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JEL: D3, F22, J1, O1
Keywords: Refugee resettlement, fertility, human capital, growth

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Refugee Resettlement, Redistribution and Growth

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Abstract

This paper studies the effect of refugee resettlement on human capital accumulation. The analysis is performed in a growth model with endogenous fertility. I propose a redistribution scheme and show that refugee resettlement from a more advanced and wealthier economy to a less advanced and less wealthy economy combined with income transfers can give rise to conditions in which utility of indigenous populations in both countries increases. I also derive conditions for the proposed resettlement policy to stimulate human capital accumulation and hence economic growth in both economies.

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1. Introduction

During past 2 decades, more than six million people have applied for asylum in the European Union. In 2015, these figures rose dramatically and it is broadly believed that millions of asylum seekers will find their way to Europe in the nearest future. Challenges posed by the volume of refugee flows have triggered an extended discussion and the current European asylum policy has widely been criticized as ineffective and, to a certain extent, unfair.

In the face of the current refugee crises, numerous voices have advocated resettlement as a possible solution. To achieve this goal, several scholars appeal to the concept of solidarity and burden-sharing and suggest a further harmonization of national asylum policies and more centralization (see, for example, Hatton (2015) where further references can be found). Others, in contrast, have recommended paying more attention to market-based mechanisms.

A market-based solution in the context of refugee resettlement was initially proposed by researchers in the field of international law. Schuck (1997) and Hathaway and Neve (1997) were first to discuss a system of bilateral negotiations over tradable refugee resettlement. Thus, in the system proposed by Hathaway and Neve (1997), poorer states would agree to host refugees, while richer states would agree to finance the costs of refugee protection incurred by those host states. Schuck (1997) proposed a similar system in which states would first argue to quotas, based on national wealth or other criteria, for the number of refugees each is obligated to protect. Next, the participating states would be able to trade their quotas by paying others to fulfill their obligations. Bubb et al. (2011) supplemented this system of bilateral exchange with a screening device to separate refugees from economic migrants. Later on, Fernandez-Huertas Moraga and Rapoport (2014) proposed a multilateral system of tradable immigration quotas with a main application to the resettlement of long-standing refugees. In Fernandez-Huertas Moraga and Rapoport (2015), they applied this idea to relocation of refugees and asylum seekers in the context of the European Union. In the analysis, all these authors emphasized that, since admission of refugees and asylum seekers is costly and the costs vary across countries, from the point of view of cooperative receiving countries efficiency gains could

be achieved if refugees and asylum seekers would be hosted where it is cheapest to host them.

The present work expands the literature on tradable refugee resettlement in the direction of human capital accumulation and growth. The analysis is performed in a growth model with endogenous fertility in the tradition of Galor and Tsiddon (1997) building on Azarnert (2010). (For a survey of the literature on endogenous fertility and growth see Galor, 2012.) The analysis shows that refugee resettlement from a more advanced and wealthier country to a less advanced and less wealthy country combined with financial transfers may increase utility of indigenous populations and stimulate human capital accumulation in both economies.

The basic idea of this paper is as follows. Suppose that for some exogenous (humanitarian) reason the government of the wealthier economy is willing to provide asylum to a certain number of refugees. [1] If on average refugees are less skilled than the indigenous population, their arrival reduces the average level of human capital in the hosting economy, which reduces the rate of return on investment in human capital for the children's generation through a global or atmospheric externality. This in turn generates an incentive for the agents in the wealthier economy to finance income transfers to the agents in the less wealthy economy to make it worthwhile for them to host the resettled refugees in their own country. In this paper, I propose a particular redistribution scheme and derive conditions for refugee resettlement combined with income transfers to increase utility of the local individuals in both economies. That is, there is a Pareto improvement.

If transfers are financed by taxes levied on labor income of the agents in the wealthier economy and distributed in the form of subsidies to labor income of the agents in the less wealthy economy, income redistribution affects the agents' optimization with respect to the quantity and quality of their offspring. Thus, taxation of the labor income increases fertility and reduces per-child human capital investment of parents in the more developed, wealthier economy, thereby reducing the resulting per-capital human capital levels in this economy in the next period. In contrast, subsidies reduce fertility and increase parental investment in per-child human capital in the less wealthy economy

hence increasing the resulting per-capita human capital levels in this economy in the next period.

