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A Market for Work Permits

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Abstract: *It will be politically difficult to liberalize international economic migration without some form of compensation for host-country workers. The paper explores the scope for managing migration using a government-regulated competitive market for work permits. We propose that host-country workers should be granted the legal option of renting out their work permits for a period of their choice, while foreigners can purchase taxable time-bound work permits. The proposed market is anonymous, with no need for personalized matchings of those on its two sides. The market can have either one price or be differentiated by occupation or region. There would probably be some losers, but potentially large gains, especially through enhanced social protection in host countries. Using its power to tax WPs, the host country can achieve any desired floor to labor earnings. The market can also provide a new instrument for implementing industrial and regional development policies.*

Keywords: Work permits; migration; social protection; poverty

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1. Introduction

Almost everywhere, a foreign migrant needs a work permit (WP) to legally take-up employment in the host country. Binding quotas on the supply of WPs create an excess demand for permission to work in high-wage countries among people living in low-wage countries. There is evidence of large potential gains to both migrants and host countries from freeing up international migration.²

Despite the likely gains, there is much resistance to freer migration in host countries. Many citizens of high-wage countries view migrants as a threat to their living standards. While migrants may well bring economic and cultural benefits, these tend to be diffused and longer term. There are both winners and losers in the host country. It is little consolation for the losers to be told (even if true) that the aggregate net gains are positive over the long term. The resistance also reflects a cultural backlash in some quarters against migrants, though, to some extent, this backlash stems from economic insecurity.³ Migration will continue to be restricted unless we can figure out a way to assure that international migrants are seen as an asset from the perspective of most citizens of the host country rather than a threat.

A clue into how that might be done is found in the fact that citizens have the right to accept any job offer in their own country once they reach the legal working age. We can call this the “citizenship work permit,” or simply “work permit.”⁴ Given the restrictions on international migration, this is undoubtedly the most valuable asset held by most low- and middle-income workers in high-wage economies—possibly 90% or more of their total wealth.⁵ Currently, that asset is not something that a citizen can cash in on. The main asset of most poor people in high-wage economies is non-marketable.

² Taking account of worker characteristics and their returns, Clemens et al. (2019) estimate that the mean price equivalent of the restrictions on migration to the US facing low-skilled male workers in developing countries is over \$20,000 per year per worker globally. Selection on unobserved determinants of productivity cannot be ruled out entirely. However, using a lottery-assignment of temporary permits for working in Malaysia to identify impacts for Bangladeshi migrants, Mobarak et al. (2020) also find large income gains (around 200% of pre-intervention earnings) five years later. Selection does not appear to be the reason. Note also that non-pecuniary motives for migration can generate the excess demand for WPs even if wages do not differ.

³ Inglehart and Norris (2017) discuss how economic insecurity has interacted with cultural changes in America. Pereira et al. (2010) discuss the role of perceived economic threats in perpetuating opposition to migration.

⁴ It is sometimes called the “right-to-work” but this is an ambiguous term, as it is also used to refer to job guarantee schemes, and also to restrictions on labor unionization. We will use the term “work permit” instead.

⁵ Tamborini et al. (2015) estimate the life-time (50 year) labor earnings of American men to be (in 2009 prices) \$1.5 million for those with only high-school education (rising to \$2.4 million for those with a Bachelor’s degree). The median net (non-labor) wealth of this education group was around \$100,000 in 2013 (Boshara et al., 2015).

Yet, there are times when some citizens would be happy to lease out their (implicit) WP. At any one time, there are both foreigners who want to work at the higher wage rates on offer in rich countries and workers in those countries who have something else they would prefer to do than work for a wage. We have a missing market in WPs, with attendant welfare losses.

Restrictions on international migration for work are the root cause of this missing market. Without those restrictions, citizens would still not be able to lease their WP—to monetize this important asset of citizenship—but that would be a moot point since nobody would have any interest in buying it. However, removing such restrictions is a tall order.

This paper explores another policy option—to create the market that is currently missing. The market would have two sides (unlike past proposals for selling WPs or citizenship) in that citizens would need to be granted the legal right to rent out their WPs if so desired, although the ownership right can be treated as inalienable and so retained by the citizen. Thus, the surplus from migration (due to the inter-country differences in marginal products of labor) is shared between the migrants and those citizens of the host country who have something better to do for a period than wage work. This sharing feature helps assure that the surplus can be generated in the first place, by making migration more politically feasible. The paper discusses the arguments for and against such a policy.

The following section outlines the policy idea, and how it relates to past thinking on this topic. Here we note various ways in which our proposal differs from others in the literature. Section 3 provides a theoretical model of the market for work permits, and draws out some implications. The paper then discusses how the market could be implemented in practice (Section 4), and some of the policy issues that would arise (Section 5). Section 6 concludes.

2. The policy, its interpretation and antecedents

Suppose that working citizens in a country (or a selected area) were legally free to rent out their WPs for a period of their choosing and that some choose to do so at the prevailing rental price. The renters of those WPs would then be able to take up a job offer in that country. The ownership of the WP would remain with the citizen, and the use right would return to its owner at the end of the rental period. The market is anonymous, with no personalized matching of its two sides. An equilibrium is reached when the price of a WP equates the aggregate supply with the aggregate demand in units of labor time. All workers would require a currently-valid WP,

and they would all be treated the same way in the labor market, whether citizens or migrants. The WPs supplied to the market by citizens of the rich country could be seen as uniform goods. The only difference between the WPs is their duration and starting date. The main purpose of the market for WPs is to regulate temporary migration for work.

This market would need to be created by the host government since it controls immigration. Creating such a market eliminates the inefficiency that arises from the current market failure that prevents citizens from renting out the WP when they would prefer to do so, while foreigners want to work in high-wage economies, but find that their entry is restricted. By tailoring the WPs issued to the amount of work that citizens do not want to do, one removes the current imbalance—the disequilibrium that stems from the missing market—without requiring a change in total employment in labor-time units. And (as we elaborate later) a new form of social protection is created for workers in high-wage economies. Nor does a competitive market in WPs entail high transaction costs or ethically questionable discrimination against migrants.

The same idea might help make refugees more popular in host countries, and assimilated more productively into the local labor market. Currently, it is hard for refugees in many countries to get WPs. They often turn instead to government handouts, or work illegally, and so are vulnerable to exploitation and poor working conditions. Given that people who have fled war-torn countries, or ethnic genocide, are unlikely to have the money needed to rent a WP, the host government or international community may choose to subsidize WPs for refugees, financed (in part at least) by diverting funds from existing public spending on caring for refugees. The refugees would then have a legal route for entering the host country labor market, while citizen workers would benefit from the freedom to rent out their WP for a period of their choice.

2.1 Rights interpretation

It is well recognized that citizenship comes with both rights and responsibilities, including abiding by the country's constitution and participating in its governance (such as by voting).⁶ When rights are tied to responsibilities, making those rights marketable calls for a means of enforcing the attendant responsibilities. That would be problematic for many rights of citizenship, such as the right-to-vote. Nor is it clear what problem would be solved by creating a market in voting rights. The policy idea studied here is not to create markets in all rights but

⁶ On citizenship rights and responsibilities in the US see US Citizenship and Immigration Services (2019).

rather to address a specific problem arising from the hostility to immigration in host countries, and the restrictions on international migration.

Under this policy, every worker-citizen would be legally free to lease her citizenship WP for a desired period. That is not the case at present. Yet, some people would be happy to exercise that freedom, and this would not appear to interfere with anyone else's rights.

Well-informed voluntary consent is an important principle here, as in any competitive market. A person retains the freedom to either take up or reject an offer for the WP at the going price. Governments have put limits to certain freedoms as a form of protection from risk or exploitation; for example, one may be prevented from forgoing one's right to certain safety conditions, such as at work. Consent alone may lose its normative force in some circumstances, such as medical contexts where life is at stake (McConnell, 2000). The "right to work" is well recognized. For example, it is Article 6 of the UN's International Covenant on Economic, Social and Cultural Rights, which recognizes "...the right of everyone to the opportunity to gain his living by work which he freely chooses or accepts" (UN 1966). The issue here is whether this is an inalienable and hence non-marketable right. There are good reasons why governments might not allow some markets to exist, such as by preventing child labor or human trafficking, or slavery. However, while governments and laws do at times restrict markets or other freedoms, there should be a good reason.

