

A Market for Work Permits

Michael Lokshin and Martin Ravallion¹

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Abstract: *Citizens have a right to accept any job offer in their country, but that right is not marketable nor extended to foreigners. Yet some citizens have useful things to do if they could rent out their right-to-work, and some foreigners would value the new employment opportunities. We have a missing market. A solution is to allow people to rent out their right-to-work for a period of their choice. On the other side of the market, foreigners can purchase time-bound work permits. Better social protection in host countries would thus be financed by tapping into the unexploited gains from international migration.*

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1. The missing market

Barriers to international labor migration are a major factor in explaining inter-country gaps in the marginal products of labor, implying large economic gains from reducing those barriers.² The main barrier is that, almost everywhere, a foreigner needs official permission—typically in the form of a work permit (WP)—to take-up employment in a 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 relatively low-wage countries. This is known to be an important source of global inequality.³ The rationing of access to employment creates costs (including long and wasteful waits for visas) and strong incentives for illegal migration, including human smuggling. Yet the citizens of high-wage countries often view migrants as a threat to their living standards, and so resist reforms to restrictive migration policies.

An explicit WP is not required for citizens. They already have a legally-recognized entitlement to accept any job offer in their own country. (Implicitly, the citizenship/residency document is the WP.) Once one reaches the specified working age, citizenship invariably comes with an unrestricted right to take up a job when it is offered—the “right-to-work” (RTW).⁴ Currently, this right is not something that a citizen can relinquish. It is a non-marketable entitlement. Yet, there are times at which some citizens in high-wage economies would be happy to sell their right to take up a job when offered. At any one time, there are both foreigners who want jobs at the higher wage rates on offer in rich countries and people in those countries who have something they would prefer to do other than work for a wage. We have a missing market.

Restrictions on international migration for work are the root cause of this missing market. Without those restrictions, citizens would still not be able to sell their RTW, but that would be a moot point since nobody would have an interest in buying that right. The market would not exist. However, removing all such restrictions is a tall order. There is another policy option—to create the market. This paper explores that option. It is argued that creating a market for work permits not only frees up migration but enhances social protection in high-wage countries—providing both insurance and relief from poverty. Migrants become an asset rather than a threat in the host country.

² See, for example, Clemens et al. (2019) and the estimates surveyed in Clemens (2011).

³ For evidence on global inequality see Bourguignon (2016) and Milanovic (2016).

⁴ This term has different meanings. Here we do not refer to a right to actual employment but simply the right to take up employment if offered.

2. The policy and antecedents

Suppose that all working-age citizens (or some well-defined subset) were free to rent out their RTW and in doing so create new WPs. The purchasers of those WPs would then be free to take up any job offer in that country, if admitted by other criteria deemed relevant. The market prices of these new WPs will be conditional on the stipulated length of time and start date (and the country of citizenship, if more than one country introduces this market). Once that period ends, the seller gets back her RTW. The marketable WP is fully disembodied from the person selling it. The market is anonymous.

A version of one side of this policy has been around for a while. Gary Becker proposed that the US government should sell citizenship rights to foreigners, rather than requiring quotas and long queues (Becker, 1992; also see Becker and Becker, 1997; Becker and Lazear, 2013).⁵ Selling visas has been suggested as a means of controlling human smuggling (as in Auriol and Mesnard, 2016). The revenue from selling work permits has also been advocated as a means of compensating those native workers who are vulnerable to competition from migrant workers, as in Weinstein (2002).

The idea of selling citizenship or WPs—either at fixed prices or using a “visa auction” (as discussed by Zavodny, 2015)—does not seem to have been popular historically. One survey for a US city some 20 years ago did not find that the idea was generally viewed favorably (Borna and Stearns, 2002). However, this seems to be changing with various “cash-for-passport” programs emerging (Sumption and Hooper, 2014).⁶ Critics have argued that simply paying money is an ethically objectionable route to the honor of citizenship, and that these programs have targeted a global elite of the very rich, with undesirable implications for global inequality (Tanasoca, 2016; Shachar, 2017).⁷

We are not proposing a “cash-for-passport”. There are two important differences. First, we are considering that a time-bound WP can be purchased, not citizenship per se. While cash-

⁵ An earlier proposal along similar lines had been mentioned by Chiswick (1982). A market mechanism has also been proposed by Moraga and Rapoport (2014) as an efficient means of allocating migrants across host-countries, using tradable immigration quotas.

