From Individual to Social Immigration Preferences

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Abstract: This paper examines the aggregation of individual into social immigration preferences through majority voting in a two-sector general equilibrium model in which individuals differ with respect to their skills and capital ownership. The model also accounts for the impact of congestion costs as a country's population expands. It is shown that ownership of capital by workers in their industry of employment is a major source for multi-peaked immigration preferences and that congestion effects fail to restore single-peakedness. Accordingly, a majority-voting equilibrium, determined by the median voter's preferences, might not exist.

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1. Introduction

The immigration policies of democratic countries are chosen either directly through a referendum of their native populations or indirectly by their elected representatives. In case of a referendum, a policy proposal generally becomes law if a majority of voters supports it. In the more common case of policy choice by elected representatives, decisions are guided by polls on voter attitudes toward immigration, as politicians weigh political support from the general public against the financial support from special interests.[1] In either case, individual immigration preferences form the foundation for democratic countries' actual immigration policies. Far less clear, however, is whether one really can aggregate individual into social immigration preferences in a coherent way; that is, without destroying the essential property of transitivity of preference relations.[2]

The main objectives of this paper are two. First, it describes the immigration preferences of individuals, who maximize their utility from the consumption of goods and services,[3] by relating each individual's utility to immigration.[4] Second, it examines whether individual immigration preferences can be aggregated into a coherent social immigration policy. We do so in a model in which individuals are characterized not only by their skills as workers, but also by their ownership of capital in one or more of the economy's industries.[5] Accordingly, a worker's income to buy goods and services depends on both her skill as a worker and her

[1] On the trade-off between political support from voters and special interests, see Peltzman (1976) and Hillman (1982).

[2] This is a particularly important issue when individual preferences are aggregated through majority voting. As Ordeshook (1986, p.65) puts it, "One widespread belief is that majority rule is an unambiguous procedure for resolving social disputes and that it is somewhat fairer than other procedures. We often find an aura of legitimacy cast over outcomes selected by majority rule."

[3] It is widely recognized that non-economic factors influence immigration preferences as well, but economic factors tend to dominate; see Scheve and Slaughter (2001) and Mayda (2006), among others.

[4] The model is static and individuals do not take into account how current immigration decisions affect political decision making in the future. For dynamic models of immigration policy formation, see Dolmas and Huffman (2004) and Ortega (2005).

[5] For the formation of tariff policies through majority voting, the implications of workers also owning capital had been explored in Mayer (1984). For the formation of immigration policies, capital-owning workers play a key role in Benhabib (1996) who examines majority-determined policies that impose capital and skill requirements on immigrants.

ownership of capital in the economy's various industries.[6] The standard assumption that individuals derive their utility from the consumption of private goods and services is modified by including population congestion effects. How much utility a commodity bundle yields may depend not only on the content of the bundle but also on the physical and social "environment" in which a person consumes. This environment is created by a set of impure public goods[7] all of which are subject to congestion effects. For every community, there exists a population size at which further growth lowers individual benefits from the consumption of private goods and services.[8]

In describing individual preferences for immigration, our primary focus is on determining each person's most-preferred or ideal level of immigration. Specifically, at issue is whether individual immigration preferences are single- or multi-peaked. Stated differently, we must examine whether each person has only one or more than one locally utility-maximizing level of immigration. An answer to this question is critical for adopting majority voting as a vehicle to aggregate over individual preferences.[9] Single-peaked individual preferences guarantee that, under majority voting, the median voter's optimal choice cannot be defeated by any other alternative. On the other hand, even if only some individuals have multi-peaked preferences, one cannot preclude a policy choice for which the median voter's ideal level of immigration fails to constitute a majority-voting equilibrium.

[6] Implicit in this specification is that individuals of the same skill, but different age tend to have different preferences with respect to immigration, as they accumulate capital over time in anticipation of retirement from the work force.

[7] These impure public goods are created through the community's own interactions, such as its social values and culture; by the community's government, as it provides parks, bridges, and roads, as well as a legal system; or by nature, with its seashores, rivers, valleys, and mountains.

[8] The notion that beyond a certain size population negative congestion effects emerge is related to the literature on a country's optimal population. In this literature, there is no agreement on the appropriate criterion for choosing the optimum. As Zimmermann (1989, p. 3) points out, "different population sizes are optimal depending on what is being maximized: income or consumption per capita, total income or consumption, life expectancy and military potential, among other criteria." However, there is a long history of recognition that a country might be either under-populated or over-populated, as pointed out by Ricardo (1817), Wicksell (1910), and Dasgupta (1969) among many others

[9] An early proof of the theorem that single-peaked preferences by individuals guarantee a majority-voting equilibrium can be found in Black (1948). For a rigorous discussion of the relationship between Arrow's (1963) impossibility theorem and majority voting as a vehicle to aggregate individual preferences, see Mas-Colell, Whinston, and Green (1995).