The effect of the relocation of refugees on human capital accumulation in twofold: First, resettlement affects the shares of the relatively low-skilled offspring of the current period refugees in the society, reducing it in the wealthier economy and increasing it in the less wealthy economy. Second, through its effect on the average societal level of human capital in current period (via the global human capital externality), resettlement contributes to a further increase in the average level of human capital in the wealthier economy in the next period, while reducing the next period's average level of human capital in the receiving economy.

I derive the exact conditions for the proposed resettlement policy to increase the average society-wide levels of human capital in both economies in the next period, thereby encouraging economic growth. Moreover, through transmission of human capital between successive generations the effect of the resettlement will evolve further from one generation to the next. The analysis thus suggests that policies of asylum provision and refugee resettlement will have long lasting consequences for human capital accumulation and hence economic growth in the future.

2. The Basic Structure of the Model

Consider an overlapping-generations economy, in which activity extends over an infinite discrete time. In every period the economy produces a single homogenous good using a constant-returns-to-scale technology with human capital as the only input. In each generation, agents live for two periods: childhood and adulthood. During childhood, individuals acquire human capital. During adulthood, they work, become parents and bring up their offspring. As parents, adult individuals allocate a positive fraction of their time to feeding and raising their children and invest in the education of their children.

Suppose a world that consists of three entities: the most advanced, high-income economy denoted by A, the less advanced, middle-income economy denoted by B and

[1] The existence of an exogenously given mass of identical refugees is a standard assumption in the literature on refugee resettlement (e.g. Facchini et al. (2006) and Fernandez-Huertas Moraga and Rapoport (2015)). Cf. also Hatton (2015) where further references can be found.

the least advanced, low-income economy denoted by C. For some exogenous reason, in the most advanced, high-income economy A wages and the average level of human capital are higher than those in the less advanced, middle-income economy B. In turn, in economy B wages and the average level of human capital are higher than those in the least advanced, low-income economy C.

In the following sections I present and analyze the effect of the refugee-type migration of relatively low-skilled individuals from the least advanced, poor economy C on the dynamics of human capital accumulation in the more advanced economies A and B. The analysis abstracts from the source economy C that is kept "outside the model".[2]

2.1. Migration and Redistribution

Suppose that in period t for some exogenous (humanitarian) reason the absentee government of the wealthiest economy A is willing to provide asylum for a certain number of refugees from the least advanced, poor economy C. Suppose that the refugees amount to an exogenously given fraction R of the sending economy's working-age population.[3] Also suppose that on average the refugees are less skilled than the indigenous populations in the more advanced economies A and B. These refugees can all be absorbed in the wealthiest economy A. Alternatively, a fraction $\alpha \in]0,1]$ of them can be resettled to the middle-income economy B. In the latter case, the population in economy B should be compensated for the in-migration-driven negative externality.

To specify the redistribution scheme, the following is assumed:

A1. In period t there is one common tax at rate τ_t levied on the labor income of any individual in economy A.

A2. The proceeds are distributed proportionally to the labor income of any individual in economy B at rate s_t.

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[2] Trivially, if refugees are drawn randomly from the general population in the sources economy C, their out-migration will have no effect on the evolution of the human capital levels in that economy. If, however, the refugees are positively/ negatively selected, their out-migration will decrease/ increase human capital accumulation in the source economy.

[3] This is a standard assumption in the migration literature that typically suppose that all agents in the less advanced economy would want to migrate to the more advanced world, but that only a certain fraction of them are allowed to do so. See, for example, Docquier and Rapoport (2012) for references.

To specify the pattern of migration, suppose that young individuals from the poor economy C seek for refuge in the very beginning of the second period of life. If the refugees are resettled to economy B, their migration to economy A is prohibited. The admitted refugees work, become parents, bring up and educate their offspring at the host economy.

