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The Not-So-Destructive Scourge of Illegal Immigration

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The 2016 presidential election is now only months away, and one candidate, Donald J. Trump, continues to stand behind his proposal to round up our illegal immigrants, deport them, and force Mexico to foot the bill for a giant wall along our southern border that will prevent the bad ones from returning. Few details have been specified about how any of this could be achieved, although he has said he will threaten to cut off the flow of remittances to Mexico if they do not pay for the wall.

What Trump fails to mention is that, if there are ten million illegal immigrants making up 5% of the American labor force, such a mass deportation would, in the long run, cost the United States 5% of gross domestic product (GDP) in perpetuity. For comparison, gross domestic product dropped by 4% at the height of the recent financial crisis, and that was for less than a year. The immediate effect of such a deportation will depend on how much low-skilled workers contribute to the country's output, but even the most conservative estimates would forecast the initial drop in GDP to be at least 2.5%. Why does Trump hate our economy so much?

Adam Smith had more or less the same question back in 1776. Europe at the time had fallen under the sway of mercantilism, the philosophy that a country should measure its economic power in terms of its gold supply. Transactions that increase a country's gold should be encouraged while transactions that deplete it should be discouraged. Following that rule translates to maximizing the country's current account, the flow of money into the country from the sale of goods, services, and inputs, which includes the trade balance. Not uncoincidentally, the current account and trade balance are the same statistics that most impress Trump, the only scores by which China, Japan, and Mexico are beating us.

While I doubt Trump understands he is a mercantilist or even knows there is such a word, he did say in his famous Wall of Garbage speech,[1] "Our Founding Fathers understood trade much better than our current politicians, believe me." According to Trump, our understanding of trade took a massive wrong turn with the publication of a not so little book called *The Wealth of Nations*, which most of the Founding Fathers probably did not read since it would have taken time to cross the Atlantic. Indeed, the political philosopher who had the most influence on the Founding Fathers was John Locke, and he was a mercantilist.[2]

As its title suggests, *The Wealth of Nations* popularized a different measure of a nation's wealth: "The annual labour of every nation is the fund which originally supplies it with all the necessaries and conveniencies of life which it annually consumes, and which consist always either in the immediate produce of that labour, or in what is purchased with that produce from other nations."[3] In modern language, the source of a nation's wealth is its gross domestic product, which also equals the sum of the wages, profits, and rents earned by everyone in the nation. Alas, since the terminology of gross domestic product had not been invented yet, Smith had to laboriously write out the latter formula every time he wanted to reference the nation's wealth, though perhaps that helped to hammer home his central message that a country's wealth is determined by how much income it earns and not by how much gold it owns. I doubt Smith could have predicted how much influence he would have on the economics profession, but he

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[1] June 27, 2016, 2:28 ET, Monessen, PA

[2] As Smith described Locke's views, "Gold and silver, therefore, are, according to him, the most solid and substantial part of the moveable wealth of a nation; and to multiply these metals ought, he thinks, upon that account, to be the great object of its political economy." (Smith, Adam, (2004), *The Wealth of* Nations (Barnes and Noble: New York), p. 279.

[3] ibid., p. xv.

won the war of ideas. Mercantilism died in the West, though other socialist philosophies rose up to take its place, borrowing heavily from its ashes.[4]

For intellectual descendants of Smith, the notion that we should restrict healthy, law-abiding workers from entering our labor force is absurd. Natives and immigrants both contribute to our gross domestic product, i.e. the wealth of the nation. A mercantilist, on the other hand, will be indifferent to the enactment of immigration laws. There is no direct correlation between the size of the labor force and the size of the country's gold or currency hoard. For a Marxist, meanwhile, it is axiomatic that the government should control the labor supply, which is why every communist country has imposed severe limits on travel both within and without its jurisdiction. Marx himself wrote in *Capital* how the "wave of immigration often sticks, depositing a sediment of 'redundant' workers," helping capitalists to suppress wages and maximize their surplus value or profit.[5]

In Smith's time, there were no laws regarding immigration to the United Kingdom, so he had nothing to say about that particular subject. There were, however, poor laws that regulated the movement of the lowest class of workers within England, and he had plenty to say about these: "To remove a man who has committed no misdemeanor, from the parish where he chuses to reside, is an evident violation of natural liberty and justice."[6] A free market must permit healthy, law-abiding workers, both foreign and domestic, to enter and leave the market at will. The government can vet immigrants to make sure they are, indeed, healthy and law-abiding, but no one ought to be denied entry for economic reasons.

