticities of $\phi(\tilde{a})$ and $\gamma(\tilde{a})$, the condition $|\varepsilon_\phi| < |\varepsilon_\eta|$ can be rephrased as a condition on $\sigma_a$. Recall from the discussion on comparative static above that $|\varepsilon_\phi|$ decreases monotonically with $\sigma_a$. Thus, for any parameter constellation, condition (10) holds if and only if $\sigma_a$ is sufficiently large.
Conversely, a lower interest rate $\bar{r}$ increases $|\varepsilon_n|$. Thus, for convergence, the (exogenous) interest rate must be small enough.

Before turning to the effects of immigration on the dynamic behavior of the economy, it is worth highlighting the reasons for the oscillating behavior on the transition path. Clearly, with the twin assumptions of a given interest rate $\bar{r}$ and certainty, allowing for concave utility functions would not affect the behavior of agents and the oscillations cannot be attributed to a lack of consumption smoothing due to the assumption of linear utility. Rather, oscillations originate from the assumption of finite lives. Current generations do not internalize the effect of their education decision on their descendants. If generations were linked in a Barro-like way by an altruistic bequest motive, smooth transition paths would obtain.\(^9\)

4 Endogenous skill formation can exacerbate resistance against one-shot immigration

Assume that the model economy stands at the beginning of period 1. The government organizes a referendum on whether or not allow the immigration of some $M_1 > 0$ unskilled immigrants. If the referendum delivers a positive result, a law is passed allowing the immediate inflow. Immigrants are ‘old’ when they arrive and consequently remain low-skilled during the whole period. At the end of the period they disappear from the labor market. Their descendants, who are ‘young’ in period 2, either remain in the host country and become perfectly indistinguishable from natives, or they leave at the end of period 1 together with their parents. Both alternatives are equivalent in terms of the model, since the size of the economy does not have any effect on factor prices (by constant returns in the aggregate production function).\(^10\)

With a given cut-off level $\bar{a}_1$, the immediate effect of the arrival of low-skilled immigrants is to drive $h_1$ down, leading to an increase in $w_{H,1}$ and a decrease in $w_{L,1}$. However, upon the inflow of immigrants, young agents no longer find it optimal to acquire education if $a_i > \bar{a}_1$. Since the opportunity costs of education are lower now, $\tilde{a}$ falls to $\tilde{a}_1$, leading to a reduction in the low-skilled labor force $L_1$. Whether this adjustment can neutralize the effect of immigration, depends on a comparison of $|\varepsilon_\phi|$ and $|\varepsilon_\eta|$. The elasticity of the optimal

\(^9\)Note that the focus of the presentation is on factor price effects of immigration. However statements about GDP or GNP are easily made. During the adjustment period following an immigration shock, GNP per capita will be larger than in the steady state equilibrium, as long as the skill composition of the immigrant inflow is different from the initial host country skill intensity (Borjas, 1999). However, GDP per capita will be lower, so that compensating low-skilled agents by redistributing income through taxation and provision of public goods cannot yield pareto optimal outcomes, unless immigrants (and their descendents) are excluded from the redistributionary scheme. Thus, in what follows, compensating transfers are ruled out.

\(^10\)The assumption of constant returns to scale in the production function has the major drawback that if the political outcome is that the country accepts immigrants, any level of immigration is sustainable. The easiest way to remedy this, is to postulate an upward-sloping supply curve for immigrants.
cut-off ability $\bar{a}_1$ with respect to a change in the skill intensity $h_1$ is given by $|\varepsilon_\\eta|^{-1}$. What this implies in terms of $\bar{a}_2$ depends on $|\varepsilon_\\phi|$. Thus, the elasticity of $a_2$ with respect to a change in $h_1$ is given by $|\varepsilon_\\phi|/|\varepsilon_\\eta|$. The stability condition (10) implies that $|\varepsilon_\\phi|/|\varepsilon_\\eta| < 1$, so that a given immigration shock cannot be fully compensated by endogenous adjustment behavior.

Summarizing, an inflow of low-skilled immigrants in period 1, drives down $w_{L,1}$ and $\bar{a}_1$. In period 2, the original immigrants will have been replaced by their descendents, who, just as any native, face the decision whether to earn a degree or not. Because some of the immigrants’ children will go to higher education, total unskilled labor supply will be reduced, improving $w_{L,2}$ and increasing the optimal cut-off level $\bar{a}_2$. In this oscillating manner, the economy converges back to the original stationary state. Figures (2) to (4) summarize the effects of an unexpected immigration shock on the time paths of endogenous variables. In the simulations, in order to make the effects well visible, the immigration shock is assumed to be fairly large (the total population is increased by about 45 percent). Assuming a more realistic, smaller inflow, of course does not change the qualitative results.