There has been much debate about what restrictions a government can place on individual freedoms, and what constitutes an "inalienable right."⁷ In this context, we can side-step that debate by agreeing that a citizen can be prohibited from permanently and irrevocably selling their WP. This may be seen as "deep social protection," recognizing that mistakes happen and circumstances change in unanticipated ways such that a person may become highly vulnerable if she does not retain the ownership right over her WP. A further consideration is that the idea of a market in the ownership right would contradict the existing laws in countries that do not allow the purchase of citizenship.

However, treating the ownership of a citizen's WP as inalienable and hence irrevocable does not preclude allowing the use-right to be marketable for some desired period.⁸ The use-right

⁷ See, for example, the discussion in Brown (1955).

⁸ US law recognizes the right to transfer an "inalienable right" by consent; for example, the popular [USLegal](#) website provides the following definition: "Inalienable [right] is defined as incapable of being surrendered or

returns to the citizen at the end of that period. Also, the citizen retains the right to rent a WP of the required length at any time before that date. This arrangement can achieve the welfare gains from creating a market for work permits, while still respecting the (arguably inalienable) rights of citizenship.⁹

From a legal perspective, one can view the WP as a citizen's property, which comes with a right to rent that property out to others. By this view, a citizen's WP always remains her property—a non-physical asset that is implicit in citizenship, but which should nonetheless come with the right to rent it out when one wants. Against this view, one might respond that “property” only refers to physical objects. However, intellectual property is well recognized. Once one sees the citizenship WP as a property right, renting out that right for a period (while retaining ownership) is no more problematic than renting out other assets, whether physical or not.

There are precedents to the idea that a citizen can voluntarily relinquish the use right for her WP. For many jobs, one signs a contract saying that one will take no other employment at the same time. Then one has implicitly forgone one's WP during the contracted period of employment. We are also reminded of past land and housing policy in some countries whereby these assets had previously been administratively assigned to individuals, such as agricultural land in Vietnam or housing in China or Russia, without the right to sell the asset or legally rent it out. Thus, an important asset for many poor people was not marketable, effectively reducing their wealth. Subsequent reforms made these property rights marketable, and active markets emerged in these assets.¹⁰

2.2 Antecedents in the literature

The idea of a government selling passports and work permits has been around for a while. Becker (1992) proposed that the US government should sell citizenship rights (including WPs) to foreigners, rather than requiring quotas and long queues.¹¹ The revenue from selling WPs has

transferred; at least without one's consent....A person can surrender, sell or transfer inalienable rights by actual or constructive consent.” Here we treat ownership as inalienable (overriding consent) but use-rights as alienable.

⁹ An alternative argument can appeal to Wertheimer's (2001) distinction between “strongly alienable,” and “strongly” versus “weakly” inalienable. We treat the use-right over a WP as strongly alienable but the ownership right as strongly inalienable. We do not develop this distinction further here.

¹⁰ For an analysis of the efficiency and equity implications of the reform to introduce a market in land-use rights in the context of Vietnam see Ravallion and van de Walle (2008).

¹¹ Also see Chiswick (1982), Becker and Becker (1997) and Becker and Lazear (2013). A market mechanism has also been proposed by Moraga and Rapoport (2014) as an efficient means of allocating migrants across host-

been advocated as a means of compensating those native workers who are vulnerable to competition from migrant workers, as in Weinstein (2002), although the mechanism for such compensation is unclear. There have also been various “cash-for-passport” programs, often targeted to a global elite of the very rich (Sumption and Hooper, 2014; Shachar, 2017).¹²

In the closest antecedent to the policy studied here, DeVoretz (2008) proposed that (Canadian) citizens in the workforce should be given a voucher that allows them to auction off their current job for (say) one year. Any foreign workers on an approved list can bid for that voucher. If there is a buyer, and the employer of the Canadian worker is willing to make the substitution, then the deal is struck: the Canadian worker is replaced by the specific foreign worker for the coming year.

Other approaches to freeing up migration require no explicit market for selling WPs. Posner and Weyl (2008) propose a “Visas between Individuals Program” (VIP). The VIP entails that an individual citizen can sponsor a visa for a specific migrant, and the citizen and migrant share the earnings gain realized by migration.

Another approach advocates that migrants be treated differently to citizens. Freeman (2006) proposes higher taxes on migrants than for citizens. Milanovic (2019) proposes legally-defined differences in citizenship rights between native-born citizens and migrants.¹³ To some observers, this form of discrimination against migrants is a necessary evil to assuring freer migration (Ruhs, 2013; Milanovic, 2019).

Like these past policy proposals, creating a competitive market in WPs would help address host-country resistance to migrants, stemming from the expectation that migrants take the jobs of citizens. (There are other potential external costs, such as in providing public services to migrants.) It can be granted that, to some extent, these expectations are not well founded in the truth, and may well be a camouflage for xenophobia or racism. However, seeing the benefits that migrants can bring to citizens must presumably help undermine the camouflage.

Another common feature of these proposals is that immigration policies are taken to be reasonably well enforced. We maintain that assumption, though we show that full enforcement is

countries, using tradable immigration quotas. Selling visas has also been suggested as a means of controlling human smuggling (as in Auriol and Mesnard, 2016).

¹² Some but not all of these programs require that one makes an investment, but that investment is still owned by the applicant. Here we refer to the subset of programs in which the purchaser makes a payment to the government.

¹³ Milanovic (2019) refers to “citizenship rent” as the rent derived by a citizens given their rights but does not consider the possibility that this could in fact be rented out.

not required. Of course (at one extreme), if immigration laws are not enforced, then the market for WPs will cease to exist, since the price of a WP can be avoided. But then the issue of restrictions on migration largely vanishes (though there may well be extra transaction costs). As we explain later, a competitive market for WPs can also help with enforcement; in general, it will reduce, and may even eliminate, illegal migration.

The idea of a market for WPs that we propose here differs from these past proposals in one or more of the following six respects. First, instead of the government supplying some pre-selected (arbitrary) number of WPs at some selected price (also arbitrary), the supply of WPs and their price would be market determined, with the efficiency benefits of introducing a competitive market for WPs that is currently missing. The purchase of WPs by foreigners generates revenue for citizens who have something better to do than work for a wage. Furthermore, by balancing the demand for WPs with the supply, the market for WPs avoids an increase in aggregate labor supply in the host country, thus avoiding overall downward pressure on wage rates (though there may well be distributional effects as discussed later).

Second, the proposal is designed to regulate temporary work migration. Only a time-bound WP can be rented, not citizenship *per se*. While cash-for-passport programs have been in large part striving to attract rich individuals, and have come with high prices, what we study here is a scheme with competitive prices that is likely to have broader appeal.

Third, citizen workers do not rent out their job, but only a permission to take a job when it is offered. It is WPs that are traded, not jobs (as in DeVoretz, 2008).

Fourth, as we will explain below, unlike these past proposals, the double-sided competitive market for WPs would directly provide an extra source of social protection for workers in high-wage economies. Workers in the host country would have the new option of leasing out their WP. One can think of many examples of valuable things that people could do by renting out their WP for some period. Someone who lost their job in a company town (such as due to automation) could lease their WP for a period to cope with the unemployment, while re-training and/or migrating. A young person who has reached the minimum age for paid work may choose to rent out her WP for a limited period to help finance extra schooling or skill-training. Or someone may use this option to help raise their children in a critical period or to provide home-care for a loved one in need (such as an elderly parent or grandparent). It might also help someone deal with the onset of a serious illness or disability.