When immigration policies are chosen by elected representatives rather than through majority voting, the possibility of multi-peaked preferences remains a concern. As politicians gauge the public's immigration attitudes through polling, the public's responses in the presence of multi-peaked preferences might reveal rather contradictory attitudes. Individuals with multi-peaked preferences might favor a cutback in immigration when a proposal sets a modest immigration quota, but support further expansion of immigration when the proposal calls for a very large quota. Consequently, policy adjustments in response to polling the public might lead to either highly restrictive or highly liberal policies in contrast to a middle-of-the road policy that would reflect the preferences of the majority of all individuals with single-peaked preferences.

This paper examines the immigration preferences of individuals in a model that captures key features of recent US immigration debates.[10] First, we assume that the driving force behind individuals' attitudes toward immigration is its impact on their own personal welfare. As Borjas (1999, p. 184) and others have observed, there might be alternative considerations as well, but the economic well-being of the country and, more importantly, of individuals has been the driving force behind every major US immigration debate. Second, we allow for two types of labor, skilled and unskilled, recognizing the fact that the recent US immigrant population has been "highly bifurcated."[11] Third, the model reflects the fact that unskilled labor immigration has been particularly pronounced in the production of services whose prices are endogenously determined. Hence, immigration affects not only the factor income of individuals but also the prices of services they are buying. We include this feature by specifying a two-sector economy with a traded-good industry which is a price taker in the world market and a non-traded service industry whose price is endogenously determined. Fourth, we take note of possible "congestion" effects due to immigration. As was pointed out earlier, the benefits from consuming traded goods and non-traded services depend on the environment in which they are consumed.

[10] For a discussion of these features, see Borjas (1999).
[11] As Borjas (1999, p.8) puts it, "there are many immigrants with few skills and many immigrants who are highly skilled".

When the current population is of a size that immigration neither causes congestion nor mitigates isolation, the impact of immigration on an individual's personal income critically depends on her factor ownership. At constant prices, immigration always reduces income of an individual provided she owns no capital but possesses the same skills as the immigrants. If, on the other hand, she owns capital in the industry of her employment, then immigration has opposing effects on the native worker's income: while it lowers the wage, it raises the return on her capital. Which effect dominates depends on the native's capital-labor ownership ratio relative to the entire industry's capital-labor employment ratio. If a person is *relatively capital-rich* (*capital-poor)*, such that her capital-labor ownership ratio exceeds (falls short of) the industry's capital-labor employment ratio, then immigration raises (lowers) her income when evaluated at constant prices of goods and services. Finally, immigration always raises income (at constant prices) of those natives who own capital but do not work in the industry which absorbs the immigrants.

The presence of a non-traded service, whose price is influenced by immigration, modifies the impact of immigration on a native's income and welfare. The inflow of skilled labor raises the price of non-traded services whereas the inflow of unskilled labor lowers it. How these price changes affect a native's welfare depends on the person's expenditure relative to income earned in the service sector. In the "usual" case – meaning that people who work (do not work) in the service industry receive more (less) income from that industry than they spend on its product – the price effect from the inflow of unskilled (skilled) labor hurts (benefits) unskilled natives and benefits (hurts) skilled natives.

The above-stated findings on income and price effects imply that individual preferences with respect to the *immigration of unskilled labor* are single-peaked for skilled natives with or without capital ownership and for unskilled natives with no capital ownership in the service industry. But the preferences might be multi-peaked for unskilled natives who own some capital in their industry of employment. Correspondingly, individual preferences with respect to the *immigration of skilled labor* are single-peaked for unskilled natives with or without capital ownership and for skilled natives with no capital in their industry of employment. But the

preferences might be multi-peaked for skilled natives who own some capital in their industry of employment. Consequently, a majority-voting equilibrium might not exist and the preferences of the median voter might not be the determinant for the country's immigration policy. Also, signals conveyed by polls might be highly contradictory: many natives might support an immigration proposal that either closes or opens the borders widely, but be opposed to any form of more limited immigration.

The addition of congestion effects only modifies but does not change the basic insights gained from modeling immigration without them. The main modification is that no individual can gain either from an infinite expansion or from an extreme contraction of the current labor force. When immigration leads to over-population, negative congestion effects eventually overpower all positive income effects from a larger workforce; and when the decline in population leads to under-population, negative isolation effects eventually overpower all positive income effects from a smaller workforce. Importantly, the addition of congestion might change the immigration preferences of some individuals from single-peaked to multi-peaked and vice versa, but it does not systematically remove the possibility of capital-owning workers having multi-peaked immigration preferences.

