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Social Status and Public Expectations: Self-Selection of High-Skilled Migrants

Abstract

We analyze public expectations about migrants' provision of work effort as a driving force in the self-selection process of high-skilled migrants. We adopt and extend Piketty's (1998) theoretical framework of social status and work out how country-specific public expectations affect the migrants' choice about their country of destination. As a result, we relate Germany's attested low attractiveness for high-skilled immigrants to its society's attitudes towards immigrants. We develop measures to increase Germany's attractiveness in the competition about talents.

JEL Classification: F22

Keywords: Immigration; social status

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1 Christian Lumpe, Justus-Liebig-University Giessen; Claudia Lumpe, Justus-Liebig-University Giessen and RWI; Jürgen Meckl, Justus-Liebig-University Giessen. *- We are very grateful to RWI for hosting Claudia Lumpe as a guest researcher. We thank Max Albert, Julia Bredtmann, Holger Bonin, Björn Frank, Matthias Göcke and Stefan Zink for very helpful suggestions. We also appreciate comments from participants of the MAGKS Doctoral Colloquium, the 17th Workshop on International Economics in Göttingen, the ETSG Conference, the Workshop on Migration Barriers in Jena and the RES Conference. All errors remain our own. We gratefully acknowledge financial support from the Fritz Thyssen Foundation within the framework of the project "Public attitudes and migration".* *- All correspondence to: Claudia Lumpe, Justus-Liebig-University Giessen, Department of Economics, Licher Str. 66, 35394 Giessen, Germany, e-mail: claudia.lumpe@wirtschaft.uni-giessen.de*

1 Introduction

Irrespective of the current mass inflow of refugees primarily from war regions in the Middle East, Germany seems to have considerable problems in attracting qualified labor both at a sufficient scale and for permanent stay (cf. OECD, 2013). Although being highly attractive for low–skilled immigrants, high–skilled immigrants prefer to migrate to other countries, especially to the US (cf. Geis et al., 2011; Peri, 2005). The reasons for this adverse self-selection of immigrants should be worth to be analyzed, as Germany fears a shortage especially in its supply of skilled labor in the near future. The scope for internal measures to compensate for the demographic change, e.g., a higher accumulation of human capital, is limited (cf. Fertig et al., 2009). On the other hand, immigration of skilled labor from abroad is considered as a promising solution.

One of the principal reasons for that lack of attractiveness for high–skilled immigrants stressed in the literature is labor–market opportunities (specifically expected after–tax income)[1] that are considered to be worse in Germany compared to those in the US (cf., e.g., Algan et al., 2010; Card, 2005). This argument gets additional support from emigration of top scientists out of Germany to the US observed in the past (cf. Docquier and Rapoport, 2012; Peri, 2005). Another source of disadvantage is language problems that can be thought of as an additional country–specific migration cost (cf. Chiswick and Miller, 2015). Whereas a lot of potential high–skilled migrants speak English very well, only a minority in this group speaks German. These causes for Germany's lack in attractiveness are well understood, but may not exhaust all possible obstacles to attract high–skilled workers. Especially, these arguments are in considerable conflict with the observed adverse selection with respect to different types of labor. For the group of low–skilled immigrants, labor–market opportunities are not significantly better in Germany than in other industrialized countries, and language problems may even be more severe for that group. This might be partially offset by a more generous welfare state (cf. Borjas, 1999; Razin and Sadka, 2014) and/or networks (cf. Beine et al., 2011), but nevertheless, the problem of skill–specific attractiveness is not sufficiently understood.

Another cause for a poor attractiveness that has been stressed more recently in the public debate is that it is relatively hard to attain adequate social status in Germany. This alternative mechanism rests on specific public attitudes of the German society towards migrants that imposes high challenges on migrants in order to attain proper social status.[2] Our paper stresses that channel and provides a theoretical explanation for that argument. Thereby we heavily draw on a model developed by Piketty (1998). Piketty argues that if agents care about their social status, multiple equilibria with self–fulfilling public expectations/ beliefs about the agents' choice of work effort may exist.[3] We apply Piketty's argument to the potential social status attained by immigrants in different host countries and show how migrants of two different skill

[1]Borjas (1987) explains self–selection of immigrants mainly by existing differentials in the returns to skills and different income distributions between host and sending country.

[2]See, e.g., Kaas and Manger, 2011, and Uhlendorff and Zimmermann, 2014, for the labor market discrimination of migrants in Germany that drives their opportunity to attain proper social status.

[3]We will interchangeably use the wording "public beliefs" and "public expectations".

groups self–select accordingly in the process of deciding about their country of destination. Especially, we show that it may be comparably hard for skilled migrants to attain adequate social status in Germany relative to the US, whereas there is no difference for unskilled migrants to obtain social status in both countries. As a result, we should observe an endogenous self–selection with skilled migrants favoring the US while there is no selection in the group of the unskilled. Our extended version of the Piketty approach thus reconciles the theory with the observed selection of migrants. Furthermore, it complements existing migration theory in offering a new explaining factor for the self–selection of migrants. We will also discuss means to overcome the adverse–selection problem caused by differences in public beliefs as an enlargement of our basic approach, especially how policy makers can coordinate public expectations in order to establish a better "welcoming attitude" towards high–skilled migrants.

The remainder of our paper is organized as follows. The next section introduces the basic model of individuals that care about their social status and applies it to the problem of immigration. Section 3 then analyzes the immigrants choice of their host country and relates that decision to country–specific self–fulfilling beliefs. In Section 4 we explore measures to compensate for the adverse self–selection problem. Section 5 concludes.

2 The Model

Basic Assumptions

We follow closely the proceeding of Piketty, but extend his model at several points for our question at hand. Agents – in our specific case: people that potentially emigrate from their home country – are assumed to be heterogeneous with respect to their innate abilities β, and with respect to skills they have acquired by education in their home country. Innate abilities are assumed to be distributed among the population according to some density function $f(\beta)$. As far as skills are concerned, we assume for the purpose of simplification that there are only two skill levels. The set of agents $I = [0, 1]$ is partitioned with I_s agents who have acquired skills, and I_u agents who have not. We do not assume a perfect market for education that determines a unique threshold ability thus perfectly separating agents with low abilities from agents with high abilities by their skill level. Instead, we suppose that abilities in the group of type j workers are distributed by some density function $f_j(\beta)$ with mean $\bar{\beta}_j$ and variance σ_j^2 for $j = s, u$, such that $\bar{\beta}_s > \bar{\beta}_u$. These assumptions ensure that skilled workers on average have also higher abilities. However, because of imperfect access to education due to credit constraints or corruption,[4] skills are not perfectly correlated to abilities in our setting.[5]

An agent i is assumed to derive utility from income he obtains in the host country, y_i, and

[4]Since skills are typically substantiated by specific certificates, corruption may appear as a convenient way of acquiring these certificates.

[5]In contrast to our model, Piketty assumes that individuals are partitioned according to the economic success of their parents into two different social classes. He also argues that distribution of abilities may be class specific, but he does not fully analyze that case. Nevertheless, although our model seems to be different, it is a straightforward application of Piketty's approach in that respect.

his perceived social status in the host country, i.e. the public beliefs μ_i about the agent's ability β_i. Exertion of effort, e_i reduces agent i's utility as captured by some cost function $C(e_i)$. The objective function of agent i is specified as

$$U_i = (1-\lambda)y_i + \lambda\beta_i^P - C(e_i)\,, \qquad \lambda \in [0,1]\,, \tag{1}$$

where β_i^P is the expected ability of i according to the public beliefs μ_i, and thus measures the social status of agent i. We explicitly allow for special cases where agents derive no utility from perceived abilities (the case of no status preferences at all with $\lambda = 0$), and where agents exclusively care about social status ($\lambda = 1$). This will allow to isolate the impact of status preferences on the self–selection of migrants.

In order to keep the analysis tractable, we assume that in each host country there are only two possible income levels $y_1 > y_0 \geq 0$ that migrants can attain. We will refer to the situation where agents obtain the high income y_1 as economic success. The probability that agent i obtains the high income y_1 depends positively on his ability β_i, and the effort e_i he chooses:[6]

$$\begin{aligned} If\ i\ \in\ I_s, &\qquad Prob\{y_i = y_1\} = \pi_s + \theta\beta_i e_i \\ If\ i\ \in\ I_u, &\qquad Prob\{y_i = y_1\} = \pi_u + \theta\beta_i e_i\,. \end{aligned}$$

Here, $\pi_j \geq 0$ measures the extent to which a high income is attained independently from the agents' abilities or effort. For a skilled agent, π_s measures both the impact of his acquired skills and the impact of pure luck on economic success; for an unskilled agent, π_u measures only the extent of pure luck on economic success. Since there is no reason why the effect of pure luck should differ for both types of agents, we have $\pi_s > \pi_u$.[7] Eventually, $\theta \geq 0$ measures the extent to which effort and ability translate into a higher probability of economic success.