Fifth, the present proposal can help address the various forms of discrimination against migrants found in practice.¹⁴ In addition to the concerns about human rights, such discrimination helps legitimize prejudiced thinking, and risks strengthening the hand of those opposed to migration on xenophobic grounds. Ethically questionable discriminatory practices are not necessary for making migrants more welcome in host countries. Our proposal does not require that migrant workers are treated any differently to citizen workers. Having bought their WP, and obtained the visa, they should receive the same wages for the same work and fall under the same regulations, including (of course) worker safety and health regulations. (Being temporary work migrants, they would not, of course, be granted the political rights of citizens.)

Sixth, a market for WPs does not require sponsorship (as in Posner and Weyl, 2008) or a one-to-one matching of current jobs held by citizens with specific foreign workers that employers agree to hire (as in DeVoretz, 2008). These proposals are likely to entail large transaction and matching costs. Instead, in the market for WPs proposed here, the process is anonymous—there is no contact between the parties involved nor any matching of existing jobs to foreigners. This would reduce the transaction costs of these past proposals, such as in obtaining the required one-to-one matchings and dividing up the gains from migration.¹⁵

3. Model of the market and some implications

We start with a discussion of a key assumption we make about enforcement. We then provide a simple expository model that contains the essence of the policy idea. This model suggests a high price of WPs. We then introduce costs of migration that suggest a lower price. One of those costs is the tax rate levied on WPs, which (as we will see) gives the host government a useful means of managing the scheme. Some implications are then drawn for social protection in the host countries.

3.1 Enforcement

As noted in Section 2, past work on the idea of a market for WPs has generally assumed that the migration policy is fully enforced. We show in this section that the assumption can be

¹⁴ The U.N.'s Commission for Human Rights has viewed such discrimination against migrants in host countries as an important source of racism and xenophobia (U.N., undated).

¹⁵ Posner and Weyl propose that the gains be shared equally, but in practice this would be open to negotiation.

relaxed to allow only partial enforcement—meaning that there remains a positive probability of an illegal migrant escaping deportation by the authorities in the host country—and yet the new market drives out illegal migration.

To see how, consider a single migrant for whom the wage in the low wage economy is w^L while it is w^H in the high wage economy if the migrant takes the legal route. We assume that both wage rates are known to each individual migrant.¹⁶ Let there be an illegal entry option that comes with an up-front cost of c per worker. (For example, this can be thought of as the charge made by the human trafficker and/or the required bribe to an official.) The enforcement policy is represented by the (known) probability r of an illegal migrant being caught and deported, in which case he returns to the low-wage economy (though still having incurred c). The illegal migrant may have to accept a discounted wage in the host country, giving a net wage $w^H - \delta$ for $\delta \geq 0$, where δ is the discount incurred when working in the host country without the WP. The net wage in the host country if the migrant takes the illegal route is $r(w^L - c) + (1 - r)(w^H - \delta - c)$, while the wage received taking the legal route (w^H) is obtained when $r = c = \delta = 0$.

Starting from a state with no market for WPs, how will a migrant who expects to gain from the illegal route respond when the market option is available? For a migrant to take the illegal route in the absence of the market, the net wage he receives in the host country must exceed the wage at home, i.e.:

$$r(w^L - c) + (1 - r)(w^H - \delta - c) > w^L \text{ implying that } w^H - w^L > \delta + \frac{c}{1-r} \quad (1)$$

The migrant chooses to rent a WP at price p rather than take the illegal route if:¹⁷

$$w^H - p > r(w^L - c) + (1 - r)(w^H - \delta - c) \text{ implying that } w^H - w^L > \frac{p - c - \delta(1-r)}{r} \quad (2)$$

We see that higher wage gaps ($w^H - w^L$) not only make the illegal route more remunerative than not migrating but they also make the market option more attractive to the illegal one.

¹⁶ One can introduce uncertainty about the wage at the destination but this complicates matters without providing any important new insights.

¹⁷ Notice that we have written (2) as if w^H is unchanged when the market is introduced. More plausibly (as we argue later), the market for WPs is likely to increase w^H . We can readily modify equation (2) by adding a (negative) term on the RHS of the inequality representing the impact of the market on w^H , which is then interpreted as the “pre-market” w^H , consistently with (1).

Two implications are notable. First, the introduction of this market makes illegal migration less likely; more precisely, the set of individuals with wage gaps, $w^H - w^L$, satisfying (1) must intersect the set satisfying (2). Second, if the probability of being sent home exceeds a critical value, then the introduction of the market for WPs will eliminate illegal migration. More precisely, suppose that $r > 1 - \frac{c}{p}$ (< 1), implying that $\frac{c}{1-r} > \frac{p-c}{r} \geq \frac{p-c}{r} - \frac{\delta}{r}$.¹⁸ Then the fact that $w^H - w^L > \delta + \frac{c}{1-r}$ for those who choose the illegal route implies that $w^H - w^L > \frac{p-c-\delta(1-r)}{r}$, i.e., that all those for whom the illegal option is preferred to not migrating in the absence of the market option will gain by acquiring a WP through the new market. Illegal migration will vanish.

So, we do not need to assume full enforcement ($r = 1$) in our model of the market; the weaker assumption suffices that the probability of an illegal migrant being caught exceeds the gap between the legal price of the WP and the cost of the illegal entry option as a proportion of the price ($r > 1 - \frac{c}{p}$).

3.2 Benchmark model of the market

Imagine a single high-wage country introducing a rental market for WPs. A supply of WPs is provided by the citizens of that country who want to lease their own WPs. The demand for those WPs comes from citizens from some or all low-wage countries willing to rent the WPs. The market is in equilibrium when aggregate supply balances aggregate demand over some period of time, which we call the market-clearing period. The equilibrium price is taken to hold within that period of time, recognizing that the market need not clear at each instant within the period.

For the purpose of this expository model, we do not differentiate the WP by any worker characteristic, such as occupation. This can be relaxed to allow multiple markets, one for each occupation, within some sensible grouping. The supply of WPs would balance the demand within each group, with an equilibrium WP for each occupation. These features complicate the mathematical representation of the model without any extra insight on the economics. However, we return to discuss the more general model in Section 5.

¹⁸ To verify the first inequality note that $r > 1 - c/p$ implies that $c > p(1 - r)$, and hence that $c + cr > p(1 - r) + cr$ and thus $cr > (p - c)(1 - r)$. Note that this ignores any effect of the market on w^H . The formula can be readily modified to allow this.

Different people may choose different sub-periods to participate in the market, and the distributions of these contracted time periods can differ between the two sides of the market. On the supply side, citizens will probably opt for shorter periods than are desired by potential migrants, given the fixed costs of migration. Thus, the number of people renting out their WP in the host country may well exceed the number of people entering the country as migrants with WPs. All that matters to the equilibrium price is the aggregate demand and supply in time units—aggregating over all market participants within the market-clearing period. However, to simplify the exposition, we model the market for a common fixed interval such as one year on both sides, though this can be readily relaxed. Thus, the equilibrium equates the number of workers renting out their WP with the number of migrants buying WPs.

In the high-wage country, wages have a continuous distribution function $F(w)$ for $w \in [w^{min}, w^{max}]$ (with $F(\cdot)$ strictly increasing as usual).¹⁹ Thus, $F(w)$ gives the share of the workforce in the high-wage economy that earn less than w . (Note that this is the post-intervention distribution, including general equilibrium effects of the policy.) The lower bound to the distribution of wages, w^{min} , can be interpreted as a statutory minimum wage. This is assumed to be binding, i.e., $F(w^{min}) = 0$ (though we can relax this to allow w^{min} to be less than the statutory minimum wage rate). By definition, $F(w^{max}) = 1$. Within the interval $[w^{min}, w^{max}]$, the equilibrium price of a WP, p , is a specific value of w that clears the market. The proportion of the workforce in the high-wage economy earning less than p is $F(p)$, and the country has a workforce of size n_h (h is the index for the high-wage country). For the purpose of this expository model, we treat n_h as exogenous, unaffected by the price of the WP. We assume that citizens are willing to rent out their WP for a price exceeding their current wage rate. Then the aggregate supply of WPs is $F(p)n_h$.