2.2. The Formation of Human Capital

In any period t, an adult individual born in economy i ($i = A, B, C$) is characterized by a skill level h_t that is distributed according to the cumulative density function $F_t^i(\cdot)$ over the strictly positive support $[h_t^{i,\min}, h_t^{i,\max}]$. It is assumed throughout that in period t, the average level of human capital in the most advanced economy A is higher than that in the less advanced economy B, which, in turn, is higher than the average level of human capital in the least advanced economy C; $\overline{h}_t^A > \overline{h}_t^B > \overline{h}_t^C$.

In each period of life individuals are endowed with one unit of time. In the first period, children devote their entire time for the acquisition of human capital. The acquired human capital increases if their time investment is supplemented with real resources invested in their education.

The human capital level of a child, who becomes an adult in period $t+1$, depends on the parental real expenditure on the child's education, e_t, and on the average level of human capital of all adult individuals residing in economy i in period *t*, which is defined as $\overline{h}_t^i = \int h_t dF_t^i(h^i)$, $i = A, B, C$, according to the human capital production function or learning technology is described by

$$h_{t+1} = \Theta(e_t, \overline{h}_t^i). \tag{1}$$

This learning technology captures an external spillover effect that arises from the average society's level of human capital, $\overline{h}_t$. Such formulation is consistent with the so-called global or atmospheric externality, which implies that an increase in the average level of human capital in the society as a whole increases the rate of return on investment in human capital for the children's generation. First introduced by Tamura (1991), the assumption that the average level of human capital in society is an input in the production

of human capital for each individual became common in the literature. This externality has been utilized, e.g. by Tamura (1996), Galor and Tsiddon (1997), Morand (1999), Viaene and Zilcha (2002), de la Croix and Doepke (2003), Azarnert (2008, 2009, 2010, 2014), among many others. A particular form of human capital production function is specified below in equation (8).

Since economy C is "outside the model", in next sections I consider only individuals who were born or admitted as refugees in economies A and B. Therefore, there are three types of individuals in the model: (1) a, individuals born in the wealthiest economy A, (2) b, individuals born in the less wealthy economy B, (3) r, individuals born in the poor economy C, who were accepted as refugees either in economy A or B.

2.3. The Optimization of Parents

Agents of any type derive utility from their own consumption in adulthood and from the total future income of their children.[4] The utility function of an individual of any type $j = a, b, r$ born at time $t-1$ is therefore

$$U_t^j = (1-\beta)\log C_t^j + \beta \log(I_{t+1}^{N,j}), \tag{2}$$

where C_t^j is an individual's own consumption, $I_{t+1}^{N,j}$ is the future income of that individual's offspring and $\beta \in (0,1)$ captures the relative weight given to children.

In every period *t*, adult individuals are endowed with one unit of time. Adults allocate their time between childbearing and labor force participation. In either economy, the cost of feeding and raising children is measured in terms of work time (i.e. net labor income) foregone at δ per child. The cost of acquiring human capital is measured in units of the wage per efficiency unit of labor in that economy, w^j. The wage per efficiency unit of labor, w^j, is fixed over time, as follows from, for instance, the assumption of a CRS technology with a single factor of production.

To maximize utility, an adult of any type j simultaneously chooses a current consumption, C_t^j, the number of children, N_t^j, and invests e_t^j units of w^i in each child's education subject to the following budget constraint:

$$C_t^j + w^i(\delta h_t(1+k_t^j)+e_t^j)N_t^j \le w^i h_t(1+k_t^j). \quad (3)$$

The right-hand side of equation (3) represents an adult's income, which is allocated between consumption and the total cost of rearing children. Given the redistribution scheme, as defined in Section 2.1, $k_t^a = \tau_t \le 0$ in the case of an individual born in economy A, $k_t^b = s_t \ge 0$ in the case of an individual born in economy B, and $k_t^r = 0$ for a refugee.

The total future income of the individual's offspring is:

$$I_{t+1}^{N,j} = N_t^j h_{t+1} w^i. \quad (4)$$

2.4. Quantity - Quality Tradeoff

From optimization, an adult's consumption is

$$C_t^j = (1-\beta)h_t w^i(1+k_t^j). \quad (5)$$

That is, a fraction $1-\beta$ of an adult's net full income is devoted to consumption and hence a fraction β is devoted to childrearing.