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[4] Mercantilism qualifies as a form of socialism as it is defined in "What is Socialism?" since the government actively interferes with the production and distribution of private goods to maximize the current account balance.
[5] Marx, Karl, (1976), *Capital, Volume I*, tr. by Ben Fowkes, (Penguin Books: London), p. 937-938.
[6] Smith, Adam, (2004), *The Wealth of Nations* (Barnes and Noble: New York), p. 122.

Basic supply and demand says that Marx and his sympathizers from both sides of the political spectrum must be correct, though, that illegal immigrants are pulling down wages. Does it really matter whether a mass deportation will cause a recession if the only ones to be hurt are the very wealthy, who have captured almost all the gains from the past few decades of economic growth? Perhaps that is what is necessary to restore economic balance.

This question cannot be answered with a simple model, which helps to explain the wide variety of opinions on this issue. Most economic models assume everyone is identical. In such a model, workers and capitalists are the very same people. A deportation would then have no effect on wages—or anything else households care about. The departing workers would take their share of the capital stock, i.e. the tools and equipment used in production, so the amount of capital allotted for use by each worker will remain the same. Thus the workers left behind will be just as productive as before, and their wages will not change. We need to have at least two kinds of workers in any model that demonstrates adverse effects from immigration.

Suppose we categorize workers as high-skilled or low-skilled; and we assume that illegal immigrants are low-skilled workers. The key question then is how much the wages of low-skilled workers will increase if we deport the illegal immigrants. When addressing quantitative questions with modern macro models, the answer usually depends on the parameters of the model, so it would be reasonable to expect that to be true here. For this particular question, however, that is not the case, mainly because the answer will be close to zero for any parameters consistent with basic facts about the distribution of income between capitalists and workers.

The common intuition of Marxists and mercantilists is summed up by Fig. 1, which shows the labor market as they would model it.
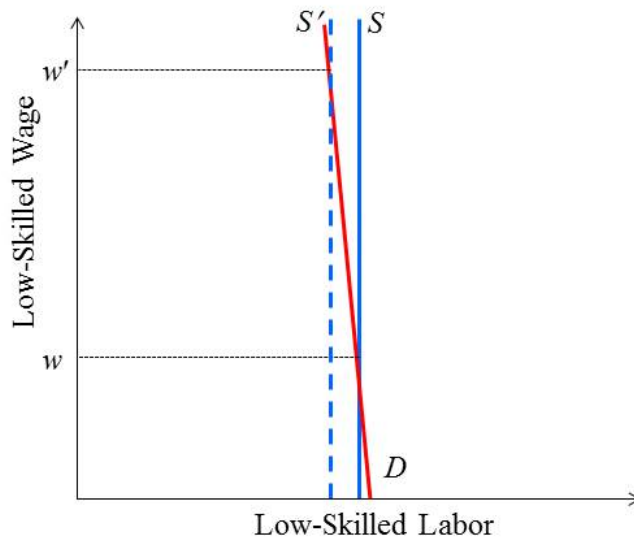
Fig. 1. Labor market with highly inelastic
labor demand as per common intuition.

To begin with let us assume for simplicity that the supply of labor is perfectly inelastic, meaning

that low-skilled households all contribute a fixed amount of hours, say 40 per week.[7] The

quantity of low-skilled labor will then be the same regardless of the low-skilled wage, and the

supply curve will be a vertical line, represented by the solid blue line in Fig. 1. In the common

view of the labor market, the demand curve, represented by the red line in Fig. 1, will be almost

vertical too. The equilibrium wage, w', will then be the height of the point where the supply and

demand curves intersect in Fig. 1.