2. The Economy and its Voters

The immigration preferences that matter for the formation of a country's immigration policy are those of its native population; that is, of those individuals who already reside in the country. It is assumed that each native's objective is to support economic policies that raise her utility from the consumption of goods and services. How much utility is yielded by a bundle of goods and services depends not only on the makeup of the bundle, but also on the physical and social environment in which it is consumed. As much of this environment is provided by impure public goods which are subject to congestion effects, the utility function of person *i* is given by:

$$U^i = h\left(c_X^i, c_Y^i\right) g(L) \qquad (1)$$

where c_X^i and c_Y^i denote the quantities of good *X* and service *Y*, respectively, consumed by individual *i,* and where $h(.)$ is strictly quasi-concave, homothetic and identical for all consumers. Good *X* is assumed to be a traded good, whose price is exogenously given by the world market. Good *Y*, on the other hand, is a non-traded service, whose price is endogenously determined and thereby influenced by immigration. The function $g(L)$ expresses the influence of the population's total size, *L,* on the physical and social environment in which consumption takes place.[12] The function is assumed to be concave and to have three distinct ranges. In the first range, immigration reduces *isolation* and thereby raises utility from the consumption of goods and services; that is, $g'(L) > 0$ for $0 \leq L \leq L^o$. In the second range, $L^o < L < L^1$, there are neither isolation nor congestion effects and $g'(L) = 0$. In the third range, $L^1 \leq L \leq \infty$, immigration causes *congestion* at an increasing rate, with $g'(L) < 0$ and $g"(L) < 0$.

The economy is assumed to consist of two industries: a traded-good industry, *X,* and a non-traded-service industry, *Y.* Production of the traded good requires skilled labor, L_X, and sector-specific capital, K_X; production of the non-traded service calls for unskilled labor, L_Y,, and sector-specific capital, K_Y. The production functions,

$$X = X(L_X, K_X) \qquad \text{and} \qquad Y = Y(L_Y, K_Y) \tag{2}$$

are homogeneous of degree one in labor and capital, and factor markets are perfectly competitive.

The distinguishing feature of each individual is her factor ownership, which varies across the population along two dimensions: working skills and capital ownership. A native is either a skilled worker who provides one unit of labor to the traded-good industry or an unskilled

[12] These congestion effects are really community or neighborhood rather than country-wide phenomena. Consequently, immigration might have a negative impact on the residents of some communities but not affect the residents in other communities. Even within the same community, different individuals tend to have different thresholds for congestion effects to set in. The implication is that an individual's immigration preferences are not only shaped by her ownership of factors of production but also by the location of her residency. Since this added heterogeneity in individual preferences for immigration does not alter the basic message of this paper, we employ the vastly simplifying assumption that, at a given population size, the congestion effects are the same for all individuals residing in the country.

worker who provides one unit of labor to the service industry.[13] In addition to supplying labor, natives also own sector-specific capital. The amount of capital owned by person *i* in the traded-good and service industries are denoted by K_x^i and K_y^i, respectively, where $0 \leq K_x^i \leq K_X$ and $0 \leq K_Y^i \leq K_Y$. Immigrants, on the other hand, are assumed to enter the country without any capital, providing one unit of labor as either skilled or unskilled workers.

*The inco*me of skilled native x is:

$$m^x = w_X + r_X K_X^x + r_Y K_Y^x \tag{3}$$

where $w_X = X_L = \partial X(L_X, K_X)/\partial L_X$ is the wage paid to the owner of one unit of skilled labor, $r_X = X_K = \partial X(L_X, K_X)/\partial K_X$ and $r_Y = PY_K = P\partial Y(L_Y, K_Y)/\partial K_Y$ are the returns on capital specific to the traded good and service industry, respectively, while $P_X = 1$ and $P_Y = P$ are the prices of good *X* and service *Y.*

The corresponding income of unskilled native y: is:

$$m^y = w_Y + r_X K_X^y + r_Y K_Y^y \tag{4}$$

where $w_Y = PY_L = P\partial Y(L_Y, K_Y)/\partial L_Y$ is the wage paid to the owner of one unit of unskilled labor.

The economy's employment of capital before and after immigration is given by its fixed industry-specific capital endowments, $\underline{K_X}$ and $\underline{K_Y}$, whereas its supplies of skilled and unskilled labor can be adjusted through immigration. Industry labor supplies are:

$$L_X = \underline{L_X} + I_X \qquad \text{and} \qquad L_Y = \underline{L_Y} + I_Y \tag{5}$$

where $\underline{L_j}$ and I_j denote the pre-immigration and immigration supply of labor, respectively, to industry *j = X,Y.*

[13] While skilled workers could also perform unskilled tasks, we assume that, in the relevant range of immigration for either skilled or unskilled labor, the wage rate of skilled workers remains above that of unskilled workers, so that no skilled native has an incentive to offer her labor as an unskilled worker.