In order to allocate resources between children's quantity and quality, an adult makes two simultaneous decisions. First, he decides how much consumption to forego during his adulthood to rear a family. Second, he decides what amount of resources to invest in the education of his children to increase their skill level.

For an individual of any type in the case of a non-corner solution, the standard condition of setting the marginal rate of substitution between quality and quantity equal to the price implies that

$$\frac{h_{t+1}}{N_t^j} - \frac{\delta h_t(1+k_t^j)+e_t^j}{N_t^j/\left(dh_{t+1}/de_t^j\right)} = 0 \quad \text{if} \quad e_t^j > 0, \quad (6)$$

where h_{t+1}/N_t is the marginal rate of substitution between quality and quantity, $w^i(\delta h_t(1+k_t^j)+e_t^j)$ is the cost of an additional child for a given level of parental investment in the child's education and $w^i N_t^j/[dh_{t+1}/de_t^j]$ is the marginal cost of children's quality (human capital) for a given number of children.

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[4] The model abstracts from child mortality. For an analysis of child mortality in the context of educational

From equation (6), optimization with respect to child's quality thus implies that

$$h_{t+1} = \left(\delta h_t (1 + k_t^j) + e_t^j\right) \frac{dh_{t+1}}{de_t^j}. \qquad (7)$$

The next subsection discusses the solution for the parents' optimization problem for a particular form of the human capital production function.

2.5. Choice of Fertility and Investment in Education

To characterize optimal choices of fertility and investment in education, suppose that in either economy all children born in this economy have access to the same technology of human capital production:

$$h_{t+1} = (\mu + e_t^j)^{\gamma} \bar{h}_t^i, \text{ where } 0 < \gamma < 1, \ 0 < \mu < 1, \text{ where } i = A, B \text{ and } j = a, b, r. \qquad (8)$$

This learning technology implies that children of the refugees from economy C born in the host economy become similar to the indigenous population of that economy.

Given (8), the optimal choice of investment in the children's education of an individual of any type in either economy is[5]

$$e_t^j = \frac{\gamma \delta h_t (1 + k_t^j) - \mu}{1 - \gamma}, \qquad (9)$$

so that, according to (9),

$$h_{t+1} = \left(\frac{\gamma}{1 - \gamma} (\delta h_t (1 + k_t^j) - \mu) \right)^{\gamma} \bar{h}_t^i. \qquad (10)$$

Given the amount of resources allocated to children's education, the desired fertility of an individual j ($j = a, b, r$) is

$$N_t^j = \frac{\beta(1 - \gamma)}{\delta - \dfrac{\mu}{(1 + k_t^j) h_t}}. \qquad (11)$$

Equation (9) shows that the optimal choice of investment in the offspring's education and hence the children's human capital levels (Eq. 10) is positively related to the parent's human capital, although parental human capital does not enter the learning

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investment see, for example, Azarnert (2006) and references therein.

[5] An assumption that $h_t^{i,\min} > \mu / \gamma\delta$ ensures that all parents invest in the education of their children.

technology directly. Equation (11) displays the traditional negative relationship between the parental level of human capital and the choice of fertility.

Furthermore, from equations (9) to (11) it is also clear that, for any $k_t^a = \tau_t \leq 0$, taxation increases fertility and reduces per-child human capital investment of indigenous population in economy A. In contrast, for any $k_t^b = s \geq 0$, subsidies given to agents in economy B, increase quality and reduce quantity of their offspring. Similarly, redistribution reduces adults' own consumption in economy A and increases consumption in economy B (Eq. 5).

2.6. Refugee Resettlement, Redistribution and Utility

By construction in this model, the wages and the average levels of human capital in the more advanced economies A and B are higher than those in the least advanced economy C; $w^A > w^B > w^C$ and $\overline{h}_t^A > \overline{h}_t^B > \overline{h}_t^C$. Therefore, migration always increases utility of the refugees through an increase in their own consumption (Eq. 5) and the levels of human capital of their offspring (Eq. 10), although the increase in the utility is lower if they are resettled to economy B.