 Suppose illegal immigrants make up 5% of the low-skilled labor force. If the

government removes them from the economy, this will reduce the number of labor hours

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[7] This is obviously an oversimplification, but the wage effect of illegal immigrants would be even smaller if we do
not make this assumption.

supplied to the market by 5%. The labor supply will shift to the left by an amount equal to this 5% reduction in labor hours to the dashed blue line in Fig. 1. Because the demand curve has a negative slope, the new wage, w', will be higher than it was before. In fact, since the demand curve is almost vertical, the new wage will be a lot higher than it was before. In the figure, the wage more than doubles, which is in line with the thinking of many people who have this picture in their minds.

A nearly vertical demand curve is also consistent with the intuition that illegal immigrants are stealing jobs. In this picture, which typifies what economists call the "lump of labor fallacy",[8] the set of jobs is very nearly fixed. The wage would have to fall considerably in order to induce firms to create new jobs and hire more workers. So it makes sense that if there is an influx of new workers and the new workers are willing to accept a lower wage than the old workers, the old workers will be pushed out of this fixed set of jobs.

The problem with this picture is that a fixed set of jobs is not compatible with our dynamic economy. Both the population and per capita income grow over time. The supply of labor grows with the population, and the demand for labor grows with the economy. If one grows faster than the other, one curve will move relative to the other in Fig. 1, and since the two curves are both vertical or nearly vertical the wage will be very sensitive to the relative position of the two curves. Over long periods of time, we can expect the two curves to grow at the same rate, but there is no reason to expect they will remain in synch over the short run, so we should see wild fluctuations in the (real) wage of low-skilled workers. But that is not what we see. In

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[8] I thank Aspen Gorry for bringing this to my attention.

fact, low-skill wages are quite stable and possibly even sticky.[9] So the demand for labor cannot
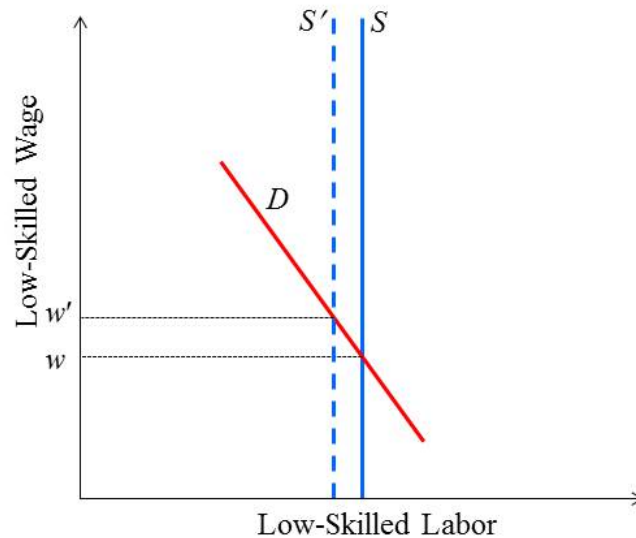
be nearly vertical.

Fig. 2. Labor market with realistic labor
demand.

Fig. 2 shows what happens with a more realistic labor demand curve. The same shift in

supply from the deportation yields a much smaller increase in the wage. Economists quantify

how a change in one variable affects another variable in terms of what is known as an

elasticity.[10] The relevant elasticity here is the percentage by which the low-skilled wage would

increase if the supply of low-skilled labor decreases by 1%.[11]

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[9] In fact, the recent behavior of low-skilled wages has been too stable compared to their historical behavior. Usually low-skilled wages grow at the same rate as the rest of the economy, but some measures of the real wage have remained constant or even declined for decades.

[10] In general, the elasticity of *y* with respect to *x* is the percentage by which *y* changes if *x* changes by 1%. This differs from the slope of the graph of *y* with respect to *x*, which shows how much *y* changes in absolute terms if *x*

While the exact value of this elasticity is a matter of some controversy among empirical economists, if low-skilled labor is a substitute for combinations of high-skilled labor and capital then we can show the fraction of GDP that goes to high-skilled labor and capitalists, i.e. the fraction of GDP that does not go to low-skilled labor, is an upper bound for this low-skilled wage elasticity.