On the other side of the market, the workforce of the low-wage countries is n_l . We normalize such that $n_h + n_l = 1$. Let us assume for now that there is a labor surplus in the low-wage economy such that there is no foregone income from migration. Also assume that there are no other costs of moving and no taxes levied by the high-wage country on the purchase of a WP. Also assume that workers in the low-wage countries expect to receive a wage drawn from the

¹⁹ There can be some disutility of work, represented by a taste parameter δ , and we can let $\tilde{F}(w, \delta)$ denote the joint distribution of wages and the disutility of work. $F(w)$ is then the marginal distribution integrating out the variation in the disutility of work.

same distribution of wages as observed in the high-wage country.²⁰ The demand for the new WP within the market-clearing period is then $[1 - F(p)]n_l$.

There is an excess demand for WPs at w^{min} given that $F(w^{min}) = 0$ and $n_l > 0$.²¹ There is excess supply at w^{max} (the excess supply is $1 - n_l > 0$). Thus, by continuity and monotonicity of the supply and demand functions, a unique equilibrium exists.²² The market equilibrium solves:

$$F(p)(1 - n_l) = [1 - F(p)]n_l \text{ implying that } p = F^{-1}(n_l) \quad (3)$$

where $F^{-1}(\cdot)$ is the quantile function of wages in the high-wage country. The equilibrium is stable under standard assumptions about the market's adjustment process out of equilibrium; in this case, we require that the price rises (falls) whenever $F(p)$ is less than (greater than) n_l . The solution in (3) is the point on the quantile function for wages in the high-wage country corresponding to the share of the global workforce in the low-wage countries. This is clearly a high equilibrium price if n_l is high; for example, if $n_l > 0.5$ then the equilibrium price is above the median wage rate in the high-wage country.

3.3 Introducing costs of migration

A lower equilibrium price is found when we introduce costs of migration that naturally create frictions to migration flows. The costs of migration include foregone earnings back home, extra living costs in the high-wage economy, out-of-pocket migration costs, taxes levied by the host country and some less obvious costs of migration such as demands from the family and friends back home to share in the gains from migration and self-insurance to deal with risks at the destination. Such frictions imply that workers in the low-wage countries cannot reasonably expect to receive a gain in wages net of costs that is drawn from the existing distribution in the high-wage country.

To allow for costs of migration, we focus now on the expected distribution of net wages (gross wage less costs of moving). Potential migrants expect to receive a net wage with a

²⁰ Our model assumes that migrants know with certainty the wage they get if they migrate. It might be more realistic to assume that migrants face some wage uncertainty when they migrate and base their migration decision on conditional expectation over $F(\cdot)$. This assumption does not change the conclusions in any important way.

²¹ The necessary and sufficient condition for an excess demand at w^{min} is that $F(w^{min}) < n_l$.

²² Here and later, we invoke standard mathematical properties of continuous functions.

continuous cumulative distribution $G(w)$ (with $G(\cdot)$ strictly increasing as usual). Given the costs of moving, the net wage distribution can be taken to be unambiguously “poorer” than the $F(w)$ distribution, in that $G(w) > F(w)$ for all w . Demand for the WPs is now $[1 - G(p)]n_l$. We impose two restrictions on the $G(\cdot)$ distribution, namely that $G(w^{min}) < n_l$ and $G(w^{max}) = 1$, which imply positive excess demand at w^{min} and an excess supply at w^{max} . Again invoking continuity and monotonicity, a (unique) equilibrium exists at given n_l . The new market equilibrium is:

$$p' = H^{-1}(n_l) \quad (4)$$

where $H(w) \equiv F(w)n_h + G(w)n_l$ is the weighted mean distribution. Clearly $p' < p$.

3.4 Managing the market using the tax rate and eligibility criteria

There are reasons why the high-wage country would want to tax the WP as a policy instrument for managing the scheme. This can be thought of as another cost of moving (as embedded in the $G(\cdot)$ distribution), but it is instructive to make it explicit. Let that tax be $\tau (> 0)$ and the relevant net wage distribution for potential migrants is $G(w + \tau)$. The existence of a unique equilibrium is assured under the same assumptions, with the modification that we assume that $G(w^{min} + \tau) < n_l$ (although this can be relaxed somewhat while still assuring that an equilibrium exists). The new market equilibrium (p'') solves:

$$F(p'')(1 - n_l) = [1 - G(p'' + \tau)]n_l \quad (5)$$

Evidently $p'' < p' < p$. (Note that $[F(p'') - F(p')]n_h + [G(p'' + \tau) - G(p')]n_l = 0$. This cannot hold if $p'' > p'$.) How much lower the equilibrium price will be depends on τ . The higher is the value of τ , the lower is the price solving (5); more precisely:

$$\frac{\partial p''}{\partial \tau} = -\frac{1}{1+\gamma} < 0 \quad (6)$$

where $\gamma \equiv \frac{f(\cdot)n_h}{g(\cdot)n_l}$ and $f(\cdot)$ and $g(\cdot)$ are the density functions (corresponding to $F(\cdot)$ and $G(\cdot)$ respectively) evaluated at the equilibrium price. This suggests that the existence of a binding minimum wage yields a limit to how high the tax can go. If τ is too high then the solution of (5)

will reach w^{min} and the market will vanish for any higher value of τ . From (5) it is clear that for the market to exist at the minimum wage we require that:²³

$$\tau < G^{-1}\left(1 - \frac{F(w^{min})(1-n_l)}{n_l}\right) - w^{min} \quad (7)$$

(where $G^{-1}(\cdot)$ is the quantile function of migrants' net wages).

A tax on the rental price of the new WPs (or increase in the cost of moving, such as due to a higher forgone income in the low-wage economy) is passed on in part through the equilibrium price. To a first-order approximation, a unit increase in τ will lead to a final rental price of $p'' + \gamma/(1 + \gamma)$ with a final leasing price of $p'' - 1/(1 + \gamma)$. (The tax is shared equally in the special case of uniform densities and equal workforces.)

The market for WPs described above would create a new binding floor to labor earnings in the host location—a new lower bound, above the current floor, and potentially above the current minimum wage rate.²⁴ Workers will rent out their WP if they earn less than p'' (and some earning more than p'' will also do so if they experience a disutility of work). If the government is worried that the equilibrium price is too high—thus attracting too many workers out of the labor force—then it can simply raise the tax rate on WPs. This can also be considered a prudent way to introduce and manage the scheme. Indeed, as we now explain, a taxable market for WPs can be interpreted as a means of assuring a normatively-chosen minimum level of labor earnings in the host country.

We can posit a first-best distribution of earnings that maximizes some weighted aggregate of utilities, with the weights reflecting the government's social preferences. The first-best distribution of income is bounded below by \bar{p} . However, in the absence of this policy, the first-best is not implementable given other constraints (notably on information and administrative capabilities). The observed distribution has incomes below \bar{p} due to uninsured shocks or longer-term disadvantages. With the policy in place, instead of solving (5) for p'' , the host government can now solve for the tax rate on WPs required to assure that $p'' = \bar{p}$, namely:²⁵

²³ Our assumption that $G(w^{min} + \tau) < n_l$ already implies an upper bound to the tax (namely $G^{-1}(n_l) - w^{min}$), but at that bound the market does not exist at $p = w^{min}$ (assuming that $F(w^{min}) < 1$).

²⁴ The only estimate of the level of the floor in America (averaged over reported incomes of the poor, with higher weight on poorer people) puts the floor at about \$5 per person per day (Jolliffe et al., 2019). Allowing for (say) one dependent, this implies an income of \$10 a day. It would be reasonable to assume that this is lower than the equilibrium price of a WP. Indeed, \$10 a day is lower than the minimum wage rate in the US for an eight hour day.

²⁵ Recalling that $G(w) > F(w)$, a sufficient condition for $\tau^* > 0$ for any desired \bar{p} is that $G(\bar{p}) < n_l$.

$$\tau^* \equiv G^{-1} \left(1 - \frac{F(\bar{p})(1-n_l)}{n_l} \right) - \bar{p} \quad (8)$$

Thus, the market for WPs now makes it feasible to implement the host country's socially optimal minimum income. We refer to this as the “inverse problem.”