The world and domestic price of the traded good is exogenously given at $P_X = 1$. The domestic price of the non-traded service, on the other hand, is endogenously determined, satisfying the market-clearing condition:

$$C_Y(P, M) = Y(L_Y, K_Y) \tag{6}$$

where $C_Y(P, M)$ denotes total demand for the service by the country's population, $L = L_X + L_Y$, P is the domestic price of the service, $M = X(L_X, K_X) + PY(L_Y, K_Y)$ is the country's total income in terms of the traded good, and $Y(L_Y, K_Y)$ is the supply of services.

The response of the service's price to immigration depends on whether immigrants are skilled, I_X, or unskilled, I_Y. Substituting (5) in (6), using the definition of *M*, and differentiating with respect to I_X yields:

$$\frac{dP}{dI_X} = -(\gamma X_L)/(P\sigma_Y) > 0 \tag{7}$$

where $0 < \gamma < 1$ is the propensity to spend on the non-traded service[14] and $\sigma_Y < 0$ is the own substitution effect of a service price change. While immigration of skilled workers does not change the supply of the service, it always raises demand and thereby its price. Immigration of unskilled workers, I_Y, on the other hand, has the opposite effect on the service price:

$$\frac{dP}{dI_Y} = [(1-\gamma)Y_L]/\sigma_Y < 0. \tag{8}$$

Immigration of unskilled workers raises both supply of and demand for the service. But the supply effect is greater, resulting in a decline of the service's price.

[14] It is implicitly assumed that, in the relative price range, positive amounts of both *X* and *Y* are consumed.

3. Individual Immigration Preferences in the Absence of Congestion

The objective of this section is to relate a native's utility to the immigration of unskilled labor when there are no congestion effects. To accomplish this, it is helpful to express the sub-utility function from the consumption of goods and services, $h\left(c_X^i, c_Y^i\right)$, in its indirect form of:

$$v^i = v(P, m^i)\,, \qquad i = x, y. \tag{9}$$

Immigration affects an individual's welfare through two channels: as a factor owner, as her income, m^i, changes and as a consumer, as the price of the service, *P*, changes. The total welfare effect greatly varies in terms of direction and magnitude, depending on the native's skills as a worker and the allocation of her capital between industries. Not only might utility of skilled and unskilled natives change in opposite directions, but a conflict of interest on immigration policies might also exist between natives with the same skills but different capital ownership.

We start the analysis by examining the *impact of unskilled labor immigration on the income of skilled native x.* Differentiating (3) with respect to I_Y yields:

$$\frac{dm^x}{dI_Y} = \left[m_Y^x\left(\frac{dP}{PdI_Y}\right) + K_Y^x(PY_{KL})\right] \tag{10}$$

where $m_Y^x = r_Y K_Y^x$ is income earned by skilled native *x* in the service industry, *Y*. Since skilled natives do not perform unskilled tasks in industry *Y,* the only source of income from industry *Y* is capital income. Recalling from (8) that $\frac{dP}{dI_Y}$ is negative, one can see that unskilled labor immigration has conflicting effects on the income of a skilled native who owns capital in the service industry: it lowers her income as it depresses the price of the capital-employing service, but it raises her income as more unskilled labor raises capital's marginal product. For skilled natives who don't own capital in the service industry, income is not affected by unskilled labor immigration.

To evaluate the *effect of unskilled labor immigration on* a *skilled native's utility*, we return to (9), differentiate the expression with respect to I_Y , use Roy's identity, and substitute (10) to obtain:

$$\frac{dv^x}{dI_Y} = \frac{\partial v^x}{\partial m_x}\left[(m_Y^x - e_Y^x)\left(\frac{dP}{PdI_Y}\right) + K_Y^x(PY_{KL})\right] \tag{11}$$

where $e_Y^x = Pc_Y^x = \gamma(m_X^x + m_Y^x)$ is expenditure on the service by skilled native *x*, and $m_X^x = w_X + r_X K_X^x$ and $m_Y^x = r_Y K_Y^x$ are her income earned in industries *X* and *Y*, respectively. As shown in the Appendix, skilled native *x* always spends more on service *Y* than she receives income from the industry producing *Y*, $(m_Y^x - e_Y^x) < 0$, if her share of total income generated in the industry in which she does not work, *Y*, is less than her share of total income generated in the industry in which she does work, *X.* We consider this to be the "usual" case, and state:

Proposition 1: *In the "usual" case that skilled natives spend more on the service than they earn income from the industry that produces it, immigration of unskilled labor always raises welfare of each skilled native when there are no congestion effects.*

If the skilled native owns no capital in the service industry, $K_y^x = 0$, then the RHS of (11) reduces to $\frac{\partial v^x}{\partial m_x}\left[-\gamma m_X^x\left(\frac{dP}{PdI_Y}\right)\right] > 0$. If she owns some capital in industry *Y,* $K_y^x > 0$, then the second term on the RHS adds a positive reinforcement while the first term remains positive for the usual case of $(m_Y^x - e_Y^x) < 0$.