At the same time, since the refugees are on average less skilled than the indigenous agents in economies A and B, $\overline{h}_t^r < \overline{h}_t^B < \overline{h}_t^A$, their arrival always reduces the average level of human capital in the economy where the refugees are hosted. As a consequence, as follows from the property of the human capital production function (8) with respect to the average level of human capital in the society, the decline in the average level of human capital in the economy where the refugees are accepted will be associated with a reduction in the individual levels of human capital of the offspring of the indigenous agents in this economy. Hence, the resulting reduction in the parental levels of utility generates an incentive for the agents in the wealthiest economy A to finance transfers to the agents in the less wealthy economy B to make it worthwhile for them to admit the resettled refugees.

Therefore, with the redistribution scheme, as specified above in Section 2.1, the utility levels of the agents in economy A in the case with taxation and the refugee resettlement ($U_t^{a,RR,\tau_t>0}$) is higher than their utility in the corresponding case when the

refugees are absorbed in their own country and without taxation ($U_t^{a,NR,\tau_t=0}$) if the rate of tax, τ_t, is lower than[6]

$$\widetilde{\tau}_t = 1 - \left(\left(\frac{\delta h_t (1-\widetilde{\tau}_t) - \mu}{\delta h_t - \mu} \right)^{1-\gamma} \frac{\overline{h}_t^{A,RR}}{\overline{h}_t^{A,NR}} \right)^{-\beta}, \tag{12}$$

where $\overline{h}_t^{A,RR}$ refers to the average level of human capital in economy A in period t in the case of the refugee resettlement, while $\overline{h}_t^{A,NR}$ refers to the average level of human capital in the case when the refugees are hosted in economy A, correspondingly.

Similarly, the utility levels of the agents in economy B in the case with the subsidy and the refugee resettlement in their own country ($U_t^{b,RR,s_t>0}$) is higher than their utility in the corresponding case when the refugees are not resettled and there are no subsidies ($U_t^{b,NR,s_t=0}$) if the rate of the subsidy, s_t, is higher than[7]

$$\widetilde{s}_t = \left(\left(\frac{\delta h_t - \mu}{\delta h_t (1+\widetilde{s}_t) - \mu} \right)^{1-\gamma} \frac{\overline{h}_t^{B,NR}}{\overline{h}_t^{B,RR}} \right)^{\beta} - 1, \tag{13}$$

where $\overline{h}_t^{B,RR}$ refers to the average level of human capital in economy B in period t when the refugees are resettled in this economy, while $\overline{h}_t^{B,NR}$ represents the average level of human capital in economy B, without refugee resettlement.

If these conditions do not hold, i.e., inequalities (12) and (13) are reversed, the agents in economies A and B can be worse off with redistribution and refugees resettlement.

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[6] To derive this rate of tax, note that $U_t^{a,RR,\tau_t>0} > U_t^{a,NR,\tau_t=0}$ if the following condition holds:

$$(1-\beta)\log((1-\beta)w^A h_t(1-\tau_t)) + \beta \log\left(\frac{\beta(1-\gamma)}{\delta - (\mu/(1-\tau_t)h_t)} \left(\frac{\gamma}{1-\gamma} (\delta h_t (1-\tau_t) - \mu) \right)^{\gamma} \overline{h}_t^{A,RR} w^A \right)$$

$$> (1-\beta)\log((1-\beta)w^A h_t) + \beta \log\left(\frac{\beta(1-\gamma)}{\delta - (\mu/h_t)} \left(\frac{\gamma}{1-\gamma} (\delta h_t - \mu) \right)^{\gamma} \overline{h}_t^{A,NR} w^A \right).$$