⁶ Some but not all of these programs require that one makes an investment, but this is still owned by the applicant. Here we refer to the subset of programs in which the purchaser makes a payment to the government (Sumption and Hooper, 2014).

⁷ As Tanasoca (2016, p.178) puts it, the “conferral of citizenship would recognize robust relationships (social, political, *and* economic) to a community of citizens.”

for-passport programs have been in large part striving to attract very rich individuals, and have come with high prices, what we have in mind is a scheme with competitive prices that would have broader appeal across the distribution of income.

Second, an important feature of the proposal considered here is that there is a supply side for the WPs in that working-age citizens are free to sell their RTW for the period of their choice. The payments made for WPs by foreigners fund the payments to citizens selling their RTW plus any other taxes or charges deemed necessary. (The final incidence of these taxes will fall in part on the citizens selling their RTW; we return to this in Section 3.) The citizen is free to sell her right to accept employment for any period, although it would be sensible to impose an upper bound consistent with their age and expected working life span.

Other approaches to freeing up migration do not entail an explicit market for selling WPs. Migrants can be treated differently to citizens in a way that would make citizens more accepting of migrants. One can impose higher taxes on them, as discussed in Freeman (2006). Or one can discriminate against migrants in other ways, such as in restricting their rights, as in how migrants are treated in the Gulf countries. Milanovic (2016) proposes legally-defined differences in citizenship rights between native-born citizens and migrants. Something like this exists already; typically migrants do not have voting rights, for example. Objections are often raised to how migrant workers are treated, though this has been seen as a necessary evil to assuring freer migration (Ruhs, 2013). Nonetheless, the objections remain. Our proposal does not require that migrant workers be treated any differently to citizens.

Another approach is found in Posner and Weyl (2008). They 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 in the earnings gain realized by migration. One difference is that we do not require sponsorship. The transactions involved are anonymous—there is no contact between the parties involved—which would reduce the transaction costs of the nontradable VIP, such as in finding each other and dividing the gains from migration.⁸ Another difference is that our proposal need not increase aggregate labor supply in the host country. If the option of selling your RTW is confined to those in the workforce then aggregate labor supply will stay the same. Most importantly, by its lower

⁸ Posner and Weyl propose that the gains be shared equally, but in practice this would be open to negotiation.

transaction costs, our proposal will come closer to eliminating the market failure and so assure larger welfare gains.

A feature that creating a market in WPs has in common with these options in the literature and practice is that it would help address host-country resistance to migrants, stemming from the expectation that migrants will take the jobs of citizens—an externality. (There are other external costs, such as in providing public services to migrants.) The policy proposed here would help relieve this concern given that the citizen has the new option of selling the right to accept work for a desired period—providing scope for internalizing the externalities associated with migrants, including through taxes levied on WPs. Native workers who want to stay employed but whose wage rates fall due to competition with migrants will not benefit directly. Revenue from taxing the transactions in the new market could be used to help compensate these workers.

On the supply side, one can think of many examples of valuable things that people could finance by renting out their RTW for some period. Imagine the following stylized cases:

- You are a young person who has reached the minimum age for paid work. Renting out your RTW for a limited period would help to finance extra schooling or skill-training.
- To help raise your children or provide home-care for a loved one in need, you would like to leave the workforce for a period, but you still need money. Then rent out your RTW.
- On losing your specialized job in a company town (such as due to automation), you can rent out your RTW for a period to cope with the unemployment, while re-training and/or migrating.
- You would like to set-up a new business or do some unpaid community service, or you want to take up employment for some period in a different country. Or just take a long vacation. You do not need your RTW, so why not sell it for that period?
- You want to retire early. Fine, sell your RTW.
- You get seriously ill or disabled. Again, renting out your RTW will help you cope.

The essential idea is to eliminate the inefficiency that arises from the current market failure that prevents one from renting out the RTW in each of these examples. A market for WPs is called for. By tailoring the number of WPs issued to foreigners 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.