The corresponding *effect of unskilled labor immigration on the income of unskilled* natives is obtained by differentiating (4) with respect to I_Y:

$$\frac{dm^y}{dI_Y} = \left[\left(m_Y^y\right)\left(\frac{dP}{PdI_Y}\right) + \left(K_Y^y - \frac{K_Y}{L_Y}\right)(PY_{KL})\right] \tag{12}$$

where we use the property that $Y_{LL} = -Y_{KL}(\frac{K_Y}{L_Y})$ for homogeneous-of-degree-one production functions and we note that $m_Y^y = (w_Y + r_Y K_Y^y)$ denotes income of unskilled native *y* from

ownership of one unit of unskilled labor and $K_Y^y \geq 0$ units of service-industry-specific capital. Immigration of unskilled labor affects the unskilled native's income through three different channels. First, as an unskilled worker, it reduces her marginal contribution to the production of services; that is, $Y_{LL} < 0$. Second, as a possible owner of capital, $K_Y^y > 0$, it raises her capital's marginal contribution to the production of *Y*. Which effect, first or second, dominates depends on the unskilled native's personal capital-labor ownership ratio, $K_Y^y/L_Y^y = K_Y^y$, relative to the entire service industry's capital-labor employment ratio, K_Y/L_Y. The second term inside the bracket of (12) is positive if the unskilled native is *relatively capital-rich*, such that $K_Y^y > \frac{K_Y}{L_Y}$, and is negative if she is *relatively capital-poor*, such that $K_Y^y < \frac{K_Y}{L_Y}$. Third, there is the negative effect of unskilled labor immigration on the price of the service, *P,* which lowers the values of the marginal contribution of all factors the unskilled native owns in industry *Y*. Hence, the first term inside the bracket on the RHS of (12) is always negative. Accounting for all three effects, one can see that all unskilled natives with no capital ownership in the service industry, $K_Y^y = 0$, always experience a decline in income. For unskilled natives with some capital ownership in their industry of employment, on the other hand, the negative impact of unskilled labor immigration on her income is reduced; and if her capital-ownership ratio in industry *Y* exceeds the industry's capital-labor employment ratio by a substantial margin, she might experience a rise in total income earned.

The *effect of unskilled labor immigration on an unskilled native's utility* must also include the benefit from the decline in price of the non-traded service on the native as a consumer. Again we differentiate (9) with respect to I_Y, employ Roy's identity, and substitute (12) to obtain:

$$\frac{dv^y}{dI_Y} = \frac{\partial v^y}{\partial m^y}\left[\left(m_Y^y - e_Y^y\right)\left(\frac{dP}{PdI_Y}\right) + \left(K_Y^y - \frac{K_Y}{L_Y}\right)(PY_{KL})\right] \qquad (13)$$

where $e_Y^y = Pc_Y^y = \gamma(m_X^y + m_Y^y)$ is expenditure on the service by unskilled native *y* and where $m_X^y = r_X K_X^y$ and $m_Y^y = (w_Y + r_Y K_Y^y)$ are her income earned in industry *X* and *Y*, respectively. The term $(m_Y^y - e_Y^y)$ is positive (negative) if native *y* earns more income in the service industry

than she spends on services. Again, we refer to the Appendix where it is shown that m_Y^y exceeds e_Y^y as long as the unskilled native's share of total income in her industry of employment, *Y,* exceeds her share of total income in the other industry, *X*. In this "usual" case, the expression of (13) implies:

Proposition 2: *In the absence of congestion effects, unskilled natives always lose from the immigration of unskilled labor if they are relatively capital-poor. Unskilled natives might gain from the immigration of unskilled labor if they are relatively capital-rich.*

Clearly, many unskilled natives own little or no capital in either industry *X* or *Y*, and their main or exclusive source of income are wage payments from the service industry. For them, $(m_Y^y - e_Y^y) > 0$ and $(K_Y^y - \frac{K_Y}{L_Y}) < 0$ in (13), implying that they are always hurt by unskilled labor immigration. On the other hand, it also is quite possible that some unskilled natives find themselves in the possession of substantial capital in the service industry, making them relatively capital-rich in their industry of employment. In addition to inheritances or other fortuitous events, older workers might have accumulated capital in anticipation of retirement. For them, $(K_Y^y - \frac{K_Y}{L_Y})$ is positive; and if the now positive second term in (13) is sufficiently large to more than offset the negative impact of the first term, unskilled natives gain from immigration to their industry of employment.