To see, whether natives would vote in favor of a liberal (i.e. non-zero) immigration policy, we have to examine the effects on the present value of income accruing to native agents alive in period 1. We must distinguish between the young agents, who have yet to decide on their education, and old agents, who are already either high- or low skilled. For old agents, the situation is particularly simple: old high-skilled agents’ human capital is suddenly scarcer, leading to a higher wage $w_{H,1}^o$. Old low-skilled agents are hurt, and their wage falls to $w_{L,1}^o$. In principle, the situation for young agents is more intricate. Figure 5 illustrates the young agents’ trade-off: it determines the cut-off level $\bar{a}_1$ at the intersection of the concave curve $PV_{H,1}$ and the line $PV_{L,1}$. The equilibrium present value position for every value for every
Figure 3: Impulse response of the fraction of young agents enrolled in education (immigration shock in period 1).

Figure 4: Impulse response to the relative wage (immigration shock at period 1).
individual $a_i$ is just the upper envelope of these two curves. The present value in period 1 terms after the arrival of immigrants are denoted by primes \( PV_{i,1}^{\prime} \) and \( PV_{i,1}^{\prime}\prime \). Again from the stability assumptions in the model, the present value of choosing no education, \( w_{L,1}^{\prime} + w_{L,2}^{\prime}\frac{(1 + \bar{r})}{(1 + \bar{r})} \), will be reduced by immigration since the oscillatory behavior implies that a the decrease in \( w_{L,1}^{\prime} \) will not be matched by a sufficient increase in \( w_{L,2}^{\prime} \). The present value of getting educated, \( -c(a_i) + w_{H,2}^{\prime}\frac{(1 + \bar{r})}{(1 + \bar{r})} \) will also be reduced; again the opposite effect is ruled out by oscillatory dynamics. Therefore, even if a larger share of young natives enrolls in higher education, the overall effect on the present value of earnings is negative.

The wage pressure introduced by low-skilled immigrants in the period of their arrival, spills over to both, old low-skilled agents and young agents regardless of their educational choice. The only profiteers are old high-skilled agents who experience windfall human capital gains. Incumbent (‘old’) low-skilled workers and prospective high-skilled workers join in their resistance against the immigration of low-skilled agents. Consequently, there can never be a majority in favor of a liberal immigration policy as the entire young generation, making up exactly half of total stationary state native population, plus low-skilled old agents vote against the bill and reject it.

In contrast to this, if the agents do not have any possibility to adjust their human capital in response to the immigrant inflow, it is possible that the law is passed.

In the static model, where \( \bar{a} \) is fixed at some level, say at \( \bar{a} \), the current wage wage income of low-skilled agents falls, but that of high-skilled agents increases. Next period’s wages will
already be back at the steady state levels as the old, low-skilled immigrants have passed away and their descendants, are partitioned into high- and low-skilled workers by a constant cut-off $\bar{a}$, just as the children of natives. Thus, prospective high-skilled agents are indifferent between allowing immigrants in, all low-skilled workers are against, and the old high-skilled workers are in favor. Assuming, as Hillman and Weiss (1999), that indifferent agents abstain from the referendum, with fixed cut-off levels, the pro-immigration law will be accepted if

$$\frac{1 - F(\bar{a})}{1 + F(\bar{a})} \geq \frac{1}{2} \iff F(\bar{a}) \leq 1/3,$$

that is, if the initial skill intensity is larger than unity (by substitution in (8)). In contrast, in the dynamic case, an entire generation is opposed to immigration, so that the winners – old, high-skilled agents – never can have an absolute majority.

Note that this logic is perfectly inverted if the immigration inflow comprises old high-skilled agents. Tracing the effect of a positive shock on $h$ through the phase diagram (figure 1), it becomes quickly clear that only old, high-skilled agents will resist immigration. Thus, in the dynamic case, voters will be more eager to welcome high-skilled workers than in a static environment.

Summarizing, compared to the static case, in a dynamic model with finite live times, the possibility of endogenous skill-adjustment exacerbates resistance against low-skilled immigration and strengthens the eagerness to accept high-skilled immigrants, if voting and immigration occur in the same period.

5 Discussion

The time inconsistency of announced one-shot immigration. Within the framework of the proposed model, given that the length of any period corresponds to half of an individual’s economic life, it is most realistic to assume that voting and actual immigration occur in the same period, as above. However, it is interesting to introduce a lag between the date at which immigration is voted on and the date at which immigrants actually arrive. This twist gives all relevant agents the time needed to adjust to the inflow of low-skilled workers and tends to make agents willing to welcome immigration. Assume, for the moment, that the outcome of a referendum is indeed binding and that re-voting on the proposal is not possible.