Of course, probabilities range by definition between 0 and 1. We assume that the model's parameters are such to guarantee this condition; specifically, we impose an upper bound for effort E and for innate abilities B identical for both types of agents that ensure

$$\pi_s + \theta BE < 1\,. \tag{A1}$$

The above assumption is a sufficient condition ensuring that all probabilities are in the admissible range.

Social status is modeled as the public beliefs about an agent's ability. We assume that the two distributions of abilities are public information; additionally, individual income is also publicly observable, as well as the acquired skills. On the other hand, we assume that individual effort levels and, of course, abilities are not publicly observable.

[6] We interpret effort in the following as effort in order to attain a job with a high or low income and the respective social status.

[7] Piketty (1998) compares two types of agents that have class-specific background. Our π_s corresponds to $\pi + \Delta\pi$ in his notation, our π_u stands for his π. There is no difference with regard to contents between his and our approach on that point apart from notation.

Information Extraction

We analyze the information exertion by the public about abilities of agents concentrating on the case of a skilled agent; the case of an unskilled agent is completely analogous to the case considered. Before observing the income of a skilled agent i, the public belief μ_i about agent i's income is derived solely from the density function $f_s(\beta)$. *Ex ante*, the social status of each skilled agent thus is $\bar{\beta}_s$. After observing the agent's income, however, this *ex-ante* social status is adjusted according to Bayes rule. Assuming that everybody expects skilled individuals to choose an effort level e_s, we obtain the updated public belief of a skilled agent's ability with an income $y_i = y_1$:

$$\mu_i(\beta | i \in I_s,\, y_i = y_1) = \frac{\pi_s + \theta\beta e_s}{\pi_s + \theta\bar{\beta}_s e_s} f_s(\beta)\,. \tag{2}$$

Rational updating implies that society puts higher (lower) weights on above (below) average abilities for those agents that have realized an income y_1 (y_0). As a result of this updating of beliefs we obtain the ability expected by the public β_i^P as

$$\beta_i^P = \int \beta \frac{\pi_s + \theta\beta e_s}{\pi_s + \theta\bar{\beta}_s e_s} f_s(\beta)\, d\beta\,.$$

Solving for the integral, we get the following value of expected ability for agent i:

$$\beta_i^P = \bar{\beta}_s + \frac{\theta e_s}{\pi_s + \theta\bar{\beta}_s e_s}\sigma_s^2\,. \tag{3}$$

Let us now denote the social status of a skilled agent that has been observed to earn a high income in the host country given in (3) by β_{1s}^P. By applying the same procedure we can derive the social status β_{ij}^P associated to agents of type j ($j = s, u$) after the public observed an income $y_i = y_1$ resp. $y_i = y_0$. We have:

$$\beta_{1j}^P = \bar{\beta}_j + \frac{\theta e_j}{\pi_j + \theta\bar{\beta}_j e_j}\sigma_j^2 \tag{4}$$

$$\beta_{0j}^P = \bar{\beta}_j - \frac{\theta e_j}{1 - \pi_j - \theta\bar{\beta}_j e_j}\sigma_j^2\,. \tag{5}$$

From our status measures in (4) and (5) we finally obtain two status differentials that reflect the difference in status for skilled and unskilled agents earning high or low income:

$$\beta_{1j}^P - \beta_{0j}^P = \frac{\theta e_j \sigma_j^2}{(\pi_j + \theta\bar{\beta}_j e_j)(1 - \pi_j - \theta\bar{\beta}_j e_j)}\,. \tag{6}$$

Note that our assumption (A1) ensures that (6) defines the status differentials as a function of e_j for all admissible $e_j \leq E$.

Choice of Effort

Agents will now choose their effort level in order to maximize their utility function given by (1) taking as given the public belief about their social status (i.e., taking as given the status measures in (4) and (5)). Additionally we simplify the analysis by assuming (i) that *ex ante* agents do not know their exact ability but share the public belief, and (ii) by specifying the cost of effort as $C(e_i) = e_i^2/2a$ for both types of workers, with $a > 0$. An agent of type j ($j = s, u$) then solves the following problem:

$$\max_{e_j} = \left[\pi_j + \theta\bar{\beta}_j e_j\right]\left[(1-\lambda)y_1 + \lambda\beta_{1j}^P\right] + \left[1 - \pi_j - \theta\bar{\beta}_j e_j\right]\left[(1-\lambda)y_0 + \lambda\beta_{0j}^P\right] - \frac{e_j^2}{2a}. \quad (7)$$

The first-order condition for an interior solution of this problem reads

$$e_j = a\theta\bar{\beta}_j\left[(1-\lambda)(y_1 - y_0) + \lambda(\beta_{1j}^P - \beta_{0j}^P)\right]. \quad (8)$$

As long as the solution of this first–order condition is feasible, an agent of type j chooses effort according to (8). Otherwise, the agent supplies full effort $e_j = E$. Furthermore, as all agents of type j (i) solve the same problem and (ii) are confronted with the same social status in case of high income ($y_i = y_1$) resp. low income ($y_i = y_0$), all agents of type j will choose the same effort level in equilibrium. Additionally, assume that

$$\tilde{e_s} = a\theta\bar{\beta}_s(y_1 - y_0) < E. \quad \text{(A2)}$$

Assumption (A2) guarantees that in the absence of a status motif (i.e., $\lambda = 0$) a high–skilled agent chooses an admissible value of effort.

Characterization of the Equilibrium

In equilibrium, the agents' optimal selections of effort levels given either by (8) in the case of an interior solution, or by E in the case of a corner solution have to be consistent with the type–specific effort levels e_j expected by the public and used in (6). For an interior solution, the equilibrium is obtained by substituting for status differentials in (8) from (6):

$$e_j = g_j(e_j) \equiv a\theta\bar{\beta}_j\left[(1-\lambda)(y_1 - y_0) + \lambda\theta\sigma_j^2 h(e_j, \mathbf{v}_j)\right], \quad (9)$$

where $h(e_j, \mathbf{v}_j) \equiv e_j/[(\pi_j + \theta\bar{\beta}_j e_j)(1 - \pi_j - \theta\bar{\beta}_j e_j)]$, and $\mathbf{v}_j$ denotes the vector of parameters: $\mathbf{v}_j = (\pi_j, \bar{\beta}_j, \theta)$.

In order to discuss the properties of the equilibrium (existence and uniqueness), we illustrate (9) as a function of e_j. The graph of the lhs in (9) corresponds to the 45–degree line. With respect to the graph of the rhs of (9), let us first look at the function $g_j(e_j)$, ignoring the restriction for effort at the moment. The function $g_j(e_j)$ cuts the vertical axis at $K_j \equiv (1-\lambda)\tilde{e_j}$ with $0 < K_j < E$ for all $\lambda \in [0, 1)$, while $K_j = 0$ in case of $\lambda = 1$ (i.e., if agents only care about status). Furthermore, $g_j(e_j)$ is monotonically increasing in e_j; since $g_j'(e_j) = A_j \partial h(e_j, \mathbf{v}_j)/\partial e_j$, with $A_j > 0$ as some constant, monotonicity can be shown by calculating the partial derivative of h:

$$\frac{\partial h(e_j, \mathbf{v}_j)}{\partial e_j} = \left[\frac{h(e_j, \mathbf{v}_j)}{e_j}\right]^2 [\pi_j - \pi_j^2 + (\theta\bar{\beta}_j e_j)^2] > 0,$$

where the inequality is ensured by $\pi_j \in (0, 1)$.