Although the number of unskilled natives who can gain from immigration is likely to be quite small relative to the number who are going to lose, the gainers' role could be pivotal in the political choice of immigration policies. With all skilled natives in support of opening the gates to unskilled immigrants and most unskilled natives in opposition, the small number of unskilled natives with substantial capital ownership might be decisive in an immigration referendum or in shaping the votes of elected politicians who poll the natives on their preferences.

Figure 1: Insert here

Voter Preferences for Unskilled Labor Immigration with no Congestion Costs

Figure 1 portrays the relationship between utility, *v(.),* from the employment of unskilled workers, L_Y, in the absence of congestion costs for three natives with different factor ownership: unskilled native *y* with no ownership of capital in industry *Y*, $K_Y^y = 0$; unskilled native *y* with ownership of capital in industry *Y*, $K_Y^y > 0$; and skilled native *x* with or without capital ownership in industry *Y*, $K_Y^x \geq 0$. With no immigration, employment of unskilled workers is $\underline{L}_Y$. With immigration, employment is $L_Y = \underline{L}_Y + I_Y$. Hence, immigration preferences are depicted by the *v(.)* functions at and to the right of the $\underline{L}_Y\underline{L}_Y$ line. Based on (13), the unskilled native without capital, $K_Y^y = 0$, loses at all levels of immigration, and her ideal amount of immigration is $I_Y = 0$, where $L_Y = \underline{L}_Y$. In fact, this worker would benefit from a reduction in the current workforce, such as through the expulsion of already employed workers who are illegally in the country. However, if the only feasible employment adjustment is through immigration, then her highest utility is attained at the intersection of the $\underline{L}_Y\underline{L}_Y$ and $v(K_Y^y = 0)$ lines, at point A. Also based on (13), the unskilled native with some capital ownership, $K_Y^y > 0$, loses from employing more unskilled labor when immigration is low but gains when it is high. This native's capital ownership in the service industry is constant at $K_Y^y >$ *0*, as is the service industry's stock of capital, K_Y, whereas rising employment due to immigration lowers the industry's capital-labor ratio, K_Y/L_Y, until the term $(K_Y^y - \frac{K_Y}{L_Y})$ changes its sign from negative to positive. As can be seen from (13), the unskilled native's utility is lowest at point *E,* where industry employment is:

$$\tilde{L}_Y^y = K_Y/\Delta^y \qquad (14)$$

with $\Delta^y = \left[K_Y^y + \frac{(m_Y^y - e_Y^y)}{P^2\, Y_{KL}}\left(\frac{dP}{dI_Y}\right)\right] > 0$. As shown in the Appendix, the value of $\tilde{L}_Y^y$ is always inversely related to K_Y^y for unskilled natives who own capital in the service industry *only*. In other words, the larger an unskilled native's capital ownership in her industry of employment, the lower is the service industry's employment at which she benefits from the addition of more

unskilled labor.[15] The unskilled native with $K_Y^y > 0$ has two locally ideal immigration levels, one at point *B* and the other at point *C.*[16]. Finally, Figure 1 shows that utility of a skilled native, with or without capital ownership in the service industry, $K_Y^x \geq 0$, rises with immigration at all employment levels. The skilled native's utility is highest at point *D*, at the maximum immigration level of L_Y^{max}.

4. Immigration Preference Peaks with Congestion Costs

The specification of a native's utility function, as stated in (1), makes explicit that individual benefits from the consumption of goods and services depend on the environment in which consumption takes place. As mentioned earlier, this environment is created by a set of impure public goods which are subject to negative congestion effects when the country becomes "over-populated". The environment is shaped by a country's government, as it develops the legal foundations for interactions among individuals, defends its people against internal and external enemies, and builds roads, bridges, and parks. The environment is further defined by the interactions among the country's natives, as they develop their own culture, social values, and norms of behavior. And some impure public goods are simply a gift of nature, such as the mountains, shorelines, and rivers that make up the physical environment in which its people live. These impure public goods have in common that their utility-enhancing impact on the consumption of private goods and services eventually diminishes as the population becomes excessively large. Our specification of an individual's utility function in (1) abstracts from the fact that congestion effects are likely to vary from city to city within a country and might even vary among different geographic areas within a city.[17] Our specification ignores the influence of

[15] The same relationship can be shown to hold when unskilled natives own capital in both the goods and service industry and, while different individuals might own different amounts of capital, all of them have allocated their capital to the two industries in the same proportion.