Assume that the inflow is planned at the beginning of period 1 and voting takes place at period 0. Knowing that $h_1$ will be reduced due to the arrival of low-skilled workers, young natives anticipate a higher $w_{H,1}$ and a lower $w_{L,1}$. The increased return on education leads to a reduction in the cut-off ability $\tilde{a}_0$, and incites a larger fraction of young natives to leave the labor-force and become high-skilled. In the period of voting, as a larger fraction of young agents leaves the low-skilled labor supply to become high-skilled, $h_0$ increases, leading to a decline in $w_{H,0}$ and an increase in $w_{L,0}$. As above, the stability condition $|\varepsilon_\phi| < |\varepsilon_\eta|$ ensures
that the adjustment of educational choices will not fully undo the effect of immigration and that the deviation from steady state is largest at the time the inflow actually arrives, that is $|h_0 - h^*| < |h_1 - h^*|$. Now, the effect of a credibly announced inflow of low-skilled workers improves the position of old, low-skilled agents and hurts the position of old, high-skilled workers (as $w_{L,0}$ increases and $w_{H,0}$ goes down). Young agents who optimally remain low-skilled benefit from a larger wage in period 0, but suffer a decrease in period 1. \textit{A priori}, the present value of the change is ambiguous, as next period’s wage loss is larger than the current period’s wage gain, but mitigated by discounting. However, it can be shown that the present value change is negative. In contrast, young agents who optimally invest into education, benefit from an increase in next period’s high-skilled wage rate.

Consequently, a coalition of old, low-skilled agents and young, talented agents supports immigration, whereas old, high-skilled workers and young low-skilled agents resist it. However, the identity of the marginal individual also changes. Figure 6 shows that present value earnings of young agents shift left from the solid curve to the dashed one. The cut-off level falls from $\tilde{a}_0$ to $\tilde{a}'_0$, showing that a larger fraction of young agents enrolls education. However, only some of those additional students see their present value of income go up; the fraction of young agents benefitting from immigration is given by $1 - F(\tilde{a})$ which is smaller than $1 - F(\tilde{a}'_0)$. The electorate votes in favor of immigration if

$$\frac{1 - F(\tilde{a}) + F(\tilde{a}_1)}{2} \geq \frac{1}{2} \implies F(\tilde{a}) \leq F(\tilde{a}_1),$$

\vspace{10mm}

Figure 6: Effects of desynchronizing voting on immigration and the actual inflow on the present value income of young natives.
where \( F(\bar{a}_1) \) is the proportion of old low-skilled agents. The stationarity of the initial equilibrium implies that \( \bar{a}_1 = \bar{a}_0 \). Therefore, the above inequality always holds and the electorate always accepts low-skilled immigration. Allowing for a lag between the political decision and the actual inflow of immigrants gives all agents who will be economically active during the period in which immigration takes place the possibility to adjust their human capital. A the initial marginal individual becomes an inframarginal individual benefitting from the advantages of being high-skilled, immigration will be politically feasible.

However, this outcome depends crucially on the existence of a credible commitment device which rules out that the decision taken in period 0 to let a given amount of immigrants into the host economy be revised in period 1. If this were possible, voters are in the same situation as in section 4 and are likely to turn the proposal down. To see this more clearly, note that if educational adjustment had taken place in period 0, the economy enters period 1 with an increased skill intensity \( h_1 > h_0 \). If re-voting were allowed, and the policy option now is whether to accept immigration in the current period, young and old low-skilled immigrants will resist immigration for exactly the same reasons than in section 4. Now, their incentives to block the proposal are even stronger, as a given inflow reduces low-skilled earnings by more when they are initially high. Young, prospective high-skilled workers, will also oppose the law. Thus, for exactly the same reasons than in section 4, immigration will be resisted by the electorate. Agents anticipate this outcome and do not undertake any adjustments during period 0. Moreover, their voting behavior in period 0 will become completely indeterminate.

Remedying this time-inconsistency problem presupposes a credible commitment device. Given the fact that the length of one period encompasses half of an average individual’s economic life time, say 20 years, it is difficult to think of such a device. However, a World Migration Organization, as advocated by Jagdish Bhagwati, and modelled to the example of the WTO could provide the disciplining rigor that ensures that pre-announced immigration strategies actually will be carried through.