For the curvature of the graph of $g_j(e_j)$ we also calculate the second derivative as $g''_j(e_j) = A_j \partial^2 h(e_j, \mathbf{v}_j)/\partial e_j^2$. We obtain

$$\frac{\partial^2 h(e_j, \mathbf{v}_j)}{\partial e_j^2} = 2\left[\frac{h(e_j, \mathbf{v}_j)}{e_j}\right]^2 \left\{\left[\frac{\partial h(e_j, \mathbf{v}_j)/\partial e_j}{h(e_j, \mathbf{v}_j)} - \frac{1}{e_j}\right]\left[\pi_j - \pi_j^2 + (\theta\bar{\beta}_j e_j)^2\right] + \theta^2 \bar{\beta}_j^2 e_j\right\}.$$

A sufficient condition for g_j being convex in e_j is that

$$\frac{\partial h(e_j, \mathbf{v}_j)/\partial e_j}{h(e_j, \mathbf{v}_j)} - \frac{1}{e_j} \geq 0 .$$

Calculating that condition gives:

$$1 - 2\pi_j \leq 2\theta\bar{\beta}_j e_j .$$

As a result, a sufficient condition for both g_j and h to be convex functions of e_j is $\pi_j \geq 1/2$. In the following we assume that this condition always holds for skilled agents; so we implicitly assume that the probability of skilled workers to be economically successful is at least 1/2, independently of their choice of effort.

This condition equally holds for unskilled agents if $\pi_s > \pi_u \geq 1/2$. However, if $\pi_u < 1/2$ due to $e_u < (1 - 2\pi_u)/2\theta\bar{\beta}_u$, we may end up with either a concave function g_u and h for all admissible effort values, or with the functions g_u and h being concave for effort levels below some threshold $t \in (0, E]$, and convex for $e_u > t$.

In the case of concave functions g_u and h, there will be a unique effort equilibrium for $\lambda < 1$: a unique interior solution for the optimal effort e_u^* or a unique corner solution $e_u = E$. Multiple equilibria are not possible in that case. As we will show in the following, it is the convexity of the function g_j that opens up the possibility of multiple equilibria which are especially relevant for skilled agents.

As an illustration of the rhs of (9), the function $g_j(e_j)$ only applies for all admissible $e_j \in [0, E]$ if $g_j(E) < E$. This is illustrated in Fig. 1 (cf. the appendix for the figures). Due to the curvature of the g_j–function, there exists exactly one point of intersection of the graph of g_j and the 45–degree line that establishes the unique equilibrium $e_j^* < E$ in that case (Case 1 in the following). On the other hand, if $g_j(e_1) \equiv E$ for some $e_1 < E$, the graph of $g_j(e_j)$ applies for all $e_j \in [0, e_1]$, while we have $e_j = E \,\forall\, e_j > e_1$, i.e. $g_j(e_j)$ has a kink at $e_j = e_1$. In that case (Case 2 in the following), several types of equilibria are possible:[8]

- Case 2a): two interior solutions e_j^* and e_j^{**} to (9) where the graph of $g_j(e_j)$ intersects the 45–degree line plus one corner solution with maximum effort E (cf. Fig. 2).

- Case 2b): one interior solution e_j^{**} to (9) where the graph of $g_j(e_j)$ is tangential to the 45–degree line plus one corner solution with maximum effort E (cf. Fig. 3).

- Case 2c): no interior solution to (9), but one corner solution with maximum effort E (cf. Fig. 4).

[8] Piketty's proposition 1 (p. 124) proves that a unique effort equilibrium exists for sufficiently low values of λ (Case 1) and that the case of multiple–effort equilibria (Case 2) exists for sufficiently high values of λ.

Eventually, there exists a third case (Case 3) with $g_j(E) = E$ where the graph of $g_j(e_j)$ intersects the 45–degree line for $e_j = e_j^*$ and $e_j = E$ (cf. Fig. 5). Note that Case 2b) and Case 3 are knife–edge cases in the sense that their existence rests on very specific parameter constellations, and any change in the parameters of the model generate a regime switch: Case 2b) either switches to 2a) or to 2c), Case 3 either switches to Case 2a) or to Case 1.

As a result, whatever value of effort the public expects from skilled or unskilled agents (i.e., for each admissible $e_j \in [0, E]$), an individual's best answer is determined by the corresponding point on the respective graph of $g_j(e_j)$. All best answers on the 45–degree line then are a Nash equilibrium of the model. Following the usual proceeding we ignore unstable effort equilibria where $g_j(e_j)$ cuts the 45–degree line from below or is tangential to the 45–degree line.

The crucial difference between skilled and unskilled agents that can be derived from a comparative-static analysis is then, that the case of multiple equilibria can only occur for unskilled agents, if there are multiple equilibria for the skilled as well. On the other hand, multiple equilibria for the skilled may occur while there is a unique equilibrium for the unskilled. Our argument of self–selection of skilled migrants going in hand with no such self–selection effects for the unskilled is thus, based on that asymmetry of the model.

Ranking of Equilibria

Before deriving the migrants' choice about their country of destination from this model, let us rank the multiple equilibria by their utility values. First, note that the first–best effort can be obtained by substituting in (7) for β_{1j}^P and β_{0j}^P from (4) and (5); thus we get the first–best effort as

$$e_{FB} = a\theta\bar{\beta}_j(1-\lambda)(y_1 - y_0)\,. \tag{10}$$

From (9) and (10) we derive that for every $\lambda > 0$ the effort level e_{FB} is less than any solution of $e_j = g_j(e_j)$. Since expected utility is concave in effort, we obtain that equilibria are always less inefficient the lower the equilibrium effort level. So multiple equilibria can always be ranked in terms of effort: the lower effort, the higher expected utility. The economic intuition is given by Piketty (1998: 124): as long as all migrants choose the same effort level, expected utility derived from the status motive is always $\bar{\beta}_j$. Seeking for status induces solely a 'rat race' in effort.

3 Migrants' Choice and Self–Selection Effects

We apply the basic model in order to show the impact of public expectations that affect the social status of skilled migrants on their self–selection into different host countries. We specifically concentrate on migration of skilled workers from a given source country who have the option of migrating to two host countries: Germany (GER) and the US. Thus, migrants face country–specific expected utilities. For reasons of simplicity, reservation utility in the source country is normalized to zero.

In order to isolate the role of public expectations, we assume that both countries are structurally identical; this means that all parameters of the model characterizing the destination country – the values of a, θ, π_s, y_1 and y_0 – are identical for both countries. Moreover, we assume that both countries have identical information about the potential immigrants' abilities summarized by the density function $f_s(\beta)$. It is only public expectations about migrants' effort, where the countries may differ. Of course, this presupposes that the parameter values support the case of multiple equilibria (Case 2a)) on which we will focus in the following. The case of multiple equilibria requires that skilled migrants have sufficiently high status preferences ($\lambda >> 0$). On the other hand, if status preferences λ are sufficiently low or even in the absence of the status motive ($\lambda = 0$), there exists a unique solution of equilibrium expectations that generate unique solutions in equilibrium effort consistent with migrants choice of effort, and thus there is no scope for differences in public expectations to emerge. Then, skilled migrants (as well as unskilled migrants) would be indifferent and equally distribute themselves over different host countries. From this follows that preferences for social status are essential and decisive for migrants' decisions to select into one specific destination country.

Concerning expected utility in the case of multiple effort equilibria our analysis of the ranking of equilibria immediately shows that migrants' expected utility is the higher, the lower the equilibrium effort. A self–selection effect arising solely from the migrants' care about social status then presupposes that skilled migrants expect that the public in the US expects a low effort from them ($e_{US} = e_s^*$) whereas the public in Germany expects from them a high effort ($e_{GER} = E$). As these expectations are self–fulfilling, we will end up with the respective differences in equilibrium effort that are associated with the asserted differences in expected utilities that favor migration to the US only.

Germany's lack of attractiveness is then the problem that skilled migrants believe that they have to exert excessive work effort to meet the high expectations of the German public which negatively affects their expected utility. By comparison, they could achieve with less effort an even higher expected utility in the US. These beliefs of skilled migrants can be based on population surveys that examine public attitudes towards immigrants in different destination countries. Although these surveys have a very general character and, e.g., lack a distinction of public attitudes towards different skill groups of migrants, they can give a potential empirical evidence of the modeled differences in expectations about the work effort of skilled migrants. More concretely, empirical studies referring to these population surveys indicate that public attitudes in the US are less anti–immigrant than in Germany (cf. Mayda, 2006, and O'Rourke and Sinnott, 2006).[9] Thus, we argue that skilled migrants have to overcompensate public attitudes in Germany with extremely high effort. In contrast to this option, skilled migrants have to invest a lower effort level in the US (due to lower public expectations) in order to attain a high–income position and the respective social status, i.e. it is easier for skilled migrants to get

[9]Bauer et al. (2000) confirm this result concerning the survey question if immigration should be limited or not – but they show a more differentiated view while assessing further survey questions reflecting natives' attitudes towards immigration.

a well–paid job in the US than in Germany.[10] Consequently, Germany is relatively unattractive as a host country compared to the US.