3. Model of the market and some implications

We start with a simple expository model. This suggests a high price of WPs—above the median wage in high-wage economies. We then show that more realistic assumptions suggest a lower price.

There are high-wage and low-wage countries. A single high-wage country introduces the proposed market for WPs, with citizens from all low-wage countries eligible to purchase the WPs (though we consider relaxing this later). Let the price for a WP in the high-wage country be ω . (This depends on the time period for renting out the RTW, t , so we might write it as $\omega(t)$, but we do not do so to keep the notation simple.) In the high-wage country, wages have a continuous distribution function $F(w)$ for the wage $w \in [w^{min}, w^{max}]$ (with $F(\cdot)$ strictly increasing as usual).⁹ The lower bound to the distribution of wages, w^{min} , can be interpreted as the statutory minimum wage. This is assumed to be only binding for a minority of the workforce ($F(w^{min}) < 0.5$). (By definition, $F(w^{max}) = 1$.) The proportion of the workforce in the high-wage economy earning less than ω (for the designated time period) is $F(\omega)$ and the country has a workforce of size n_h (h is the index for high-wage country). We assume that citizens are willing to rent out their RTW for a price exceeding their current wage rate. Then the supply of marketable WPs from workers in the high-wage country is $F(\omega)n_h$.

On the other side of the market, the share of the global workforce in the low-wage countries is n_l . We normalize such that $n_h + n_l = 1$. We can take it to be the case that $n_l > 0.5$ (and quite possibly much greater than that). Let us assume for the moment that there are no costs of moving and no taxes levied by the high-wage country on the purchase of a WP. Also assume (for the moment) that workers in the low-wage countries expect to receive a wage drawn from the same distribution of wages as observed in the high-wage country. The number of people wanting to buy the new WP is then $[1 - F(\omega)]n_l$ (per capita of the total workforce).

There is a positive excess demand for WPs at w^{min} (given our assumptions that $F(w^{min}) < 0.5$ and $n_l > 0.5$). There is excess supply at w^{max} (the excess supply is $1 - n_l >$

⁹ 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.

0). Thus, by continuity and monotonicity of the supply and demand functions, a unique equilibrium exists.¹⁰ Under these assumptions, the market equilibrium solves:¹¹

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

where $F^{-1}(\cdot)$ is the quantile function of wages in the high-wage country. The solution is the point on that quantile function corresponding to the share of the global workforce in the low-wage countries. This is clearly a high equilibrium price, well above the median wage in the high-wage country (given that $n_l > 0.5$).

3.1 A more general model

A lower equilibrium price is indicated when we relax some of the assumptions of this simple model. First, it may not be reasonable for workers in the low-wage countries to expect to receive a wage drawn from the existing distribution in the high-wage country. They will probably incur some cost of moving (including foregone income in the origin country). Suppose instead that they expect to receive a net wage drawn from a “poorer” distribution, namely $G(w) > F(w)$ for all w (with $G(\cdot)$ strictly increasing). We impose two restrictions on the $G(\cdot)$ distribution, namely that $G(w^{min}) < n_l$ and $G(w^{max}) = 1$, both of which seem reasonable. Given that $G(w^{min}) < n_l$ it can be readily shown that there must be a positive excess demand at w^{min} . And since $G(w^{max}) = 1$ there must be an excess supply at w^{max} . Again invoking continuity and monotonicity, a (unique) equilibrium exists at given n_l . Then the new market equilibrium is:

$$\omega' = H^{-1}(n_l) \quad (2)$$

where $H(w) \equiv F(w)n_h + G(w)n_l$ is the weighted mean distribution across the two segments of the global market. Clearly $\omega' < \omega$.

Second, the high-wage country may want to tax this transaction. This can be thought of as just another cost of moving (as embedded in the $G(\cdot)$ distribution), but it is instructive to make it explicit. Let that tax be $\tau (> 0)$ such that the relevant net wage distribution is now $G(w + \tau)$. Existence of a unique equilibrium (conditional on n_l) is assured under the same assumptions as for the model with $\tau = 0$ with the modification that we assume that $G(w^{min} +$

¹⁰ Here and later we are invoking standard mathematical properties of continuous functions.