[16] Point C corresponds to an employment level L_Y^{max} at which foreign unskilled workers no longer have an incentive to move to the country in question.

[17] Overpopulation is more likely to show up first in the more crowded quarters of unskilled worker residencies. Furthermore, the negative effects from a rising population are highly subjective and, therefore, might even be different for individuals who live in the same immediate neighborhood.

location, as well as of personal tastes about when congestion sets in. Instead, the specification of (1) assumes that $g(L)$ is the same for all individuals of the country in question. Accounting for the possible presence of congestion effects, the impact of immigration on a native's utility is expressed by:

$$\frac{dU^i}{dI_Y} = \frac{dv^i(P,m^i)}{dI_Y} g(L) + v^i\left(P, m^i\right) \frac{dg(L)}{dI_Y} \qquad (15)$$

where $L = L_X + L_Y$ is the country's entire population, and where $dg(L)/dI_Y$ is positive for $0 \leq L \leq L^o$, when the country is subject to isolation, zero for $L^o < L < L^1$, when the country is in the range of optimal population size,[18] and negative for $L^1 \leq L$, when the country is subject to congestion.

Figure 2 portrays the relationship between utility *U(.)* of the three natives of Figure 1 and employment in the service industry when isolation and congestion effects are added. Again, the three natives' immigration preferences can be ascertained by taking $\underline{L_Y}$ as the origin and defining immigration as $I_Y = L_Y - \underline{L_Y}$. With isolation and congestion effects, their wellbeing declines when employment further declines at already very low and when employment further rises at already very high employment levels. While the population sizes at which isolation and congestion effects set in are assumed to be the same for all individuals, the levels of employment at which these effects overpower their income and price effects vary with an individual's ownership of labor and capital. While isolation effects might be important for some countries or communities, our discussion of immigration preferences puts the focus on congestion effects.

Figure 2: Insert here

Voter Preferences for Unskilled Labor Immigration with Congestion Effects

As was the case in Figure 1, $u(K_Y^x \geq 0)$ denotes utility of a skilled native with some or no capital owned in industry *Y*, whereas $u\left(K_Y^y > 0\right)$ and $u\left(K_Y^y = 0\right)$ express utility of an unskilled

[18] Once the country is populated by enough people to make it a workable and sustainable entity, the population can grow substantially without any significant impact on the quality of life.

native with some and no capital, respectively, owned in the same industry. Their *preference peaks for employment*, L_Y, are marked by by *D* for the native with $(K_Y^x \geq 0)$, *b* and *C* for the native with $\left(K_Y^y > 0\right)$, and *a* for the native with $\left(K_Y^y = 0\right)$. Hence, all skilled as well as unskilled natives with no service industry capital have single-peaked *employment preferences*, whereas the capital-owning unskilled native has employment preferences with two peaks. Each worker has one most-preferred or ideal level of unskilled labor employment, namely $L_Y^*\left(K_Y^y = 0\right)$ for the unskilled native without capital, $L_Y^*(K_Y^x \geq 0)$ for the skilled native with some or no capital; and $L_Y^*\left(K_Y^y > 0\right)$ for the unskilled native with substantial capital.

The *immigration preferences* of the three individuals are restricted to the segments of the utility functions that are at or to the right of the pre-immigration employment level, $\underline{L}_Y$. This implies that the *immigration preference* peaks might be different from the *employment preference* peaks. In Figure 2, they are marked by *B* and *C* for the unskilled native with capital, and by *A* and *D* for the unskilled native without capital and the skilled native with or without capital, respectively.

5. Aggregating Over Individual Immigration Preferences

The key issue in the political formation of immigration policies is whether there exist political mechanisms that are capable of aggregating individual into social preferences while retaining the basic axioms of completeness and transitivity of preference orderings. A major implication of Arrow's impossibility theorem (1963) is that political institutions and mechanisms matter a great deal in how individual preferences on immigration are transformed into collective choices.[19] While majority voting is an obvious candidate for aggregating preferences, some important restrictions on the domain of individual preference relations must be imposed to guarantee that the thereby obtained social preferences relations remain transitive. The key

[19] As Ordeshook (1986, p.55) puts it, "groups are unlike people in a fundamental way, and to utter theoretically sound propositions about 'their' decisions we must explore their inner structure."

requirements are that voting is limited to a one-dimensional issue[20] and that all voters have single-peaked preferences. When individuals have single-peaked preferences along a single dimension, a majority voting equilibrium is established at the utility-maximizing choice of the median voter (Black, 1948), and the social preference relation established by the median voter's ideal choice is transitive.