To help understand this, let us consider what would happen if production can be divided into two separate but essential processes in which one process uses only low-skilled labor and the other process uses only combinations of high-skilled labor and capital. The low-skilled labor does not assist the other process, nor can it be used to replace high-skilled labor or capital in the other process; and vice versa. In the language of economists, low-skilled labor is neither a substitute nor a complement for capital and high-skilled labor; this is an in-between case.[12]

Let α denote the fraction of the production process that uses capital and high-skilled labor, and $1 - \alpha$ the fraction that uses low-skilled labor. The share α will also be the fraction of GDP that goes to pay capitalists and high-skilled workers while $1 - \alpha$ is the fraction of GDP that goes to pay low-skilled workers. As I will argue below, α will also be the low-skilled wage elasticity in this example.

In reality, of course, capital and high-skilled labor can substitute for low-skilled labor. Much of the consternation expressed by low-wage workers today comes from their fear that they will be replaced by machines. Because of this, a 1% decrease in the supply of low-skilled labor

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changes by one unit. The elasticity has the advantage that it will be the same regardless of which units *x* and *y* are measured in terms of; an elasticity is dimensionless.

[11] Usually economists focus on the reciprocal elasticity, the percentage by which employment will change if the wage changes by 1%. The demand curve in Fig. 1 is called inelastic because the usual elasticity is close to zero. For our purposes, however, the relevant elasticity is the percentage by which the wage will change if employment changes by 1%, and that wage elasticity will be quite large if the demand curve is very inelastic under normal terminology.

[12] Such a production process is described mathematically by what is known as a Cobb-Douglas production function.

may actually result in less than an α% increase in the low-skilled wage. If low-skilled labor becomes scarce, employers may choose to use more capital and high-skilled labor rather than bid up the price they pay for low-skilled labor. This is why I said α is an upper bound on the low-skilled wage elasticity.

Demonstrating that α is the low-skilled wage elasticity in the in-between case where low-skilled labor is neither a substitute nor a complement for capital and high-skilled labor requires a lot of math.[13] However, we can easily understand why α is the elasticity for the extreme cases where α is zero or α is approximately one.

If α is zero, high-skilled labor and capital do not contribute to production. All production is done by low-skilled labor. This is a situation that corresponds to the labor theory of value. Assuming, as we have, that all workers are identical, they will all take the same amount of time to produce a given good. The relative value of, say, a bicycle and a pork chop will be determined by how long it takes to produce each good. If a person takes a week to produce a bicycle and a day to produce a pork chop, people will trade one bicycle for seven pork chops. Measured in terms of any arbitrary good, the wage will be the amount of that good that a person can produce in an hour, which will be the same for everybody and will not depend on how many people there are. A 1% increase in the labor supply will have no effect on the wage, so the wage elasticity will be zero.

At the opposite extreme, suppose that almost all production is done by high-skilled labor and capital. However, there are still a few jobs that require low-skilled labor. For example, while computers can drive cars, it will probably be a long time before we automate the driving of

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[13] To see the math, consult my companion research paper, "Transition Dynamics of a Mass Deportation," which details the impact of the deportation over time. In particular, it tracks which actors benefit and which suffer from the deportation. Spoiler alert: there are always some native actors who are hurt.

ambulances since an ambulance driver has to deal with emergency conditions that cannot be anticipated by a programmer beforehand.

In this hypothetical world, the lump of labor fallacy is not a fallacy. If there is X labor to be done and N low-skilled workers, the wage for a low-skilled worker should be X/N. If we decrease N by 1%, $1/N$ will increase by 1% and so also will X/N. Since a 1% decrease in the low-skilled labor supply will cause a 1% increase in the low-skilled wage, the low-skilled wage elasticity will be one.