¹¹ The equilibrium is stable under the standard assumptions about the market’s adjustment process out of equilibrium; in this case we require that the price rises (falls) whenever $F(\omega)$ is less than (greater than) n_l .

$\tau) < n_l$ (although this can be relaxed somewhat while still assuring that an equilibrium exists).

The new market equilibrium (ω'') solves:

$$F(\omega'')(1 - n_l) = [1 - G(\omega'' + \tau)]n_l \quad (3)$$

Evidently $\omega'' < \omega' < \omega$. (Note that $[F(\omega'') - F(\omega')]n_h + [G(\omega'' + \tau) - G(\omega')]n_l = 0$. This cannot hold if $\omega'' > \omega'$.) How much lower the equilibrium price will be depends on τ . The higher is the value of τ the lower is the price solving (3); more precisely,

$$\frac{\partial \omega''}{\partial \tau} = -\frac{1}{1+\gamma} < 0 \quad (4)$$

where $\gamma \equiv \frac{f(\cdot)n_h}{g(\cdot)n_l}$ and $f(\cdot)$ and $g(\cdot)$ are the density functions (evaluated at the equilibrium price) for $F(\cdot)$ and $G(\cdot)$ respectively. This suggests 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 (3) will reach w^{min} and the market will vanish for any higher value of τ . From (3) it is clear that for the market to exist at the minimum wage we require that:¹²

$$\tau < G^{-1}\left(1 - \frac{F(w^{min})(1-n_l)}{n_l}\right) - w^{min} \quad (5)$$

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

A tax on the purchase 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 naturally passed on in part to the sellers through the equilibrium price. It is readily verified that a unit increase in τ will (to a first-order approximation) lead to a final purchase price of $\omega'' + \gamma/(1 + \gamma)$ with a final selling price of $\omega'' - 1/(1 + \gamma)$. (In the special case of uniform densities and equal workforces the tax is shared equally.)

3.2 Implications for social protection

Under certain conditions, this policy will create a new binding floor to labor earnings in the host country—a new lower bound, above the current floor and above the current minimum wage rate.¹³ Workers in the host country will sell their RTW if they earn less than ω'' (and some

¹² 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 $\omega = w^{min}$ (assuming that $F(w^{min}) < 1$).

¹³ The only estimate of the level of the income 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

earning more than ω'' will also do so if they experience a disutility of work). Similarly, foreign workers will only take up migration under this scheme if they earn something more than ω'' (sufficiently higher to cover costs of moving and any tax levied). This holds for all contracted time periods of the WPs. Thus, creating a market in WPs along the lines we suggest can be thought of as a new way of providing a guaranteed minimum income for each time period.

The policy can be interpreted as a means of assuring a normatively-chosen, minimum income, $\bar{\omega}$. We can posit a first-best distribution in the host country 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 $\bar{\omega}$. However, in the absence of this policy, the first-best is not implementable given other constraints (notably on information and administrative capabilities). Thus the observed distribution has incomes below $\bar{\omega}$ due to uninsured shocks or longer-term disadvantage. With the policy in place, instead of solving (3) for ω'' , the host government can now solve for the tax rate on WPs required to assure that $\omega'' = \bar{\omega}$, namely:¹⁴

$$\tau^* \equiv G^{-1} \left(1 - \frac{F(\bar{\omega})(1-n_l)}{n_l} \right) - \bar{\omega} \quad (6)$$

Thus, the market for WPs now makes it feasible to implement the host country's socially optimal minimum income.

There is another control available to the host country, namely its power over eligibility to purchase WPs, or sell the RTW. For example, the US might (initially at least) choose to make the market only available to citizens of (say) Mexico. This can readily 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 sell the RTW among citizens of the host country). This will reduce the equilibrium price (differentiating (3)):

$$\frac{\partial \omega''}{\partial n_l} = \frac{1+F(\cdot)-G(\cdot)}{f(\cdot)n_h+g(\cdot)n_l} > 0 \quad (7)$$

Even if the host does not restrict eligibility, with economic development over the longer term, some low-wage economies (from which workers want to leave for economic gain) will become economies that attract migrants, bringing down the price of WPs. The market still exists

the equilibrium price of a WP in our proposal. Indeed, \$10 a day is lower than the minimum wage rate in the US for an eight hour day.