There are other controls available to the host country, namely through its power over eligibility to access the market. Within the host country, only those of the legal working age would, of course, be eligible. One might consider further restrictions on eligibility within this group, such as by requiring some prior period of formal work or by imposing a retirement age. Eligibility to rent a WP might also be restricted (at least initially) to workers from certain “partner” countries. For example, the US might (initially at least) choose to make the market only available to citizens of (say) Mexico. This can yield discrete changes in n_l but for analytic convenience, we can treat eligibility restrictions as a continuous reduction in n_l (either by restricting migrant eligibility or expanding eligibility to rent out the WP among citizens of the host country). This will reduce the equilibrium price (differentiating (5)):

$$\frac{\partial p''}{\partial n_l} = \frac{1+F(\cdot)-G(\cdot)}{f(\cdot)n_h+g(\cdot)n_l} > 0 \quad (9)$$

The difference between these two policy instruments is that the tax can raise revenue. The host government may face a trade-off between the level of the income floor, \bar{p} , and the extra revenue generated by a higher tax on WPs. This will exist if the (positive) partial equilibrium effect of a higher tax rate on revenue dominates the (negative) effect stemming from the deterrent effect of a higher tax on migration.²⁶

3.5 Implications for high-wage workers in the host country

Our model suggests that those renting out their WP will tend to be the citizens of the host country who earn relatively low wages. On the other side of the market, there will be migrants who plan to work in the higher wage occupations available in the host country. So, relatively high wage workers of the host country will face extra competition and downwards wage pressure from WP-buying immigrants. To the extent that these higher-wage workers tend to be more influential, this implication may well undermine the proposal politically. Against this concern, both the earnings floor provided by the market for WPs and the extra tax revenue would help

²⁶ This requires that $G(\cdot) + \frac{\tau g(\cdot)\gamma}{1+\gamma} < 1$.

compensate for such losses and for negative views of migrants in some subgroups of the host population.

To see this more clearly, suppose that a person's utility depends on current income, but on top of this, a higher earnings floor also provides extra security. To illustrate in a simple model, let utility be linear in all variables. In the absence of the market, utility is $y_0^* + \vartheta w^{min}$ where y_0^* is the person's income and $\vartheta > 0$ is the value attached to the extra security provided by a higher earnings floor. (We can ignore the disutility attached to migrants here as it is only the extra immigrants induced by the market that will matter.) With the market in place, the tax on WPs is returned as an equal lump-sum transfer to all host country citizens. Extra immigrants per capita yield disutility. The decisive voter's utility when the market exists is $y_1^* + \vartheta \bar{p} + (\tau - \delta)F(\bar{p})$ where y_1^* is income with the market in place, and $\delta > 0$ is the disutility per extra immigrant per capita. The market is beneficial to this person if

$$\vartheta(\bar{p} - w^{min}) + (\tau - \delta)F(\bar{p}) > y_0^* - y_1^* \quad (11)$$

Clearly, this will hold if there is no income loss from introducing the market ($y_1^* \geq y_0^*$) and $\tau > \delta$. When these conditions do not hold, the person will still benefit if the new market generates a sufficiently high floor to earnings; specifically, \bar{p} must reach a premium above w^{min} for the market to be preferred. That premium is $[y_0^* - y_1^*(\tau - \delta)F(\bar{p})]/\vartheta$. Whether that can be reached in practice would need to be addressed in the specific context.

The scope for adverse effects on the earnings of higher-wage workers in the host country also points to the potential importance of introducing such a policy with an initially high tax rate of WPs. This might be lowered subsequently, as more is learnt about the scheme's impacts.

There may well be other effects of such a policy. A large influx of new migrants in urban areas can be expected to impact local housing markets and put extra strain on public services, such as public transportation. If implemented at scale, the market for WP would require a significant expansion of the capacity of the border control and immigration authorities. Agencies that enforce the employment eligibility, such as the Home Security Investigations Office in the US, might also need to be strengthened. Some of the indirect effects of introducing this new market may well be hard to predict *ex ante*. Again, this speaks to the need for caution initially, starting with a reasonably high tax rate on the WPs and restricted eligibility.

It is unclear on a priori grounds how the market for WP would be impacted by the business cycle in the host country. A negative productivity or demand shock in the host country

will decrease wages and labor demand and increase unemployment initially. More citizens in the host country will be willing to sell their WPs, so the supply of the WP will go up. But the deterioration of the labor market will also reduce the expected income of a prospective migrant, so the demand for WP will go down. The resulting price of the WP and the number of migrants coming to the country would depend on the WP demand and supply elasticities.

4. How might the proposed market be implemented?

There is more than one way to implement a competitive market for work permits. One option is to create a web-platform for online double auctions of WPs—a natural analogue to the economic model of a competitive market in the previous section. This would be managed by the government of the host country, which retains its monopoly over the supply of WPs. A separate bank account would be maintained for deposits and withdrawals associated with the new market.

The government (acting as an auctioneer) announces the program and opens the site, having developed the required software. A citizen interested in participating registers on the site and provides some necessary legal documents that verify eligibility to trade on the site (for example, to verify age). Once cleared, citizen i submits an offer to rent out her WP, with a stipulated duration D_i and minimum acceptable asking price, p_i^{min} . At the same time, potential buyer j submits his desired duration d_j for a WP and maximum price p_j^{max} .

Once a reasonable number of offers are in the system, the software finds the market-clearing price p such that aggregate labor time is in balance between the two sides of the market. (Recall that balance is only required in the aggregate, and in time units, not people.) The equilibrium price equates the total duration of the proposed spells for renting out the WP for those willing to accept at least p with the total duration of the bids for WPs from those willing to pay no more than p plus the stipulated tax, τ (or other costs of moving). Exact balance is unlikely, but one can instead find the p that gives the least imbalance, i.e.,

$$p = \arg \min \left| \sum_{p_i^{min} > p} D_i - \sum_{p_j^{max} < p + \tau} d_j \right| \quad (10)$$

Alternatively, the host government may choose to announce a desired minimum level of labor earnings, which sets the rental price p . The software then solves the inverse problem—to find the tax τ that attains the desired p .

The price and tax rate are then announced. All those citizens who said they are willing to rent out their WP for at least p will take the offer, while a similar number of people wanting a WP but willing to pay no more than $p + \tau$ take it up.

This is not the only way of implementing the proposed market in WPs.²⁷ One could give the first WP to the highest initial bidder and use that to cover the lowest initial selling price, and continue this way. That would entail that the government recoups the individual surpluses as extra revenue from the scheme. An option, which may well be more popular for citizens of the host country (for its familiarity as well as transparency), is similar to the auction site *eBay*. Once cleared for using the site, a citizen submits an offer to rent out a WP, specifying the conditions (notably the desired duration and start date) and the price he wants to get. One should be able to monitor the ongoing prices for WPs and set up the price accordingly. After the WP is listed on the site, anybody in the world can bid for that as a WP with the appropriate taxes and charges added. A particular WP will go to the highest bidder. The WPs can also be bundled, so that purchasers get their desired time periods (or something close).

Once the transaction is confirmed, the person renting out a WP receives the money to his bank account and a flag is added to his profile (linked, for example, to his Social Security Number in the US) indicating the period when that person is not eligible to work in his own country. From that moment, the rentier has no obligation either to the renter or to the authorities. On the expiration date, the status is reset so the person can work again.

The renter of the WP need not be a foreign national. A citizen who leased out her WP can rent one back later if needed. However, the interest here is in the demand from foreigners, each of whom receives an official confirmation from the host country's government that he has rented a WP for a specified period. This confirmation becomes a document supporting the renter's petition to obtain an entry visa to that country. The confirmation would not guarantee that the entry visa is granted, as there could be other reasons (notably security) why that individual might not be allowed into the country²⁸. (Nor does the confirmation guarantee that on arrival the renter will find a job.)

If the visa is issued, a renter enters the country and looks for a job (or takes up a pre-contracted job). The start and end day of the visa will be linked to the dates of the WP (allowing

²⁷ An overview of the generic options for designing auctions can be found in Haeringer (2017).