Applying this upper bound for the elasticity to the real world, if we want to know how much effect a deportation of illegal immigrants will have on the wages of low-skilled natives, we need to know how much of GDP goes to capitalists and high-skilled workers. There is a general agreement among economists that capitalists get about 30% to 40% of GDP.[14] How much goes to high-skilled workers will depend on where we draw the line between a high-skilled worker and a low-skilled worker. Suppose, though, that α is a half. Then if we deport 5% of the low-skilled labor force, the low-skilled wage will increase by $1/2 \times 5\%$ or 2.5%. That is not a big increase. Most proponents of deporting illegal immigrants think low-skilled wages will increase by something on the order of 100%. If a low-skilled worker earns $10 an hour, he can reasonably expect his wage will go up by, at most, twenty-five cents an hour.[15] It is really hard to justify all the racial tension that Trump's proposals have caused so people can earn another quarter per hour.

You may be wondering how this is possible? Surely the removal of 5% of workers from the economy must have some effect on the economy. And it does. It causes a substantial drop in the earnings of high-skilled workers.

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[14] This share of capital has gradually increased over the past few decades.
[15] Even if the share going to high-skilled labor and capital was 100%, the wage increase would only go up to fifty cents an hour.

In a competitive market, wages are ultimately determined by a person's productivity. Getting rid of your competitors does not change your productivity. But if a hospital cannot hire an ambulance driver, surgeons may have to drive the hospital's ambulance. Whatever time a neurosurgeon spends driving an ambulance, he is not spending in the operating room performing the expensive surgeries he specializes in. His earnings will fall, and so will the hospital's.
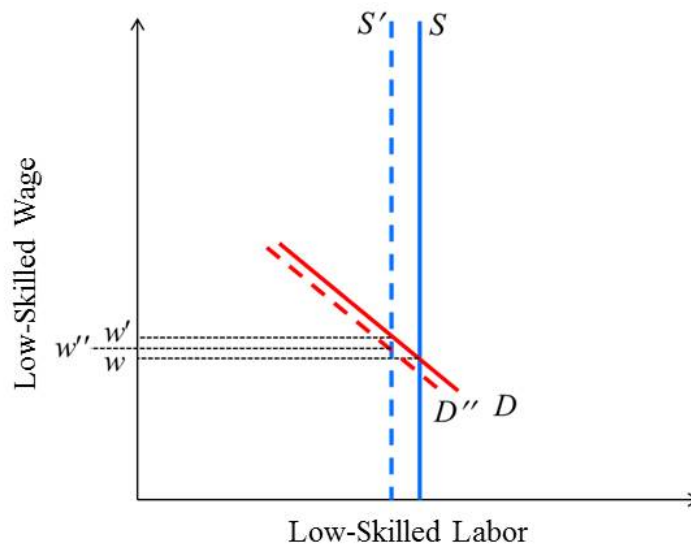

Fig. 3. Labor market with realistic demand and capital deportation.

Actually though, as small as 2.5% is, it may be a substantial overestimate of how much the deportation will increase low-skilled wages. Trump has said we are going to be nice about deporting our illegal immigrants. I take that to mean we are not going to steal their stuff when we throw them out of the country. If we give deportees the opportunity to sell their houses, take their cars, and remove their assets from the U.S. economy, those assets will no longer finance

investments in American physical capital. The immigrants' capital will be deported along with

their labor services.[16] Since the demand for labor depends on how much capital there is, the

change in the labor market is better described by Fig. 3 than Fig. 2. In Fig. 3, as the supply curve

shifts to the left from S to S', the demand curve also shifts to the left from D to D''. As a

consequence, the new equilibrium wage is w'', which is less than w'. The loss of capital has an

effect on the low-skilled wage opposite to the effect caused by the loss of low-skilled labor, and

that countervails some of the increase in the low-skilled wage that would come from the