[7] To derive this rate of the subsidy, note that $U_t^{b,RR,s_t>0} > U_t^{b,NR,s_t=0}$ if the following condition holds:

$$(1-\beta)\log((1-\beta)w^B h_t(1+s_t)) + \beta \log\left(\frac{\beta(1-\gamma)}{\delta - (\mu/(1+s_t)h_t)} \left(\frac{\gamma}{1-\gamma} (\delta h_t (1+s_t) - \mu) \right)^{\gamma} \overline{h}_t^{B,RR} w^B \right)$$

$$> (1-\beta)\log((1-\beta)w^B h_t) + \beta \log\left(\frac{\beta(1-\gamma)}{\delta - (\mu/h_t)} \left(\frac{\gamma}{1-\gamma} (\delta h_t - \mu) \right)^{\gamma} \overline{h}_t^{B,NR} w^B \right).$$

2.7. Refugee Resettlement and Human Capital Accumulation

This section analyzes the dynamic behavior of the society's average level of human capital. To characterize the effect of asylum migration and refugee resettlement on the inter-temporal evolution of human capital, I examine the effect of migration in period t on the average level of human capital in the next period, in which migration is impossible.

In the analysis I suppose that the fraction of individuals who are better off with redistribution and resettlement of a certain fraction $\alpha \in]0,1]$ of the refuges in either economy is high enough and therefore the resettlement is politically feasible.[8] I also suppose that the redistribution budget is balanced, which implies that the amount of resources collected in economy A equals to the amount of resources distributed in economy B:

$$\int \tau_t N_{t-1} h_t dF_{t-1}^A(h^A) w^A = \int s_t N_{t-1} h_t dF_{t-1}^B(h^B) w^B \quad . \tag{14}$$

The average human capital level in period $t+1$ is defined as

$$\overline{h}_{t+1} \equiv \int h_{t+1} dF_{t+1}(h) = \int N_{t+1} h_{t+1} dF_t(h) \Big/ \int N_{t+1} dF_t(h). \tag{15}$$

Given the quantity of the refugees as supposed in Section 2.1 and the number of children and the levels of human capital investment among the three types of agents as determined in Section 2.5, the average human capital level in economy A in period $t+1$ in the case of resettlement of a fraction α of the refugees is

$$\overline{h}_{t+1}^{A,RR} = \left(\frac{\gamma}{1-\gamma}\right)^{\gamma} \Bigg[\overline{h}_t^{A,RR} \Big(\int (1-\tau_t) h_t (\delta h_t (1-\tau_t) - \mu)^{\gamma-1} dF_t^A$$

$$+ (1-\alpha) R \int h_t (\delta h_t - \mu)^{\gamma-1} dF_t^C \Big) \Bigg] \Big/ \tag{16}$$

[8] The case when refugees with the lowest levels of human capital below a certain threshold are resettled follows trivially using the same intuition.

$$\left[\int(\delta-(\mu/(1-\tau_t)h_t))^{-1}dF_t^A+(1-\alpha)R\int(\delta-(\mu/h_t))^{-1}dF_t^C\right],$$

while the average level of human capital in the case when all refugees are settled in economy A is correspondingly

$$\bar{h}_{t+1}^{A,NR}=\left(\frac{\gamma}{1-\gamma}\right)^{\gamma}\left[\bar{h}_t^{A,NR}\left(\int h_t(\delta h_t-\mu)^{\gamma-1}dF_t^A+R\int h_t(\delta h_t-\mu)^{\gamma-1}dF_t^C\right)\right]\Bigg/$$

$$\left[\int(\delta-(\mu/(1-\tau_t)h_t))^{-1}dF_t^A+R\int(\delta-(\mu/h_t))^{-1}dF_t^C\right]. \tag{17}$$

Similarly, the average levels of human capital in economy B in period $t+1$ with and refugee resettlement and income transfers is

$$\bar{h}_{t+1}^{B,RR}=\left(\frac{\gamma}{1-\gamma}\right)^{\gamma}\left[\bar{h}_t^{B,RR}\left(\int(1+s_t)h_t(\delta h_t(1+s_t)-\mu)^{\gamma-1}dF_t^B\right.\right.$$

$$\left.\left.+\alpha R\int h_t(\delta h_t-\mu)^{\gamma-1}dF_t^C\right)\right]\Bigg/ \tag{18}$$