4 Measures to Counter Adverse Self–Selection

The question arises how Germany can overcome this disadvantage in its attractiveness vis à vis the US and counter an adverse self–selection effect as analyzed in the previous section. We will present four political measures:

1. *Coordination of public expectations:* Germany could improve its attractiveness if public beliefs concerning the work effort of skilled migrants would change. This fundamental change of beliefs requires a coordination of expectations towards the low effort equilibrium.

2. *Higher skill transferability via an increase in π_s:* Mechtenberg and Strausz (2012) show that the imperfect human capital transferability within the EU makes immigration from third countries into the EU less attractive – especially for more talented individuals. Thus, Germany can raise its attractiveness if skilled migrants could better transfer the skills they have acquired in their home countries to the German labor market. A recognition of educational attainments would allow skilled migrants to apply for positions at their skill level and therefore, positively affect their probability of being economically successful.

3. *Higher income level via an increase in y_1 or y_0:* Germany could also compensate its competitive disadvantage by improving the economic situation of skilled migrants. This can be achieved by, e.g., lowering the taxation of migrants' income so that after tax incomes (regardless of which level) rise.

4. *Lower migration costs via an increase in a:* Lowering effort–related migration costs by, e.g., a free language course or an easier and faster access to German citizenship, also reduce barriers for skilled immigrants and thus, make Germany more attractive.

In the following we will study the impact of each of these four policy measures. The coordination of expectations enters our model exogeneously. The remaining three measures can be modeled endogeneously within our framework.

4.1 Coordination of public expectations

A crucial measure to counter the adverse–selection effects of public expectations on skilled migrants in Germany would be a coordination of these expectations. For this purpose, we reinterpret our model as a sunspot equilibrium model. Sunspot equilibrium models are build according to the same framework as Piketty's model: they exhibit multiple rational expectations equilibria. As an extension of Piketty's and thus, of our theoretical framework, we assume

[10] Studies of the ex–post economic performance of migrants (e.g., Algan et al., 2010; Card, 2005) as well as studies about the discrimination of migrants in the labor market (e.g., Kaas and Manger, 2011; Uhlendorff and Zimmermann, 2014) can give an indication for our finding.

expectational indeterminacy of the German public that stems from an "extrinsic uncertainty". Due to this uncertainty, we assume that the public will adjust its expectations about the work effort of skilled migrants contingent on a random variable k. This random variable has no direct effect on the fundamentals of our model, i.e. the existing multiple equilibria would stay the same. k would only act via its effects on public expectations. As we are especially interested in how a policy marker might change public expectations, we assume k to be under the control of the policer maker. Interpreting the random variable as a traffic light (to take the metaphor from Evans et al., 1998), the policy maker might switch between the green or red light by exemplifying respective attitudes and/ or by introducing respective policies. These act as a signal and thus, generate more or less attractive attitudes of the public towards migrants.

A positive change in attitudes towards skilled migrants that reduces exaggerated expectations ("green signal") can be achieved by establishing a better "welcoming attitude" which is currently at the core of the public debate. This can be achieved by strongly supporting corresponding values and by anchoring them in society. Furthermore, this "welcoming attitude" can be expressed by immigration policies that signal Germany's openness and opportunities for skilled migrants (see e.g., Facchini and Mayda, 2008). In accordance with the needs of the German labor market, such an immigration policy should stronger address high–skilled migrants (like e.g., in the Canadian point system) and remove barriers to their immigration.

We would expect that the coordination of expectations can only be realized in the medium or long run but with a crucial advantage of much lower implementation costs compared to the following three political measures. However, they represent additional scope for political action - especially in the short and medium run - in order to increase Germanys' attractiveness for skilled migrants.

For each of the three measures we will carry out a comparative–static analysis in order to describe how they endogeneously affect equilibrium effort and expected utility in the case of multiple equilibria, i.e if effort and expected utility rise or fall. As we cannot calculate if and under which parameter constellations expected utility in Germany can be raised to such an extent that Germany becomes more attractive for skilled migrants than the US ($EU_s(e_{GER}) > EU_s(e_{US})$), we will complement our results by a numerical analysis. We will show if a single measure can overcompensate Germany's disadvantage in the competition about talents or if a bundle of the three measures is necessary.

4.2 Higher skill transferability

4.2.1 Impact on equilibrium effort

The impact of a change in the skill transferability π_s on (the graph of) g_s is determined by its impact on h. Writing $h - h(e_s, \mathbf{v}_s) = 0$ as an implicit function, we get:

$$\begin{aligned}\frac{dh}{d\pi_s} &= \frac{-e_s}{[(\pi_s + \theta\bar{\beta}_s e_s)(1 - \pi_s - \theta\bar{\beta}_s e_s)]^2}[(1 - \pi_s - \theta\bar{\beta}_s e_s) - (\pi_s + \theta\bar{\beta}_s e_s)] \\ &= \frac{-e_s}{[(\pi_s + \theta\bar{\beta}_s e_s)(1 - \pi_s - \theta\bar{\beta}_s e_s)]^2}[1 - 2(\pi_s + \theta\bar{\beta}_s e_s)]\,.\end{aligned}$$

The assumption $\pi_s > 1/2$ is sufficient for ensuring $dh/d\pi_s > 0$. For two alternative values $\pi_1 > \pi_0$ we thus have $g_s(e_s, \pi_0) < g_s(e_s, \pi_1)$ for all $e_s \in (0, E]$, while the intersection with the vertical axis, however, is not affected: $g_s(0, \pi_0) = g_s(0, \pi_1)$, i.e. g_s rotates upwards. For the case of multiple equilibria (Case 2a)) the following comparative–static results emerge: the stable low–effort optimum e_s^* increases while the stable corner–solution equilibrium $e_s = E$ is unaffected by an increase in π_s. For a sufficiently high increase in π_s we will observe a regime switch to the case of the unique high–effort equilibrium $e_s = E$ (Case 2c)).[11]

4.2.2 Impact on expected utility

By rearranging (7) we obtain equilibrium expected utility consistent with correct expectations about effort as

$$V(\lambda, \pi_s, \theta, y_1, y_0, \bar{\beta}_s, \sigma_s^2) \equiv (\pi_s + \theta\bar{\beta}_s\hat{e}_s)(1-\lambda)(y_1 - y_0) + (1-\lambda)y_0 + \lambda\bar{\beta}_s - \hat{e}_s^2/2a\,. \tag{11}$$

Thereby, we denote equilibrium effort which we already described in (8) by $\hat{e}_s \equiv \phi(\lambda, \pi_s, \theta, y_1, y_0, \bar{\beta}_s, \sigma_s^2)$ with its value, of course, depending on all the parameters of the model. From (11) we derive the effect of a change in the skill transferability π_s on expected utility as

$$\frac{\partial V(.)}{\partial \pi_s} = (1-\lambda)(y_1 - y_0) + \left[\theta\bar{\beta}_s(1-\lambda)(y_1 - y_0) - \frac{\hat{e}_s}{a}\right]\frac{\partial \phi(.)}{\partial \pi_s}\,. \tag{12}$$

As a result, $\partial V(.)/\partial \pi_s$ is positive for the stable solutions in effort: the first term on the rhs of (12) cannot become negative,[12] the term in the square brackets is positive as can be seen from (8) and (6), and eventually the last term is positive for stable effort solutions (cf. comparative–static results of e_s wrt π_s). If we concentrate on stable solutions, expected utility increases in π_s. Note that this also holds for corner solutions with $e_s = E$ because in this case the second term in (12) vanishes as $\partial\phi(.)/\partial\pi_s = 0$. This means that an increase in the skill transferability π_s in Germany increases expected utility $EU_s(e_{GER})$ at an unchanged maximum effort level $e_{GER} = E$.[13]

The need to increase the skill transferability has well been recognized at the European level leading to the Bologna and Lisbon Process (cf. Mechtenberg and Strausz, 2012). On the contrary, the harmonization of educational systems and the increase of labor mobility on an international level – especially in order to attract skilled migrants from non–EU states – still needs to be improved.

[11] To complete the picture, an increase in π_s increases the unique effort equilibrium e_s^* in Case 1 and can lead for a sufficiently high increase in π_s to a regime switch to all other cases. The unique high–effort equilibrium $e_s = E$ in Case 2c) is unaffected. The knife–edge cases 2b) and 3) are associated with regime switches: Case 2b) switches to Case 2c) while Case 3) can switch to all other cases except to Case 1).