¹⁴ Recalling that $G(w) > F(w)$, it is readily verified that a sufficient condition for $\tau^* > 0$ for any desired $\bar{\omega}$ is that $G(\bar{\omega}) < n_l$.

under our assumptions, though (of course) that may cease to be true if we relax them; in particular, the market disappears if n_l falls below $\frac{F(w^{min})}{[1+F(w^{min})-G(w^{min}+\tau)]}$.

The big difference between these two policy instruments—the tax on WPs and eligibility conditions—is that the tax instrument can raise revenue, albeit at the expense of both citizens selling their RTW and foreigners buying WPs. It is reasonable to assume that 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.¹⁵ Then the host government faces a trade-off between the level of the income floor and the extra revenue generated by a higher tax on WPs. Writing that revenue per capita as $R \equiv \tau[1 - G(\omega + \tau)]n_l/n_h$, we might postulate a host government maximizing $\omega + \pi R$ for some $\pi > 0$. Sufficient conditions for the existence of an interior optimum tax rate are that the distributions F and G are locally uniform, which guarantees that R is also strictly concave in τ (though those conditions can be relaxed somewhat). The optimal tax on WPs then sets marginal revenue ($dR/d\tau$) with $1/(\pi(1 + \gamma))$.

4. Policy issues

Creating this market raises a number of issues. Some observers have objected that it is ethically unacceptable to monetize any human right. This begs the question of why the right to dispose of any right should not also exist, in which case a market is just an efficient way of doing that. Once one recognizes the RTW as a citizen’s property right then selling that right can be no more problematic than selling other rights. The key step is acknowledging the property right.

Nor is this the first proposal for making rights marketable. There are precedents. We are reminded of past land and housing policy in many countries whereby these assets had previously been administratively assigned to individuals (such as agricultural land in Vietnam or housing in China or the Russian Federation) without the right to sell the asset. 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.¹⁶ Another example is the longstanding system of taxi medallions in New York City (NYC). Each

¹⁵ This requires that $G(\cdot) + \frac{\tau g(\cdot)\gamma}{1+\gamma} < 1$.

¹⁶ For an analysis of the efficiency and equity implications of this reform in the context of Vietnam see Ravallion and van de Walle (2008).

(American) owner of a medallion has the right to drive a yellow cab in NYC, but he or she may instead rent out the medallion to another driver, often immigrants.¹⁷

It is also notable that WPs are already being monetized in the form of (legal and illegal) payments to intermediaries (including human smugglers). The present system is essentially one of formal quotas and (largely informal) side payments. The difference here is that a competitive market in WPs will eliminate the quotas and channel the payments from people who could benefit from access to the high-wage segment of the global labor market to citizens who can probably make good use of the money in some other activity for some period.

Some useful insights on the issues raised by this policy can be obtained by comparing it to other options for domestic social protection.

4.1 Comparison with other social protection policies

The policy is likely to have potentially important redistributive and insurance roles for the countries involved, complementing, or even substituting for, existing social protection policies. We focus initially on the host country.

People living in rich countries but with low current wages would presumably 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. Indeed, as noted, this can be thought of as a policy for lifting the floor to labor 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 RTW 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 RTW 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 non-pecuniary benefit. The same can be said of other examples of potential take-up discussed in Section 2.

¹⁷ We are grateful to Michael Clemens for pointing out this example.

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.¹⁸ One such scheme entails topping up all incomes until they reach the desired minimum.¹⁹ 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.²⁰ 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, of course, that, under our proposal, the direct beneficiaries in the host country are not compelled to work to receive payments. Such work requirements can generate welfare losses (including foregone incomes) and also require (often sizeable) costs of monitoring the work and providing non-labor inputs. 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 transfer recipients.

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 in doing so must forgo personally and socially valuable pursuits. Like a UBI, there is no explicit targeting mechanism; since our proposal relies on a competitive market mechanism; in equilibrium, everyone (rich or poor) has this new opportunity and everyone faces the same price schedule for renting out their RTW. Thus, like a UBI, creating the proposed market in WPs can be expected to have broader appeal, and hence be more sustainable politically, than finely targeted transfers.

¹⁸ Ravallion (2019) reviews all these policy options in greater depth. Here we just note key differences with our proposal.