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[16] Strictly speaking, this is only true for a closed economy. In an open economy, after the deportees withdraw their capital, the capital of other foreign investors might flow into the economy to make up the difference. A full accounting of what will happen would require us to model both what happens in the U.S. and what happens in the rest of the world, which is a lot more complicated than just modeling what happens in the U.S.. A common approximation is to assume the country is too small for changes there to affect the global interest rate. (Obviously that approximation is a stretch when talking about the U.S.) Since changes in the interest rate help to ameliorate the effects of the deportation in the closed-economy model, the deportation actually causes a greater shock to the economy in the small open-economy model.
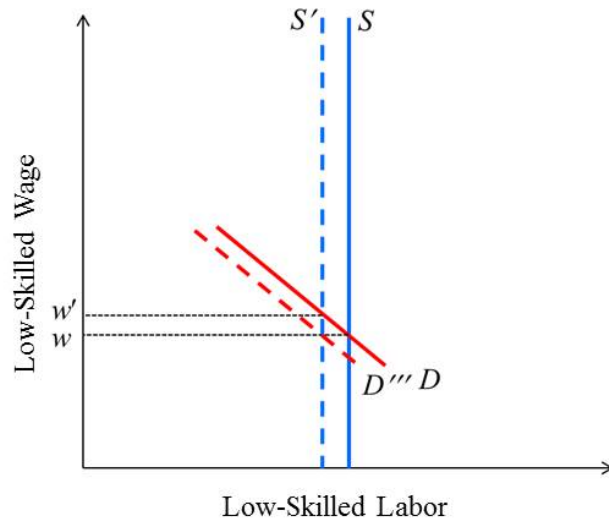
deportation.

Fig. 4. Labor market in long run with realistic
demand.

In the long run, the labor market should look like Fig. 4. Before the deportation, the

economy should have settled into an equilibrium where native workers chose whether to become

low- or high-skilled workers and everyone was happy with the job they chose. The ratio of high-

skilled workers to low-skilled workers will be just right so that both types of workers will save

enough so that the capital stock will be just right so that future workers will choose their jobs to

yield the same ratio of high-skilled workers to low-skilled workers that will yield the same

capital stock and so on. After the immigrants are deported, there will be fewer low-skilled

workers, so the ratio of high-skilled workers to low-skilled workers will be larger than the

equilibrium ratio.

But aside from the population, the deportation will not have changed any of the economy's fundamentals, so the old equilibrium ratio will still be the equilibrium ratio afterwards. The low-skilled workers will earn a higher wage than before so they will save more. The high-skilled workers will earn a lower wage than before so they will save less. Next period's capital stock will almost surely be different than the current period's capital stock. Likewise, the ratio of high-skilled labor to low-skilled labor will be different next period than it was after the deportation. Gradually, the ratio of high-skilled labor to low-skilled labor will converge back to the original, equilibrium ratio. And, if 5% of the population was deported, the capital stock will converge to a value 5% less than its value before the deportation. At that point, the supply and demand for low-skilled labor will intersect again at the original low-skilled wage. The low-skilled workers and the high-skilled workers will each be earning the same wages they earned before the deportation. From the perspective of individual households, nothing will have changed except that some natives who might otherwise have filled high-skilled jobs will instead fill low-skilled jobs. The economy as a whole will shrink by 5% in proportion to the population. In the short run, there will be a lot of Sturm und Drang that will be very costly in terms of both lives and treasure; but in the long run, nobody will be better or worse off. So really, what is the point?

Standing against the theory I have just presented, there is plenty of anecdotal evidence to suggest that illegal immigrants have in fact caused significant reductions in wages and forced native workers out of some industries. So I imagine Donald Trump would take this opportunity to call me a loser and conclude there must be something wrong with my theory. And there is an important assumption in my model that does not hold true in reality. That assumption is that society does not treat illegal immigrants any differently than low-skilled natives: employers will

view both classes of employees as interchangeable. As things stand, the law does not permit an employer who knows a worker is an illegal immigrant to treat him the same as a native worker. The upshot of the model is that where illegal immigrants are distorting labor markets, what is actually causing the distortion is the fact that these workers cannot be legally employed and not that they are in the United States. Most of the problems that stem from illegal immigration would disappear if we grant amnesty to law-abiding, healthy immigrants—as Adam Smith would have advised.