[12] The first term is always positive if we exclude maximum status preferences ($\lambda = 1$) which reflects that it is very unlikely that migrants exclusively care for social status and not at all for income. This assumption also holds for 4.3 and 4.4.

[13] A change in θ has qualitatively the same impact on equilibrium effort and expected utility as a change in π_s. But we will not follow this line of argument as political measures that directly influence the effort decision of migrants are not obvious.

4.3 Higher income level

4.3.1 Impact on equilibrium effort

An increase in after tax income levels y_1 or y_0 only affects the intersection of $g_s(e_s)$ with the vertical axis, i.e. $g_s(e_s)$ shifts upwards for an increase in y_1 and downwards for an increase in y_0. As with changes in π_s, we obtain qualitatively the same result of an unchanged German high–effort equilibrium $e_{GER} = E$. Furthermore, an increasing high income level y_1 leads to an increasing stable low–effort optimum e_s^*. Vice versa, e_s^* declines for an increase in the low–income level y_0. If changes in y_1 are sufficiently high, a regime switch from the case of multiple equilibria (Case 2a)) to the case of a unique high–effort equilibrium (Case 2c)) takes place while the high–effort equilibrium $e_{GER} = E$ remains unchanged. However, for the purpose of our analysis, the increase in y_0 should be sufficiently small to guarantee Case 2a) because otherwise, we switch to the case of a unique low–effort equilibrium (Case 1) and differences in public expectations would not occur.

4.3.2 Impact on expected utility

Consider a change in the high–income level y_1 first:

$$\frac{\partial V(.)}{\partial y_1} = (\pi_s + \theta\bar{\beta}_s\hat{e}_s)(1-\lambda) + \left[\theta\bar{\beta}_s(1-\lambda)(y_1 - y_0) - \frac{\hat{e}_s}{a}\right]\frac{\partial\phi(.)}{\partial y_1}\,. \tag{13}$$

$\partial V(.)/\partial y_1$ is positive for the stable solutions in effort: the first term on the rhs of (13) cannot become negative, the term in the square brackets is positive as can be seen from (8) and (6), and eventually the last term is positive for stable effort solutions (cf. comparative–static results of e_s wrt y_1). If we concentrate on stable solutions, expected utility increases in y_1. Note that this also holds for corner solutions with $e_{GER} = E$ because in this case the second term in (13) vanishes as $\partial\phi(.)/\partial y_1 = 0$.

Consider second a change in the low–income level y_0:

$$\frac{\partial V(.)}{\partial y_0} = -(\pi_s + \theta\bar{\beta}_s\hat{e}_s)(1-\lambda) + (1-\lambda) + \left[\theta\bar{\beta}_s(1-\lambda)(y_1 - y_0) - \frac{\hat{e}_s}{a}\right]\frac{\partial\phi(.)}{\partial y_0}\,. \tag{14}$$

The first term on the rhs of (14) cannot become negative because $(1-\lambda) > (\pi_s + \theta\bar{\beta}_s\hat{e}_s)(1-\lambda)$. The term in the square brackets is also positive as can be seen from (8) and (6). The last term now becomes negative for stable effort solutions (cf. comparative–static results of e_s wrt y_0) and thus, we get no clear result for $\partial V(.)/\partial y_0$. But if we concentrate exclusively on the German stable corner solution $e_{GER} = E$, expected utility increases with changes in y_0 because in this case the second term in (14) vanishes as $\partial\phi(.)/\partial y_0 = 0$. As a result, either increasing the high income level y_1 or the low income level y_0 raises Germany's attractiveness for skilled immigrants.

This result of higher after tax income possibilities for skilled migrants goes in line with the empirical finding that countries like the US with a comparably higher income in the upper part of the income distribution succeed to attract more high–skilled migrants than e.g. Germany.

This does not mean that we suggest to widen the overall income gap in Germany but to establish tax advantages on the income of high–skilled migrants (for which we assume that even the lower income level y_0 corresponds to e.g., the median equivalized disposable income) in order to attract them at all.

4.4 Lower migration costs

4.4.1 Impact on equilibrium effort

Finally, an increase in a that leads to lower effort-related migration costs for skilled migrants has also a positive impact on g_s. Changes in a affect the intersection of the graph of g_s with the vertical axis as well as the slope of g_s, i.e. g_s shifts and rotates upwards. We obtain qualitatively the same results as with changes in π_s and y_1, especially the German equilibrium effort level $e_{GER} = E$ remains unchanged.

4.4.2 Impact on expected utility

For a change in effort-related migration costs applies

$$\frac{\partial V(.)}{\partial a} = \frac{\hat{e}_s^2}{2a^2} + \left[\theta\bar{\beta}_s(1-\lambda)(y_1 - y_0) - \frac{\hat{e}_s}{a}\right]\frac{\partial \phi(.)}{\partial a}\,. \tag{15}$$

Again, we can conclude that expected utility increases in a as $\partial V(.)/\partial a$ is always positive for stable solutions in effort. This means that lower migration costs increase expected utility for skilled migrants in Germany as $\partial V(.)/\partial a = E^2/2a^2 > 0$ for $e_{GER} = E$.

A political attempt to lower effort-related migration costs in Germany and thus, to promote access to the German labor market for high–skilled migrants is the so called Blue Card (cf. Federal Office for Migration and Refugees, 2015, and SVR, 2015). Its acceptance with less than 5.000 recipients in the introductory phase 2013 is relatively disappointing but more current evaluations and further developments of this instrument remain to be seen. Furthermore, high–skilled migrants should have good access to free or low-budget language courses as they are for example currently offered on a large scale to refugees.

Studying the comparative–static analysis has shown that all three measures, a higher skill transferability as well as a higher after tax income level and lower effort-related migration costs, increase expected utility in Germany at an unchanged maximum effort level. Thus, Germany can raise with each measure its attractiveness for skilled migrants. As this analysis cannot provide a comparison between expected utility in the US-American and the German effort equilibrium after political measures have been implemented in Germany, we will apply a numerical analysis instead.

4.5 Numerical analysis

The numerical analysis reveals that the function of expected utility is an inverse u–shaped function that increases for low effort levels $e_s < e_{FB}$ and declines for $e_s > e_{FB}$. Before showing to what extent expected utility can be raised by a change in π_s, y_1, y_0 and/or a we will describe our proceeding and the selection of parameters: we choose $\pi_s = 0.5$ as a starting point of all analyses because it guarantees the convexity of $g_s(e_s)$. We further define parameters that remain unchanged throughout the analysis: the upper bound of abilities $B = 1$, the variance of the ability distribution $\sigma_s^2 = \frac{1}{12}$[14] and the maximum equilibrium effort applying to Germany $e_{GER} = E = 1$. For the remaining parameters λ, θ, y_0, y_1 and a we calculate basic values that are compatible with the case of multiple equilibria (Case 2a)). Thereby, values for λ have to be sufficiently high and income levels are initially set to $y_1 = 2$ and $y_0 = 1$.[15] Then, we check whether the equilibrium is feasible (i.e., whether there is no conflict with corner solutions, probabilities that exceed unity, the limitation of effort, etc.). Once we have found an equilibrium constellation, we calculate the maximum value $\tilde{\pi}_s$ that either preserves Case 2a) or that leads to a regime switch to Case 2c). Finally, we calculate expected utility as a function of π_s for all $\pi_s \in [0.5, \tilde{\pi}_s]$. We repeat the last two steps for changes in y_1, y_0 and a as well as for a bundle of the measures.

Let us first sum up under which conditions multiple equilibria occur at all and which type of migrant in terms of social status can be attracted in general by immigration countries. The numerical analysis shows that multiple equilibria only occur if the combination of π_s, θ, a and λ ensures that the slope of $g_s(e_s)$ is sufficiently high at the maximum effort level $e_s = E$, i.e. that $g_s'(E)$ is at least sufficiently close to or higher than 1. Thereby, status preferences of migrants λ play an important role as they need to be sufficiently high: for $\pi_s = 0.5$ and low or medium values of θ, multiple equilibria only occur if the status motif of migrants is very high (e.g. $\lambda \geq 0.999$ for $\theta = 0.1$, $\lambda \geq 0.99$ for $\theta = 0.2$, $\lambda \geq 0.9$ for $\theta = 0.3$, see Tab. 6 in the appendix).[16] For $\pi_s = 0.5$ and high values of θ, multiple equilibria also occur if status preferences are significantly lower (e.g., $\lambda \geq 0.5$ for $\theta = 0.4$) resulting in migrants being indifferent between income and social status. In this context, we interpret θ which measures the extent to which effort and ability translates into a higher probability of attaining a high income as a direct discriminating factor regarding effort of migrants, i.e. discrimination of migrants' effort is high if θ is low and vice versa.