¹⁹ A 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 similarly aims to top up all incomes until they reach stipulated minima (set by each city) (Ravallion and Chen, 2015).

²⁰ 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).

There are some important differences. Our proposal will probably have a more pro-poor incidence than a UBI; specifically, it will bring both direct (first-order) gains to poor people who take up the option of renting out their RTW—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? Our scheme would directly help those who lose their job due to automation. Also, unlike a UBI, it 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.

The policy also shares some of the concerns about other social protection policies. For example, it may discourage work. If the equilibrium price is very high then there will be concerns about so many people dropping out of the workforce in rich countries. Given that there can be many good reasons why they do not want to work it is not clear how much we should be concerned about this. A similar point has been made about UBI; for example, see the discussion in Bregman (2017).

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. The scheme would probably not attract many low-skilled workers in low-wage economies, but nor would it matter much for the highly skilled who can probably gain access anyway. Rather, introducing this new market seems more likely to attract middle-level skills to high-wage economies. The wage gains depend mainly on both their skills (determining realized wages in the host country) and foregone earnings (or other costs of migrating). Our expectation is that the gains will tend to be in the middle of the income distributions in the low-wage economies. This can be modified by a number of other factors with bearing on the distributional outcomes, 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, and (as we have seen) it might be quite high, though possibly not as high as one might imagine. Note, however, that this is temporary migration. There will be remittances generated. And the returns to education in developing

countries will almost certainly increase. 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 queues 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, in keeping with equation (3).) 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. 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. As the model in the previous section made clear, the level of the equilibrium price of WPs depends on the relative size of the host country. (As noted, a single small host country may need to impose a high tax rate on WPs if it wants to avoid a high level of the equilibrium price, ω .) There may also be global political-economy and coordination implications if multiple rich countries want to create this market. In our model, if additional rich countries do so (a higher n_h and lower n_l) then the equilibrium price of the WPs will fall.

4.2 Other policy issues

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

- An important design issue is whether eligibility should be confined to those currently in the workforce. Broader eligibility would allow welfare gains to those not in the workforce but also put downward pressure on wages through the greater inflow of migrant workers. Some restrictions are desirable. It would make sense to confine eligibility to those with legal and free access to the labor market, i.e., those of working age and not incarcerated. Confining eligibility to people who have previously been employed as wage-workers for some period may also be desirable behaviorally—to assure that the person is making a well-informed decision. It can also be supported from the perspective of reducing inequality as it would restrict the “idle rich” from selling their unused RTW. However, exceptions could reasonably be allowed for those who have only

just reached the minimum working age. They could be allowed to rent out their RTW for a designated period, such as to help finance schooling.

- To obtain current employment, citizens will need to show that they have not rented out their RTW. This should not be difficult. 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 RTW.
- Who should be allowed to buy the WPs? The demand need not be confined to foreigners, though they would be the bulk of it given how many people want to migrate internationally for work. Someone may have rented out their WP for two years (say) but decided after one year to rent it back. An important design choice is whether domestic firms are allowed to buy WPs. If so, then regulations may be needed to assure that large firms do not distort the market.
- The administrative costs (such as for creating the market, as discussed in Section 5) could be covered by a tax on transactions. The optimal tax on transactions may well be more than that given 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 will also alter the skill profile of those choosing to sell their RTW (in the opposite direction). Given it retains the power to tax these transactions, the host government will not lose control over the number of people entering the country.
- The sectoral/occupational composition of aggregate employment could well be affected. This could generate internal social conflicts and political resistance, although it should be noted that our proposal does have an in-built (financial) compensation mechanism for those in occupations or sectors that experience declining domestic demand. These structural changes in the economy could be managed by creating occupational WPs, with separate market price and taxes. (For example, a lower tax rate can be applied to WPs for workers with skills in shortage.) We do not consider that to be an obviously desirable step, but it can be considered by policy makers.