²⁸ In that case, a foreigner still owns his WP, but he cannot use it. A citizen retains the money he leased the WP for.

some grace period). A foreigner with a rented WP could stay in the country for the duration of the WP, plus some extra time for relocation.

A secondary market might develop to provide services and support both sides of the market. The legal services could be offered assisting those renting out their WP with the preparation of the necessary documents to confirm their eligibility to do so. The potential services for those renting in a WP would be more extensive. Because not all foreigners will be able to pay for the WP upfront, commercial banks (most likely in the receiving country) could provide loans to pay for the WP. The loan application will include checking the applicant's qualifications and will be given based on the likelihood of the buyer finding a job in the country, possibly in the form of an employment contract or binding employment offer. Legal and immigration support might also be privately provided. Insurance instruments could be developed to insure against the events of not obtaining a visa or failing to find a job while in the country.

5. Discussion of the policy issues

After noting some potential issues, we discuss differences to other options for domestic social protection. We then note other design and implementation issues to be considered.

5.1 Comparison with other social protection policies

The insurance provided by the proposed market for WPs is universal in that it would be available to all workers in the host country—it is not means-tested, so even a high-wage worker who suffers a shock can turn to the program. Nonetheless, the policy has a self-targeting mechanism. People with low current wages would undoubtedly be more willing to participate in this market and gain more from doing so. This would put upward pressure on wages for low-skilled workers, reducing poverty and inequality in rich countries. The introduction of this market can be thought of as a policy for lifting the floor to the distribution of earnings in the host country. This assumes that the scheme is introduced on top of existing social protection schemes, such as unemployment allowances. The extra benefits (including insurance) arise from the fact that anyone can rent out their WP at any time. There may be some displacement of existing private transfers, such as support from other family members. On balance, net gains can be expected.

There would also be non-pecuniary benefits (or at least benefits not reflected in current incomes). Many of those who take up the new option of renting out their WP can be expected to be doing things that yield such benefits. For example, extra time spent by parents with their young children can be expected to bring gains in terms of child development. Similarly, home care given to one's elderly parent yields a real but non-pecuniary benefit. The same can be said of other examples of potential take-up discussed in Section 2.

In thinking about the redistributive aspect in the host country, it is of interest to consider how this policy compares to other schemes that aim to guarantee a minimum income.²⁹ One such scheme entails topping up all incomes until they reach the desired minimum.³⁰ The information requirements of such a scheme are considerable, as one must know each person's income. The incentive effects can also be a concern, given that it implies a 100% marginal tax rate on poor people. Alternatively, one can consider a job guarantee program, which aims to provide work to anyone who wants it at a stipulated minimum wage rate.³¹ This also has an in-built self-targeting mechanism, whereby the program is more attractive to low-wage workers, with no explicit pro-poor targeting required, such as based on some proxy means test. The major difference is that, under the proposed market for WPs, the direct beneficiaries in the host country are not compelled to work to receive payments. Work requirements generate costs to participants (including foregone incomes) and also require (often sizeable) costs of monitoring the work and providing non-labor inputs.³² Against these disadvantages, it has been argued that such "workfare" schemes may be able to generate useful assets (although that has not, it seems, been the norm in workfare schemes) and instill a work ethic in recipients.

Viewed as an option for reducing poverty, the proposed market for WPs also has a notable advantage over proposals for raising the statutory minimum wage. Both options can attain the same level of the floor to living standards, and so reduce poverty. The difference is that the proposed market for work permits would free up the worker's time, and so it will

²⁹ Ravallion (2019) reviews all these policy options in greater depth. Here we just note key differences with a market for WPs, viewed as a social protection policy.

³⁰ Famous examples include the *Speenhamland System of 1795*, which aimed to guarantee a minimum income through a sliding scale of wage supplements (Himmelfarb, 1984). Another example is the *Di Bao* program in China, which aims to top up all incomes until they reach stipulated minima (set by each city) (Ravallion and Chen, 2015).

³¹ An example is the National Rural Employment Guarantee Scheme in India. A Federal Jobs Guarantee scheme has also been proposed for the US (Paul et al., 2017).

³² See, for example, the cost-effectiveness calculations for the National Rural Employment Guarantee Scheme in the state of Bihar, India, in Murgai et al. (2016).

encourage productivity-enhancing investments that require time. Thus, the policy can be expected to have longer-term gains in promoting people from poverty.

An interesting comparison is with a Universal Basic Income (UBI)—one of the most talked about social policies today. This provides a uniform transfer to everyone, whatever their income level. (Though, of course, the net gains may be far from uniform once one allows for the extra taxes or spending cuts needed to finance the policy.) There are some similarities. Like a UBI, the proposed market in WPs provides a new income source for people who presently have little or no option but to work and must forgo personally and socially valuable pursuits in doing so. Like a UBI, there is no explicit targeting mechanism; since the proposal relies on a competitive market mechanism; in equilibrium, everyone (rich or poor) has this new opportunity and everyone faces the same price for renting out their WP. Thus, like a UBI, creating the proposed market in WPs can have broader appeal, and hence be more sustainable politically than finely targeted transfers.

There are some important differences. The market for WPs will probably be more pro-poor than a UBI; specifically, it will bring both direct gains to poor people in host countries who take up the option of renting out their WP—the aforementioned self-targeting mechanism—and indirect gains to others via the likely tightening in the low-wage labor market. UBI has been advocated as a means of addressing job-loss due to automation (as in, for example, Yang, 2018). But why would one give the transfer to everyone, including those who stay working? A market in work permits would directly help those who lose their job due to automation.

Also, unlike a UBI, the proposed policy is self-financing. This overcomes a widespread concern about UBI proposals that require higher domestic taxes or are only available as an option to existing welfare programs, thus reducing the net gains to poor people from the UBI. And the proposed market for WPs can attain a (domestically) self-financed guaranteed minimum labor earnings in a way that is self-targeted to poor people.

A long-standing social protection issue that the policy could address is home care for the elderly. The policy would open up a new option for financing such care. Governments who are already providing assistance for this purpose may well be willing to divert some of that towards a subsidy to citizens who apply to rent out their WP for this purpose. To help assure that this is in fact the purpose, the application may be filed jointly between the elderly person and the person (such as a family member) willing to forgo the WP in order to provide that care.

The policy shares some of the concerns about past social protection policies. If the equilibrium price is very high, then there will be concerns about many people dropping out of the workforce in rich countries. Then a higher tax should be applied to the WP. Also, as we have noted, there can be many socially beneficial reasons why a worker may prefer to rent out their citizenship WP.³³

In low-wage economies, there will be first-order gains for people who cannot otherwise get a permit to work in a high-wage economy. Those gains will be greater for those with a potentially higher wage in the destination country. Introducing this new market seems more likely to attract middle- and high-level skills to high-wage economies. Since highly-skilled workers already have relatively easy access, the main direct gains (relative to the *status quo*) are more likely to be in the middle of the skill distribution. The distributional outcomes in low-wage economies can be modified by a number of other factors, including access to credit for purchasing the WPs and the incidence of remittances.

There may be concerns about brain drain from developing countries. A selection effect is evident in the fact that the new WPs come at a price. Note, however, that this is temporary migration. There will be remittances generated. And the rate of return to education in developing countries will almost certainly rise. The scheme will probably also reduce the widespread problem of the educated unemployed in developing countries that has been seen as stemming (in part at least) from quotas generated by restrictions on international migration (Fan and Stark, 2007). (To the extent that the scheme draws heavily on the educated unemployed currently waiting for WPs in low-wage economies, this will imply lower foregone income and hence a higher equilibrium price.) Improvements in credit markets in developing countries—possibly with the help of external development assistance—could help broaden access to the new opportunities for migration. Development assistance could be channeled toward improved information and access in developing countries to the purchasable WPs. The host country could also allow migrants to pay off the WP through higher taxes (similarly to how some countries help students finance tertiary education).