As a result, we can conclude that it is especially the status motif that generates multiple equilibria in effort at all. For multiple equilibria and if discrimination of migrants' effort is relatively high, only highly status–oriented migrants can be attracted. If discrimination of migrants' effort is ceteris paribus relatively low, immigration countries can also attract skilled migrants with medium status preferences. This can be explained by the fact that migrants

[14] A variance of $\frac{1}{12}$ implicitly assumes a uniform distribution of β_s on $[0, 1]$ for an interval $[0, 1]$.

[15] We do not calibrate the model but assume parameter values that fit the assumptions of the model. Nevertheless, a high income level twice as high as the low income level can be substantiated by the assumption that the low income y_0 corresponds to the median equivalized disposable income which we normalize to 1. The high income $y_1 = 2$ represents 200 % of the median equivalized disposable income which is a common threshold for relative wealth (see e.g. Federal Ministry of Labour and Social Affairs, 2013).

[16] For reasons of simplicity and comparison we calculated effort equilibria and respective expected utility with parameter values of λ in 0.1–steps and for very high status preferences we distinguished between $\lambda = 0.9$, $\lambda = 0.99$ and $\lambda = 0.999$. The exact parameter value of λ for which multiple equilibria occur might be slightly lower.

with higher income preferences face a higher probability to earn the high income in case of low discrimination of migrants' effort.

Another finding is that already minor changes in π_s, a, y_1 and y_0 lead to a regime switch – concerning the first three parameters to the case of a unique high–effort equilibrium (Case 2c)) and concerning the last parameter to the case of a unique low–effort equilibrium (Case 1), i.e.. the case of multiple equilibria is defined for very specific parameter values. But as far as the German equilibrium effort level remains unchanged at the maximum level $e_{GER} = E$ we can still calculate the corresponding expected utility.

The following numerical results emerge for each policy measure separately and for a mix of the measures. Thereby, we determine the magnitude of the increase in expected utility in Germany $EU_s(E)$ due to the three described policy measures and compare the increase with a ceteris paribus unchanged expected utility $EU_s(e_s^*)$ in the US.

4.5.1 Higher skill transferability

We start with the lowest possible value of $\pi_s = 0.5$, high discrimination of migrants' effort expressed by a low value of $\theta = 0.1$, a corresponding high status motif $\lambda = 0.999$ and migration costs e_s^2/a with $a = 281$.[17] We control whether probabilities to earn the high income are in the admissible range (A1).

π_s	θ	λ	a	$A1$	e_{US}	e_{GER}	$EU_s(e_{US})$	$EU_s(e_{GER})$
0.5	0.1	0.999	281	0.6	0.52	1	**1.00007**	0.99882
0.89				0.99		1		**0.99921**

Table 1: Higher skill transferability ($\pi_s \uparrow$) in the scenario of high discrimination of migrants' effort ($\theta = 0.1$)

($B = 1$, $E = 1$, $\sigma_s^2 = \frac{1}{12}$, $y_1 = 2$, $y_0 = 1$)

The analysis shows that the increase in π_s is limited due to (A1) and therefore expected utility in Germany does not rise sufficiently enough to exceed expected utility in the US (see Tab. 1). This means for this specific set of parameters including high discrimination of migrants' effort and high status preferences of migrants that the increase in skill transferability alone is not a sufficient policy measure for Germany to attract skilled migrants.

Consider next a set of parameters with low discrimination of migrants' effort (e.g., $\theta = 0.4$). As in this scenario multiple equilibria not only occur for very high status preferences but also for lower status preferences of migrants, we get fundamentally different results. Now, skilled migrants with lower status preferences ($\lambda = 0.5$) receive a higher expected utility in Germany than in the US if the skill transferability increases (see Tab. 2).

This result holds analogously for an also relatively low discrimination of migrants' effort of $\theta = 0.3$ in combination with relatively high but not maximum status preferences of $\lambda = 0.9$ (cf. Tab. 6 in the appendix). However, if status preferences of migrants are higher ($\lambda = 0.99$ for $\theta =$

[17] Migration costs can range between 281 and 282 to ensure multiple equilibria (Case 2a)) but we only display here and in the following scenarios the respective lower bound of a as this view is more conservative.

π_s	θ	λ	a	A1	e_{US}	e_{GER}	$EU_s(e_{US})$	$EU_s(e_{GER})$
0.5	0.4	0.5	3.65	0.9	0.94	1	**1.31678**	1.31301
0.59				0.99		1		**1.35801**

Table 2: Higher skill transferability ($\pi_s \uparrow$) in the scenario of low discrimination of migrants' effort ($\theta = 0.4$)

($B = 1$, $E = 1$, $\sigma_s^2 = \frac{1}{12}$, $y_1 = 2$, $y_0 = 1$)

0.3 and $\lambda = 0.8$ for $\theta = 0.4$), expected utility in Germany can not be raised sufficiently enough to change the destination decision of migrants in favor of Germany. This means that an increase in the skill transferability is only efficient in attracting skilled migrants to Germany if these migrants are not extremely interested in social status and if discrimination of migrants' effort is already relatively low. This result is reducible to the impact of the status motif. The higher the status motif of migrants, the higher is the difference in effort equilibria: if skilled migrants believe that expectations of the German public about their work effort differ significantly from expectations of the US–American public, Germany can hardly overcompensate its competitive disadvantage. Only lower status preferences of migrants have the desired impact as they can lead to two stable effort equilibria, US and Germany, that are relatively close by.

4.5.2 Higher income level

Both income levels, y_1 and y_0, can be increased by tax reductions without limitations regarding (A1). The numerical analysis shows that in the scenario of high status preferences–high discrimination of migrants' effort a doubling of the high income level y_1 is necessary to attract skilled migrants to Germany, whereas increasing the low income level y_0 is not a sufficient measure (cf. Tab. 3). The latter follows from the fact that the increase in y_0 is limited, i.e. a higher value of $y_0 = 1.2$ already leads to a regime switch to Case 1 with a loss of the multiplicity in effort equilibria.

π_s	θ	λ	y_1	y_0	a	e_{US}	e_{GER}	$EU_s(e_{US})$	$EU_s(e_{GER})$
0.5	0.1	0.999	2	1	281	0.52	1	**1.00007**	0.99882
			4.1				1		**1.00008**
				1.1			1		**0.998861**
0.5	0.4	0.5	2	1	3.65	0.94	1	**1.31678**	1.31301
			2.1				1		**1.35801**
				1.1					**1.31801**

Table 3: Higher income levels ($y_1 \uparrow$ and $y_0 \uparrow$) in the scenarios of high and low discrimination of migrants' effort ($\theta = 0.1$ and $\theta = 0.4$)

($B = 1$, $E = 1$, $\sigma_s^2 = \frac{1}{12}$)

We get qualitatively the same results in the scenario of medium status preferences–low discrimination of migrants' effort but the necessary increase in y_1 needs to be significantly lower which seems to be plausible as a result. In general applies that Germany can only counter the adverse self–selection effect with an increase in the high income level y_1 and thus, via a higher income gap.

Let us consider an increase in y_1 as complementary measure to an increase in the skill transferability (cf. Tab. 4).

π_s	θ	λ	y_1	y_0	a	e_{US}	e_{GER}	$EU_s(e_{US})$	$EU_s(e_{GER})$
0.5	0.1	0.999	2	1	281	0.52	1	**1.00007**	0.99882
0.89							1		**0.99921**
0.89			2.9				1		**1.0001**
0.5	0.4	0.5	2	1	3.65	0.94	1	**1.31678**	1.31301
0.59							1		**1.35801**
0.59			2.1				1		**1.40751**

Table 4: Higher high income level ($y_1 \uparrow$) as complementary measure
($B = 1,\ E = 1,\ \sigma_s^2 = \frac{1}{12}$)

In the first scenario of high status preferences–high discrimination of migrants' effort, a bundle of the two measures now increases expected utility in Germany sufficiently high to attract skilled migrants. Thereby, only a lower increase in y_1 is necessary. In the second scenario of medium status preferences–low discrimination of migrants' effort, the higher attractiveness of Germany vis à vis the US can be raised even further.