$$\left[\int(\delta-(\mu/(1+s_t)h_t))^{-1}dF_t^B+\alpha R\int(\delta-(\mu/h_t))^{-1}dF_t^C\right],$$

while the corresponding average level of human capital in the absence of resettlement and income transfers is

$$\bar{h}_{t+1}^{B,NR}=\left(\frac{\gamma}{1-\gamma}\right)^{\gamma}\bar{h}_t^{B,RR}\int h_t(\delta h_t-\mu)^{\gamma-1}dF_t^B\Big/\bar{h}_t^{B,RR}\int(\delta h_t-\mu)^{\gamma-1}dF_t^B\ . \tag{19}$$

As shown previously, taxation of the labor income increases fertility and reduces per-child human capital investment in the indigenous population in economy A, thereby reducing the resulting per-capita human capital levels in this economy in the next period. At the same time, the effect of the resettlement of the refugees is twofold: First, through

the reduction in the total number of the offspring of the current period refugees, it reduces the share of the relatively low-skilled agents in economy A in the next period. Second, it is also associated with an increase in the average level of human capital in the society in current period, which increases the rate of return on investment in human capital for the entire children's generation, thus further contributing to an increase in the average level of human capital in economy A in the next period. The net effect is thus uncertain. Comparing the levels of human capital in the case of resettlement ($\overline{h}_{t+1}^{A,RR}$) to that in the absence of resettlement ($\overline{h}_{t+1}^{A,NR}$), as shown above in equations (16) and (17), allows us to determine precisely whether resettlement of a fraction of the refugees outside the country coupled with taxation of the labor income of the local agents in period t in economy A increases or decrease the average level of human capital in the next period. Thus, if $\overline{h}_{t+1}^{A,RR} > \overline{h}_{t+1}^{A,NR}$, refugee resettlement increases this economy's level of human capital. In contrast, if $\overline{h}_{t+1}^{A,RR} < \overline{h}_{t+1}^{A,NR}$, the average level of human capital in this economy would be higher if all refugees are accepted in this economy.

For economy B, the effect of redistribution and refugee resettlement is the opposite. Thus, on the one hand, subsidies to the local agents' labor income reduce their optimal fertility and increase investment in per-child human capital hence increasing the resulting per-capita human capital levels in the indigenous population in this economy in the next period. On the other hand, the arrival of the low-skilled refugees increases the share of the relatively low-skilled agents in the next period and reduces the society's average level of human capital in the current period both reducing the average level of human capital in the coming period. Comparing the levels of human capital in the case of resettlement ($\overline{h}_{t+1}^{B,RR}$) to that in the absence of resettlement ($\overline{h}_{t+1}^{B,NR}$), as shown above in equations (18) and (19), allows us to determine precisely whether resettlement of a fraction of the refugees in this country coupled with the subsidies to the labor income of the local agents in period t in economy B increases or decrease the average level of human capital in period $t+1$.

As a consequence, if for a given α, $\overline{h}_{t+1}^{A,RR} > \overline{h}_{t+1}^{A,NR}$ and $\overline{h}_{t+1}^{B,RR} > \overline{h}_{t+1}^{B,NR}$, resettlement of the fraction α of the refugees from the most advanced, wealthiest economy A to the less advanced and less wealthy economy B will stimulate human capital accumulation in

both economies. Moreover, as follows from the property of the learning technology (8) with respect to the average level of human capital in the society, the effect of the resettlement on human capital levels in each of the economies will evolve further from one generation to the next.

5. Conclusion

In view of the large and growing number of asylum seekers who find their way to developed countries, numerous voices have advocated resettlement as a possible solution. This article expands the literature on tradable refugee resettlement in the direction of human capital accumulation and growth. The analysis is performed in a growth model with endogenous fertility. In this work, I propose a particular redistribution scheme and show that refugee resettlement from a more advanced and wealthier economy to a less advanced and less wealthy economy combined with income transfers can give rise to conditions in which utility of the indigenous populations in both countries increases. I also derive the exact conditions for the proposed resettlement policy to stimulate human capital accumulation and hence economic growth in both economies.

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