We have discussed the policy as if it is implemented by only one host country. Multiple host countries need not face the same price in equilibrium, given differences in their attractiveness to potential migrants, including differences in their tax rate on WPs. Putting those

³³ A similar point has been made about UBI; see the discussion in Bregman (2017).

differences aside, if additional rich countries introduce this market (a higher n_h) then the equilibrium price will fall. Potential migrants in low-wage economies will benefit from greater competition among high-wage countries.

5.2 The use of differentiated work permits in employment policies

As noted in Section 3, to simplify the exposition we have modeled a single market for WPs. The model can be readily generalized to allow multiple markets, each with its own price for a WP and its own tax rate. Here we note some policy implications.

When there is only a single WP market (with a single price), the sectoral or occupational composition of employment and wages in the host country could well be affected. The new market for WPs may induce a different pattern of migration that would put downward pressure on wages for some sectors and skills. This could generate internal social conflicts and political resistance, although it should be noted that a market in WPs has an in-built (financial) compensation mechanism for those in occupations or sectors that experience declining domestic demand.

These impacts on the economy could be managed by creating occupational WPs, with separate market prices and taxes. For example, a lower tax rate can be applied to WPs for workers with skills in shortage. The host government may want to tailor migration intakes to the employment implications of its industrial policy—interpretable as a vector of the required number of workers by skill or occupation. This can be done by having WPs designated by these categories, applying appropriately differentiated taxes to the WPs.

The key point is that differentiating the WPs by occupation would mean that the government retains control of the occupational structure of the economy. It could use the WP market to maintain the existing occupational and wage structure or to change it, by attracting more workers in certain occupations deemed to be in short supply. Similarly, one could define regionally-specific markets for WPs, with the market for WPs providing a new instrument for regional development policy, such as in helping lagging poor areas.

5.3 Other policy issues

There are other issues related to the design that we note briefly, though none seem to pose insurmountable challenges:

- A policy choice is whether access to this market should be restricted to those currently in the formal workforce. This would appear to be feasible in most rich countries using income tax records.³⁴ Doing so would help assure that the policy creates new and valuable options for people rather than simply making transfers to those who do not need to work (labor market non-participants), including the “idle rich.”³⁵ This restriction may also be desirable behaviorally—to assure that the person is making a well-informed decision, and to avoid poverty traps, as might arise if a young person rents out her WP at school-leaving age, and eventually finds she is unable to get into the labor market for lack of experience. One might argue for a time-bound exemption for those who have only just reached the minimum school-leaving age, and who stay in school/university. However, there are undoubtedly many students who would still be in school in the absence of this policy, and it is questionable whether one wants to use this policy to essentially make a transfer payment to them; the greater benefit is probably for those who could not afford to continue in school in the absence of the market for WPs. Eligibility could be restricted to people who have been in the workforce for some minimum period, such as one or two years, although there could be gaming of the system by people who get a job just to sell their WP. Young people who left school early for lack of money could then rent out their WP after that minimum period and so return to school.
- One could also consider allowing workers to rent out their WP for only part of each working week, retaining it for the rest of the week. This could be an attractive option at some stages of the life-cycle, such as when a family has young school-age children. A fulltime position of a migrant would essentially be “funded” by the contributions of several citizens who want to work only part time.
- Other restrictions on eligibility might be considered, possibly on a trial basis. Eligibility might be confined to citizens in poor areas hit by economic shocks; for example, a town that has seen the collapse or departure of the main employer. (The purchased WPs would allow work anywhere in the country.) Newly unemployed workers can be given the option of renting out their WP for a period, to help finance migration and/or retraining.

³⁴ For example, in the U.S., the W-2 tax form supplied by the employer identifies a formal sector worker. By definition, an informal sector worker does not have a W-2.

³⁵ The rates of non-participation are higher in the rich countries that attract migrants. For example, non-participation represents about 25% of the working age population in the UK and Germany, and 32% for the US. (OECD 2021).

- To obtain current formal employment, citizens will need to show that they have not rented out their WP. This should not be difficult for the formal sector. Even now, employers in the United States (for example) check work eligibility through the Social Security Number. This can indicate that a person is not eligible to work because she rented out her WP.
- To help avoid discriminatory practices against migrant workers, all workers (whether citizens or migrants) could be required to provide a common document at the time of employment, indicating that they have a currently valid WP. Since it is common to all, and there is no need for the document to indicate migrant status, this will make it harder for employers who want to discriminate to do so. This would not be feasible for informal sector workers or for self-employed, who are not required to provide evidence of eligibility to work. One could not prevent someone dropping out of the formal sector on renting out their WP and switching to informal work; for example, one might use the WP revenue as a deposit on a new dwelling, obtain a mortgage, and spend the time freed up in renovating it for re-sale or occupancy. It is not clear that one would want to prevent such behavioral responses, but (more to the point) a ban would be hard to enforce.
- Citizens who have rented out their WP would also be able to buy it back before the end of the contracted period.³⁶ One could add a secondary market for insurance, whereby those who rent out their WP are guaranteed that they can rent it back before the end of the contracted period at a price no greater than the price they received initially (adjusted for the change in the time period of the WP).
- The WP could also be given a positive termination value at the end of the period, which can only be cashed in on leaving the host country. This would provide an incentive for the migrant worker to not overstay. An important design choice is whether domestic firms are allowed to rent WPs. If so, the regulations may be needed to assure that large firms do not distort the market.
- The tax on WPs can cover the administrative costs (such as for creating the market) and any other external costs of migrants. Raising the tax rate will impact the likely skill profile of migrants, but (given the pass-on through the equilibrium price of the WP) it

³⁶ Because the market is anonymous, such a citizen would be renting the WP not from the migrant who purchased that WP, but on the open market, most likely from another citizen who leases out his/her WP.

will also alter the skill profile of those choosing to rent out their WP (in the opposite direction). Given that it retains the power to tax these transactions, the host government will not lose control over the number of people entering the country.

- In countries with a pay-as-go pension system, the government might tax the renter the amount of his contribution to the national pension fund. This will increase the price of the WP. The migrant contribution to the host country pension system that will be higher than the average contribution of natives who rented out their WP should be returned to the migrant once he leaves the country.
- There are other implementation issues that we have not discussed, including: How should the payments received by those renting out their WP be treated for tax purposes? Should migrants be allowed to bring their families? Existing tax and migration policies in host countries will undoubtedly have something to say about these issues.

6. Conclusions

It is widely agreed (at least among economists) that there are likely to be substantial efficiency and equity gains globally from freer international migration. As Clemens (2011) puts it, there are “trillion-dollar bills on the sidewalk.” Yet freer international migration is not a very popular idea; indeed, some people are extremely hostile to it. As Dustmann and Preston (2019) point out, there are political and economic challenges in how to find a feasible mechanism to capture the gains from international migration. Given that host countries have the power to restrict entry, any politically feasible mechanism will entail sharing those gains with host-country workers.

The policy proposed here is an anonymous market exchange in work permits. Thus, a potentially valuable asset of workers in high-wage economies would become marketable. Creating such a market would help capture the economic gains from freer migration, while keeping the host-country government in control of the migration flows and (hence) domestic labor supply. The policy can respect a citizen’s “natural rights” by distinguishing the ownership of the citizenship work permit from its rental value, with consent.

There have been past proposals for selling passports or work permits, and some examples. However, past proposals have been incomplete in an important respect: they have not eliminated the underlying market failure. Alongside the current excess demand for work permits,

there is a potentially large supply side, namely all those workers in high-wage economies who would be happy to rent out their work permit as long as they are adequately compensated. There is much they could then do, including coping with economic and health shocks, financing education or training, homecare of loved ones, or simply taking a long vacation.

The host country will benefit from adopting this policy in several ways. Relatively low productivity workers who currently have little option but to join the labor market would be replaced with high productivity workers, raising GDP and tax revenues. Workers in the host country would have new opportunities, including raising their future returns in the labor market. The scheme can be designed to avoid changing the total number of jobs (or total hours worked) in the host country, though the skill composition of employment will change, probably lowering wage inequality. There would be important complementarities with social protection goals. Creating a market in WPs also avoids the need to discriminate against migrants by extra taxation or diminished rights, thus, avoiding the trade-off between migrant welfare and freer migration. And by providing a new opportunity for social protection, this new market would help relieve the public's concerns about migration threatening the "compositional amenities" that natives derive from their neighborhoods, schools, and workplaces (Card, Dustmann and Preston 2012).