4.5.3 Lower migration costs

Finally, we analyze the magnitude of the effect of lower effort-related migration costs on expected utility for skilled migrants in Germany. Again, there do not exist limitations regarding (A1). Thus, lower migration costs can always raise expected utility in Germany to such an extent that skilled migrants can be attracted. The only difference is that in the first scenario of high status preferences–high discrimination of migrants' effort the necessary reduction in migration costs is higher than in the second scenario of low discrimination of migrants' effort which goes in line with our findings concerning a higher income y_1. Reducing migration costs as a complementary measure to an increase in the skill transferability leads to analogous results.

Tab. 5 shows that expected utility in Germany can exceed expected utility in the US in the scenario of high status preferences–high discrimination of migrants' effort. Thereby, the amount of an increase in a is far lower if migration costs would be reduced additionally as if they would be reduced alone. In the scenario of medium status preferences–low discrimination of migrants' effort Germany is already more attractive than the US via an increase in the skill transferability alone, thus, lower migrations costs increase this advantage even further. A combination of an increasing income level and lower migration costs stands for policies that mutually reinforce each other. Both measures go in the same direction and make Germany more attractive for skilled migrants than the US.

π_s	θ	λ	a	e_{US}	e_{GER}	$EU_s(e_{US})$	$EU_s(e_{GER})$
0.5	0.1	0.999	281	0.52	1	**1.00007**	0.99882
0.89					1		**0.99921**
0.89			550		1		**1.0008**
0.5			960		1		**1.0008**
0.5	0.4	0.5	3.65	0.94	1	**1.31678**	1.31301
0.59					1		**1.35801**
			5.4351		1		**1.35801**
0.59			5.4351		1		**1.40301**

Table 5: Lower migration costs ($a \uparrow$)
($B = 1$, $E = 1$, $\sigma_s^2 = \frac{1}{12}$, $y_1 = 2$, $y_0 = 1$)

To sum up, in the case of multiple equilibria (Case 2a)) which is the relevant case for the choice of skilled migrants where to migrate, an increase in the skill transferability of skilled migrants (π_s) makes Germany more attractive in the scenario of medium status preferences–low discrimination of migrants' effort, whereas the impact on expected utility is not sufficiently high in the scenario of high status preferences–high discrimination of migrants' effort. An increase in the high income level y_1 via tax advantages and a reduction in effort–related migration costs sufficiently raises Germany's attractiveness in both scenarios with a lower political effort in the scenario of medium status preferences–low discrimination of migrants' effort. Additionally, a higher high income level or lower migration costs can also be introduced concurrently with an increase in the skill transferability and then, they play a decisive role and change the migration decision of skilled migrants in favor of Germany. The respective political effort to implement these complementary measures is far lower as if they would stand alone. In all these described scenarios, the political measures raise the expected utility of skilled migrants in Germany while they still have to invest the same maximum effort $e_{GER} = E$. Invested effort would only be reduced if public expectations about the work effort of skilled migrants would change, i.e. if skilled migrants believe that the German public would expect less effort from them so that both equilibria – Germany and the US – converge or even coincide into one equilibrium.

5 Conclusion

We applied the framework of Piketty (1998) to analyze the impact of country-specific public expectations – that affect the social status of skilled migrants – on their self–selection into different immigration countries, namely the US and Germany. We were able to explain a lower attractiveness of Germany vis à vis the US by ceteris paribus higher public expectations about the migrants' work effort: skilled migrants believe that the German public expects from them an enormous work effort which lowers their expected utility. In turn, skilled migrants could achieve with less effort an even higher expected utility in the US. From the lower effort level in the US also arises that it is easier for skilled migrants to attain a well-paid job there. Consequently, they migrate to the US only. Precondition for this result is a sufficiently high status motif of skilled migrants.

Our contribution is thus to give a new theoretical explanation for the adverse self–selection effect we currently observe for Germany. More specifically, our model links public expectations in potential host countries to the decision of status–seeking skilled migrants where to migrate. Thereby, we are also able to explain a situation in which Germany is less attractive for high–skilled migrants and equally attractive as the US for low–skilled migrants.

Furthermore, we were able to show in a comparative–static analysis that Germany can compensate the adverse self–selection effect by economic policy measures – even if the high expectations about the work effort of skilled migrants and thus, the multiplicity of equilibria persist. The subsequent numerical analysis finally indicated that skilled migrants would change their decision and migrate to Germany instead of the US if they can better transfer their acquired skills to Germany, if they can achieve relatively higher income levels via, e.g., tax incentives and/or if they face relatively lower migration costs. Thereby, a bundle of measures is more efficient in raising expected utility of skilled migrants in Germany as if each measure would stand alone.

Alternatively, German politicians could also combat the high expectations about the work effort of skilled migrants and establish a better “welcoming attitude”. Such a change in public attitudes would reduce these high expectations and thus, can make Germany more attractive for skilled migrants than the US - especially at lower costs compared to the three measures we described into detail. Results from this approach even hold if Germany and the US are not structurally identical but already differ in the initial setting, i.e., if we take into account that the US have higher income levels and/or lower migration costs than Germany.

Appendices

A. Figures

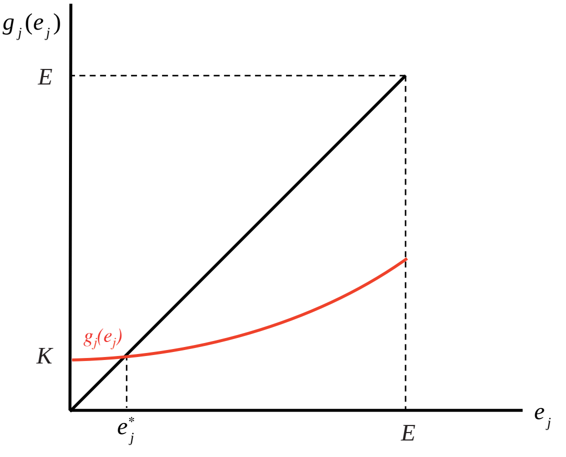

Figure 1: Case 1): one unique stable interior equilibrium e_j^*

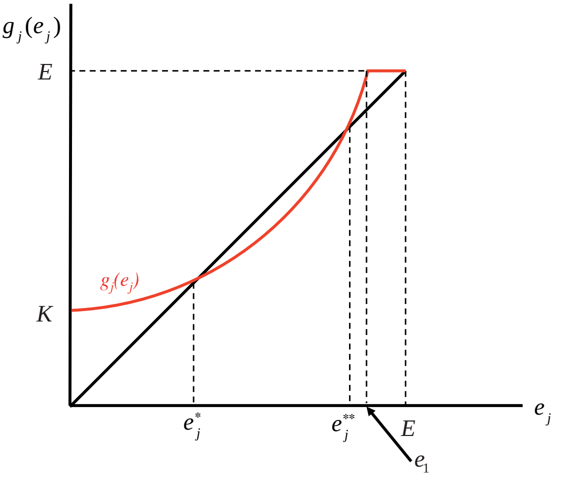

Figure 2: Case 2a): two stable equilibria e_j^* and E, one unstable equilibrium e_j^{**}