5. How might the policy be implemented?

There is more than one way to implement this proposal. 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 Section 3. 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 auctioneer) first announces a discrete schedule of WPs, each stipulating a start date and duration. (The durations could be bounded by the host country's existing practice for issuing WPs.) A citizen would register on the site, go through background checks, and provide some legal documents that verify eligibility to trade on the site (for example, to verify age).²¹ Once cleared, a citizen submits an offer to sell one (or more) of the WPs, with a stipulated duration and start date.²² The potential seller provides a minimum acceptable asking price. At the same time, potential buyers submit their maximum bids.

The canned software then finds the market clearing price ω for each WP such that the counts on the two sides of the market are in balance (at least approximately; some local averaging may be required). Under regular conditions a unique price, or range of prices, will exist. The equilibrium price schedule is then announced. All those citizens who said they are willing to sell their RTW for at least ω will take the offer, while a similar number of people wanting a WP but willing to pay no more than ω (plus stipulated taxes and charges) take it up. It is the responsibility of the buyer to provide the full bid amount to complete the transaction. Once bought, the WP cannot be resold.

This is not the only way of implementing the proposed market in WPs. 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 recouped the individual surpluses as extra revenue from the scheme.

Another variation would entail the seller selecting a (more or less) continuous vector of characteristics as well as an asking price. The double-auction mechanism for finding the equilibrium would then be more complicated computationally, but not any more so than some of those found in practice.²³

²¹ If another high-wage economy introduces this market then there may need to be a coordination mechanism to address migrants between the two countries who face little or no restriction on migration, and so should not be eligible for selling their RTW.

²² The price of the WP that starts tomorrow would probably be lower than the price of one that starts in 2 months; the price of the longer-term WPs will differ from the prices of the shorter-term WPs, etc.

²³ An overview of the options can be found in Haeringer (2017).

An optional design that 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 sell a WP, specifying the conditions (notably the desired duration and start date) and the price he wants to get. A seller should be able to monitor the ongoing prices for the similar WPs and set up the price for his WP 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.

Once the transaction is confirmed, the seller (a citizen) receives the money to his bank account and a note is made in his profile (linked, for example in the United States to his Social Security Number) indicating the period when that person is not eligible to work in his own country. From that moment, the seller has no obligation either to the buyer or to the authorities. On the expiration date of the WP, the work status of the seller is reset to an original state and he again becomes eligible to work.

The buyer (most likely a foreign national) receives an official confirmation from the host country's government that he has purchased a work permit for the specified period. This confirmation becomes a document supporting the buyer'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 country. (Nor does the confirmation guarantee that on arrival the buyer will find a job.)

If the visa is issued, a buyer enters the country and looks for a job. The start and end day of the visa will be linked to the dates of the WP (assuming some grace period). A foreigner with the purchased 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 to the buyers and sellers. The legal services could be offered assisting sellers with the preparation of the necessary documents to confirm their eligibility to sell the RTW. The services for buyers 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 buyers 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 a 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 buyers against the events of not obtaining a visa or failing to find a job while in the country.

There are other implementation issues that we have not discussed, including: How should the payments received by those selling their RTW be treated for tax purposes? Are the migrants fully eligible for existing welfare benefits in the host country? Should migrants be allowed to bring their families? Should the host country provide public services to them? How can the time-limits to WPs be enforced? Existing tax and migration policies in host countries will undoubtedly have something to say about these issues, which are shared with current policies.

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) note, there are political and economic challenges in how to find a feasible mechanism to capture the gains from migration.

This paper has pointed out that restrictions on international migration generate a missing market in work permits. The solution we propose is an anonymous market exchange at which any working-age citizen can rent out their right to take a job when offered, while someone else pays for a (taxable) work permit. The currently missing market would no longer be missing. Creating such a market would help capture the economic gains from freer migration, while keeping the host government in control of the migration flows and (hence) domestic employment. This can be seen as a social protection policy as well as an efficient policy for managing immigration. A minimum income can be attained for workers in host countries, financed by tapping into the unexploited gains from international migration.

There have been past proposals for selling visas, and some examples in practice. However, we have argued that the 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 right to take up work when offered it 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. The former workers would have new opportunities, including raising their future returns in the labor market or taking up self-employment activities. The scheme can be designed to avoid changing the total number of jobs in the host country. 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.

This policy would relieve the public's concerns about freer migration, by helping to internalize the externalities in the host countries generated by migrants (or at least perceived to be). International migration would surely become a more popular idea.

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