In addition to the first-order gains to migrants, the main group that is likely to take advantage of this new opportunity would be relatively low-wage workers in high-wage economies. The expectation is that average income would rise in the host country, while earnings inequality and poverty would fall. Some higher-wage workers would face more competition from temporary migrants, although they would be at least partly compensated by the extra social protection available, and the tax revenues. By its power to tax the WPs (and its controls on eligibility) the host government could manage the market to avoid large initial shocks.

The new market can be used to assure a minimum labor income in host countries, financed by tapping into the unexploited gains from international migration. The market would offer a new instrument for social protection, as well as an efficient means of managing immigration, complementary to employment and regional policies. The policy will not pick up all those trillion-dollar bills on the sidewalk, but it will recover some of the loss.

References

- Auriol, Emmanuelle, and Alice Mesnard, 2016, "Sale of Visas: A Smuggler's Final Song?" *Economica* 83: 646–678.
- Becker, Gary S., 1992, "An Open Door for Immigrants—The Auction," *Wall Street Journal* October 14.
- Becker, Gary S., and Guity Nashat Becker, 1997, *The Economics of Life: From Baseball to Affirmative Action to Immigration, How Real-World Issues Affect Our Everyday Life*. New York: McGraw-Hill.
- Becker Gary S., and Edward P. Lazear, 2013, "A Market Solution to Immigration Reform," *Wall Street Journal*, March 1.
- Bochara, Ray, William R. Emmons, and Bryan Noeth, 2015, "[The Demographics of Wealth](#)," Federal Reserve Bank of St Louis.
- Bregman, Rutger, 2017, *Utopia for Realists. How we can Build an Ideal World*. New York: Little Brown and Co.
- Brown, Stuart, 1955, "Inalienable Rights," *Philosophical Review* 64(2): 192-211.
- Card, David, Dustmann, Christian and Ian Preston, 2012, "Immigration, Wages, and Compositional Amenities." *Journal of the European Economic Association*, 10(1): 78-119.
- Chiswick Barry, 1982, "The Impact of Immigration on the Level and Distribution of Economic Well-Being," in Barry R. Chiswick (ed.), *The Gateway: US Immigration Issues and Policies*. Washington DC: American Enterprise Institute for Public Policy Research.
- Clemens, Michael A., 2011, "Economics and Emigration: Trillion-Dollar Bills on the Sidewalk?" *Journal of Economic Perspectives* 25(3): 83–106.
- Clemens, Michael A., Claudio Montenegro and Lant Pritchett, 2019, "Bounding the Price Equivalent of Migration Barriers," *Review of Economics and Statistics* 101(2): 201–213.
- DeVoretz, Don, 2008, "An Auction Model of Canadian Temporary Immigration for the 21st Century," *International Migration* 46(1): 3-17.
- Dustmann, Christian, and Ian P. Preston, 2019, "Free Movement, Open Borders, and the Global Gains from Labor Mobility," *Annual Review of Economics* 11:783–808.
- Fan, C. Simon, and Oded Stark, 2007, "International Migration and "Educated Unemployment", *Journal of Development Economics* 83(1): 76-87.

- Freeman, Richard, 2006, "People Flows in Globalization," NBER Working Paper No. 12315.
- Haeringer, Guillaume, 2017, *Market Design: Auctions and Matching*. Cambridge, Mass: MIT Press.
- Himmelfarb, Gertrude, 1984, *The Idea of Poverty: England in the Early Industrial Age*. London: Faber and Faber.
- Inglehart, Ronald, and Pippa Norris, 2017, "Trump and the Populist Authoritarian Parties: The Silent Revolution in Reverse," *Perspectives on Politics* 15(2): 443-454.
- Jolliffe, Dean, Juan Margitic, and Martin Ravallion, 2019, "Food Stamps and America's Poorest," NBER WP 26025.
- McConnell, Terrance C., 2000, *Inalienable Rights: The Limits of Consent in Medicine and the Law*. New York: Oxford University Press.
- Milanovic, Branko, 2019, *Capitalism Alone. The Future of the System that Rules the World*. Cambridge, Mass: Harvard University Press.
- Mobarak, Mushfiq, Iffath Sharif, Maheshwor Shrestha, 2020, "Returns to Low-Skilled International Migration: Evidence from the Bangladesh-Malaysia Migration Lottery Program" Policy Research Working Paper, 9165, World Bank.
- Moraga Fernandez-Huertas and Hillel Rapoport, 2014, "Tradable Immigration Quotas," *Journal of Public Economics* 115: 94-108.
- Murgai, Rinku, Martin Ravallion and Dominique van de Walle, 2016, "Is Workfare Cost Effective against Poverty in a Poor Labor-Surplus Economy?," *World Bank Economic Review*, 30(3): 413-445.
- OECD, 2021, "[Employment Rate](#)." doi: 10.1787/1de68a9b-en (Accessed on 04 February 2021).
- Paul, Mark, William Darity Jr., and Darrick Hamilton, 2017, "[Why we Need a Federal Job Guarantee](#)," Jacobin.
- Pereira, Ci'Cero, Jorge Vala, and Rui Costa-Lopes, 2010, "From Prejudice to Discrimination: The Legitimizing role of Perceived Threat in Discrimination against Immigrants," *European Journal of Social Psychology* 40: 1231–1250.
- Posner, Eric, and Glen Weyl, 2008, *Radical Markets: Uprooting Capitalism and Democracy for a Just Society*. Princeton: Princeton University Press.
- Ravallion, Martin, 2019, "Guaranteed Employment or Guaranteed Income?" (Development Review) *World Development* 115: 209–221.

- Ravallion, Martin, and Shaohua Chen, 2015, “Benefit Incidence with Incentive Effects, Measurement Errors and Latent Heterogeneity: A Case Study for China,” *Journal of Public Economics* 128: 124-132.
- Ravallion, Martin, and Dominique van de Walle, 2008, *Land in Transition: Reform and Poverty in Rural Vietnam*, Palgrave Macmillan.
- Ruhs, Martin, 2013, *The Price of Rights: Regulating International Labor Migration*. Princeton NJ: Princeton University Press.
- Shachar, Ayelet, 2017, “Citizenship for Sale?” in Ayelet Shachar, Rainer Bauböck, Irene Bloemraad, and Maarten Vink (eds) *The Oxford Handbook of Citizenship*, Oxford: Oxford University Press.
- Sumption, Madeleine, and Kate Hooper, 2014, *Selling Visas and Citizenship: Policy Questions from the Global Boom in Investor Immigration*, Washington: Migration Policy Institute.
- Tamborini, Christopher R., ChangHwan Kim, and Arthur Sakamoto, 2015, “Education and Lifetime Earnings in the United States,” *Demography* 52(4): 1383–1407.
- United Nations, undated, “[Migration and Human Rights](#),” Office of the United Nations High Commissioner for Human Rights.
- United Nations, 1966, *The International Covenant on Economic, Social and Cultural Rights*. New York: United Nations.
- United States Citizenship and Immigration Services, 2019, “Citizenship Rights and Responsibilities,” [Department of Homeland Security](#), United States Government.
- Weinstein, Eric, 2002, “Migration for the Benefit of all: Towards a new Paradigm for Economic Immigration,” *International Labour Review* 141(3): 225-252.
- Wertheimer, Alan, 2001, “Review of Terrance McConnell’s Inalienable Rights” *Law and Philosophy* 20(5): 541-551.
- Yang, Dean, 2011, “Migrant Remittances,” *Journal of Economic Perspectives* 25(3): 129-151.
- Yang, Andrew, 2018, *The War on Normal People: The Truth About America’s Disappearing Jobs and Why Universal Basic Income Is Our Future*, New York: Hachette.