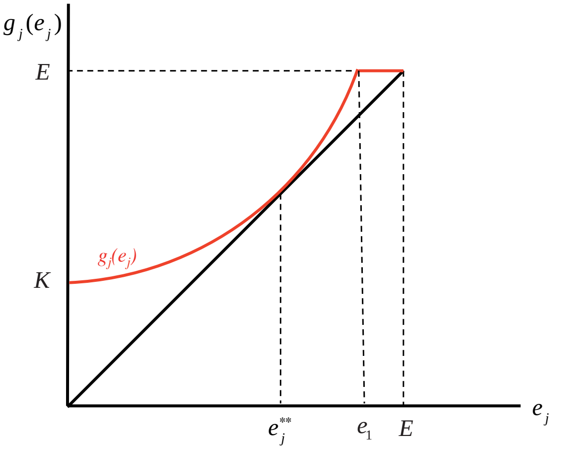

Figure 3: Case 2b): one stable equilibrium E, one unstable equilibrium e_j^{**}

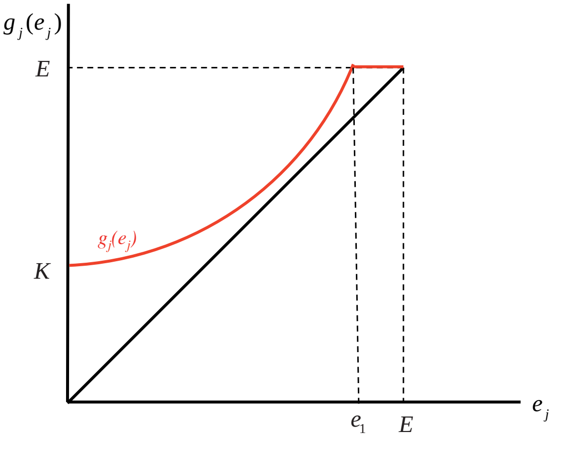

Figure 4: Case 2c): one unique stable equilibrium E

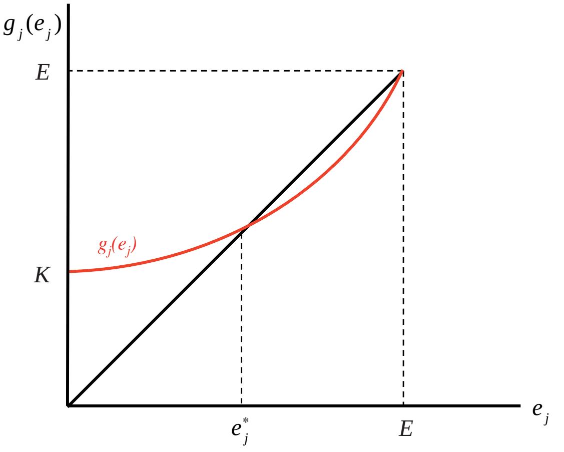

Figure 5: Case 3): one stable equilibrium e_j^*, one unstable equilibrium E

B. Numerical Analysis

π_s	θ	λ	a	$A1$	e_{US}	e_{GER}	$EU_s(e_{US})$	$EU_s(e_{GER})$
0.5	0.1	0.999	281	0.6	0.52	1	**1.00007**	0.99882
0.89			281	0.99		1		**0.99921**
0.5	0.2	0.99	57	0.7	0.54	1	**1.00351**	0.99823
0.79			57	0.99		1		**1.00113**
0.5	0.2	0.999	63	0.7	0.08	1	**1.00047**	0.99276
0.79			63	0.99		1		**0.99305**
0.5	0.3	0.9	13.86	0.8	0.82	1	**1.05024**	1.04329
0.69			13.86	0.99		1		**1.06292**
0.5	0.3	0.99	21	0.8	0.17	1	**1.00482**	0.98419
0.69			21	0.99		1		**0.98609**
0.5	0.3	0.999	22	0.8	0.02	1	**1.0005**	0.97807
0.69			22	0.99		1		**0.97826**
0.5	0.4	0.5	3.65	0.9	0.94	1	**1.31678**	1.31301
0.59			3.65	0.99		1		**1.35801**
0.5	0.4	0.6	4.02	0.9	0.84	1	**1.24661**	1.23562
0.59			4.02	0.99		1		**1.27162**
0.5	0.4	0.7	4.5	0.9	0.72	1	**1.17872**	1.15889
0.59			4.5	0.99		1		**1.18589**
0.5	0.4	0.8	5.1	0.9	0.56	1	**1.11403**	1.08196
0.59			5.1	0.99		1		**1.09996**
0.5	0.4	0.9	6	0.9	0.35	1	**1.05381**	1.00667
0.59			6	0.99	0.39	1		**1.01567**
0.5	0.4	0.99	7	0.9	0.04	1	**1.00504**	0.93757
0.59			7	0.99	0.05	1		**0.93847**
0.5	0.4	0.999	7	0.9	0.004	1	**1.0005**	0.92947
0.59			7	0.99	0.005	1		**0.92956**

Table 6: Parameter choices reflecting the case of multiple effort equilibria (Case 2a)) and impact of higher skill transferability ($\pi_s \uparrow$) on expected utility of skilled migrants in Germany

($B = 1,\ E = 1,\ \sigma_s^2 = \frac{1}{12},\ y_1 = 2,\ y_0 = 1$)

References

Algan, Y., Dustmann, C., Glitz, A. and Manning, A. (2010): “The economic Situation of first and second–generation Immigrants in France, Germany and the United Kingdom”, *The Economic Journal*, 120 (542), F4-F90.

Beine, M., Docquier, F. and Özden, C. (2011): “Diasporas”, *Journal of Development Economics*, 95 (1), 30-41.

Borjas, G. J. (1987): “Self–selection and the Earnings of Immigrants”, *American Economic Review*, 77 (4), 531-553.

Borjas, G. J. (1999): “Immigration and Welfare Magnets”, *Journal of Labor Economics*, 17 (4), 607-637.

Card, D. (2005): “Is the new Immigration really so bad?”, *The Economic Journal*, 115, 300-323.

Chiswick, B. R. and Miller, P. W. (2015): “International Migration and the Economics of Language”, in: Chiswick, B. R. and Miller, P. W. (ed.): Handbook of the Economics of International Migration, Volume 1A, Elsevier, 211-269.

Docquier, F. and Rapoport, H. (2012): “Globalization, Brain Drain, and Development”, *Journal of Economic Literature*, 50 (3), 681-730.

Evans, G. W., Honkapohja, S. and Romer, P. (1998): “Growth Cycles”, *American Economic Review*, 88 (3), 495-515.

Federal Office for Migration and Refugees (2015): “Migrationsbericht des Bundesamtes für Migration und Flüchtlinge im Auftrag der Bundesregierung. Migrationsbericht 2013”, available at https://www.bamf.de/SharedDocs/Anlagen/ DE/Publikationen/Migrationsberichte/migrationsbericht-2013.pdf, last viewed on 2016/04/01.

Federal Ministry of Labour and Social Affairs (2013): “Life Situations in Germany. The German Federal Government’s 4th Report on Poverty and Wealth”, available at http://www.bmas.de/SharedDocs/Downloads/DE/PDF-Publikationen/a334-4-armuts-reichtumsbericht-2013-kurzfassung-engl.pdf, last viewed on 2016/04/01.

Fertig, M., Schmidt, C. M. and Sinning, M. G. (2009): “The Impact of Demographic Change on Human Capital Accumulation”, *Labour Economics*, 16, 659-668.

Geis, W., Uebelmesser, S. and Werding M. (2011): "Why go to France or Germany, if you could as well go to the UK or the US? Selective Features of Immigration to four major OECD Countries", *Journal of Common Market Studies*, 49, 767-796.

Kaas, L. and Manger, C. (2011): "Ethnic Discrimination in Germany's Labor Market: A Field Experiment", *German Economic Review*, 13 (1), 1-20–.

Mayda, A. M. (2006): "Who is against Immigration? A Cross–Country Investigation of Individual Attitudes towards Immigration", *The Review of Economics and Statistics*, 88 (3), 510–530.

Mechtenberg, L. and Strausz, R. (2012): "Migration of the Talented: Can Europe catch up with the US?", *Journal of Public Economic Theory*, 14 (6), 945-969.

OECD (2013): "Zuwanderung ausländischer Arbeitskräfte: Deutschland", OECD Publishing, Paris, available at http://www.oecd-ilibrary.org/social-issues-migration-health/zuwanderung-auslandischer-arbeitskrafte-deutschland-german-version_9789264191747-de, last viewed on 2016/04/01.

O'Rourke, K. and Sinnott, R. (2006): "The Determinants of Individual Attitudes towards Immigrants", *European Journal of Political Economy*, 22, 838-861.

Peri, G. (2005): "Skills and Talents of Immigrants: A Comparison between the European Union and the United States", *UC Davis Working Paper Series*, #05-24, 1-32.

Piketty, T. (1998): "Self–fulfilling Beliefs about Social Status", *Journal of Public Economics*, 70, 115–132.

Razin, A. and Sadka, E. (2014): "Migration and Welfare State: Why is America different from Europe?", *NBER Working Paper No. 20450*, NBER, Cambridge, MA.

Sachverständigenrat deutscher Stiftungen für Integration und Migration (SVR) (2015): "Unter Einwanderungsländern: Deutschland im internationalen Vergleich. Jahresgutachten 2015", available at http://www.svr-migration.de/wp-content/uploads/2015/07/SVR_JG_2015_WEB.pdf, last viewed on 2016/04/01.

Uhlendorff, A. and Zimmermann, K. F. (2014): "Unemployment Dynamics among Migrants and Natives", *Economica*, 81, 348-367.