A Recurring inflow of low-skilled migrants. To close the discussion, assume that at the beginning of period 0, agents decide whether or not to accept repeated inflows of immigrants in all future periods. Furthermore, assume that the first wave of immigrants arrives in period 1. Now the economy adjusts to a new stationary skill intensity without any transitional dynamics. The reason is that when the first wave of low-skilled immigrants retires, it is replaced by an equal size of new low-skilled immigrants. Thus, from the second period on, native agents do not see any change in their economic environment anymore. Thus, at the beginning of period 1, the cut-off ability falls from the old stationary state level \( \bar{a}_0 \) to the lower new one, \( \bar{a}_0' \) and, after taking into account the effects of a change in \( \bar{a} \) on low-skilled labor supply, for the same reasons than above, the skill intensity falls from \( h_0 \) to \( h_0' \).

\[11\] Jagdish Bhagwati makes this argument in a letter to the editor of the Economist magazine (appeared in the December 5th 2002 issue).
To assess the impact of low-skilled immigration on present value earnings of young agents, figure 6 is useful. By permanently lowering the low-skilled wage and rising the high-skilled wage, the cut-off level falls. As before, a fraction $F(\hat{a})$ of the young population will resist immigration, a fraction $1 - F(\hat{a})$ welcomes it. Concerning the old agents, a fraction $F(\tilde{a}_0)$ oppose immigration whereas $1 - F(\tilde{a}_0)$ happily accepts it. Thus, the law will be accepted if

$$F(\tilde{a}_0) + F(\hat{a}) \leq \frac{1}{2}.$$ 

Since $\hat{a} < \tilde{a}_0$, endogenous skill formation makes it more likely that voters are in favor of a liberal immigration policy. Re-voting every period does not change anything to these conclusions: if voters support immigration in period 0 they will continue to do so in all future periods.

Note that this situation is formally identical to a scenario where immigrants’ descendents remain in the host economy but do not have any access to schooling. Clearly, both cases are unrealistic in the long-run: a permanent inflow of immigrants presupposes that international wage gaps do not close over time, which runs counter the empirical evidence (see Sala-i-Martin, 2002), and permanent discrimination against descendents of immigrants cannot be a sustainable in any democratic civil society. Assume, for simplicity, that the inflow suddenly stops at some point in time, say in period $t$, and agents know this date with certainty. If the migration law were re-voted in period $t - 1$, exactly for the same reasons than in the subsection before, a majority of voters will refuse to vote for it. Anticipating this outcome, voters in period $t - 2$ will exhibit a similar behavior. Thus, carrying the backward shows that in period 0 voters will not accept the proposal. Therefore, if foresighted voters anticipate that at some date in the future immigration flows will drop to zero, they will refuse to accept immigration already in the current period.

6 Conclusions

This note provides a simple OLG model in which ex ante heterogenous young agents decide whether to invest into education, turning themselves into high-skilled workers, or refrain from doing so, which leaves them unskilled. The combination of imperfect substitutability and finite horizons delivers interesting adjustment dynamics. In the case of a one-shot low-skilled immigration shock, the economy converges back to its initial steady state, undoing all factor price effects. However, along the transition path, the relative wage of high-skilled workers and the economy’s skill intensity move in dampened oscillations. This feature fits with US evidence presented by Katz and Murphy (1995), figure IV, where the massive arrival on the labor market of relatively well-educated baby-boomers born between 1950 and 1970 gave rise to cycles in the detrended College/Highschool wage differential and the detrended relative supply of college graduates.
The paper establishes the following results: (1) if voting on one-shot immigration and the actual inflow of immigrants occur in the same period, resistance against low-skilled immigration will be stronger than in the case where agents do not have the possibility to adjust their human capital. The key for this seemingly paradoxical result lies in the fact that the descendents of today’s low-skilled immigrants will have the same investment opportunities than natives. So, in the period after the immigration shock, the skill intensity jumps up, dragging high-skilled salaries down. Since the instantaneous reduction in the low-skilled wages cannot be undone by endogenous skill formation, the life time income of currently young agents, regardless of their educational choice has to fall, so that an entire generation resists immigration. Conversely, high-skilled immigrants will be welcome more eagerly than in the static framework. (2) These predictions are reversed if voting on immigration leads the actual arrival of immigrants by one period and re-voting is impossible. In absence of a binding commitment device, de-synchronizing the timing of the referendum and the actual inflow of immigrants brings time-inconsistency concerns into the picture and leads to the refusal of a liberal immigration policy. (3) If immigration flows could be positive during all future periods, endogenous skill adjustment makes it more likely that a referendum provides support for a liberal immigration policy. In this case, time-inconsistency issues do not arise. However, if the positive inflow is expected to end at some date in the future, voters will resist immigration already in the very first period.

The existence of time-inconsistency in some of the scenarios highlights the necessity of an international institution that can credibly enforce migration policies. Thus, the paper provides another rationale for Jagdish Bhagwati’s famous argument in favor of a World Migration Organization.
References