Figure 2 illustrates that, in the presence of multi-peaked preferences, social immigration preferences which are determined through pair-wise majority voting might not be transitive even if individual preferences are. The pre-immigration level of employment is given at $\underline{L_Y}$. If expelling past immigrants is not an option, then $\underline{L_Y}$ is the ideal unskilled labor employment for the unskilled native without capital; $L_Y^*(K_Y^x \geq 0)$ is the ideal employment for the skilled native with or without capital; and $L_Y^*\left(K_Y^y > 0\right)$ is the ideal employment for the unskilled native with capital. In pair-wise voting, $\underline{L_Y}$ beats $L_Y^*(K_Y^x \geq 0)$ by two to one; $L_Y^*(K_Y^x = 0)$ beats $L_Y^*\left(K_Y^y > 0\right)$ by two to one; and $L_Y^*\left(K_Y^y > 0\right)$ beats $\underline{L_Y}$ by two to one. Consequently, there is no immigration proposal that cannot be defeated by some other proposal and majority voting leads to cycling. Hence, we encounter a case of the Condorcet Paradox. One also can see that the ideal employment level of the median voter does not represent a majority-voting equilibrium. The median voter's ideal employment level, $L_Y^*(K_Y^x \geq 0)$, would be defeated by the proposal to keep employment unchanged at $\underline{L_Y}$. Figure 2 also shows that polls designed to gauge the sentiment of natives on immigration can be greatly misleading. If asked about immigration that leads to employment $\underline{L_Y} \leq L_Y \leq L_E$, the majority response would be to allow no immigration and settle at employment level of $\underline{L_Y}$. If, on the other hand, the three natives are asked about a much larger immigration quota that leads to employment $L_E \leq L_Y$, the majority would favor sizeable immigration that leads to employment $L_Y^*(K_Y^x \geq 0)$.

Figure 2 portrays a specific situation in which congestion effects are added to the preference relations of Figure 1. As drawn, the unskilled native with capital ownership in his industry of employment retains the multi-peaked immigration preferences she already had

[20] For multi-dimensional issues, a majority-voting equilibrium exists only under extremely restrictive conditions on individual preferences. McKelvey (1976) proves that, in general, majority voting on multi-dimensional issues leads to cycling; any proposal can be defeated by some other proposal

without congestion effects. This, however, is not necessarily the case, as we are going to show next. It is possible that a native's immigration preferences are multi-peaked with congestion effects even though they are single-peaked without them; and it is possible that a native's immigration preferences with congestion effects are single-peaked even though they are multi-peaked without them. Critical for these statements are three observations: First, the employment level at which utility from unskilled labor employment reaches a minimum, $\tilde{L}_Y^y$, falls with an unskilled native's capital ownership, as was mentioned earlier. Second, an individual's *immigration* preferences are her *employment* preferences beyond pre-immigration employment; that is, they are the employment preferences for$L_Y \geq \underline{L}_Y$. Third, it matters whether $L_Y^1 > \underline{L}_Y$ or $L_Y^1 \leq \underline{L}_Y$, where $L_Y^1 = L^1 - L_X$ is the level of employment in industry *Y* at which congestion sets in, given the values of L_X, which denotes employment in industry *X, ,* and of L^1, which indicates the population size at which congestion becomes costly.

Figure 3: Insert here
Immigration Preferences:
Single-Peaked without and Multi-Peaked with Congestion Costs

First, consider the possibility that a native's immigration preferences are single-peaked without congestion costs, but multi-peaked with them. Figure 3 traces out the relationship between utility and employment for an unskilled native who is already relatively capital-rich at the pre-immigration employment level; it is drawn as a dashed line without congestion costs, based on (13), and as a solid line with congestion costs, based on (15). We assume that $L_Y^1 < \tilde{L}_Y^y < \underline{L}_Y$, meaning that congestion costs set in at an employment level that is lower than where it yields minimum utility at point *e* which, in turn, is lower than the pre-immigration employment level. Accordingly, immigration preferences without congestion costs, which are restricted to the dashed v^y line-segment $L_Y \geq \underline{L}_Y$, are single-peaked, with the peak at *c.* With congestion costs, the influence of $dg(L)/dI_Y < 0$ in (15) moves the minimum utility employment level from point *e*, short of pre-immigration employment, to point *E*, which is beyond the pre-immigration employment level. There are now two utility peaks, one at point *B*

where $L_Y = \underline{L}_Y$ and the other at point *C*, where $L_Y = L_Y^*$. Hence, adding congestion costs results in multi-peaked *immigration preferences*.

Figure 4: Insert here
Immigration Preferences:
Multi-Peaked without and Single-Peaked with Congestion Costs

Second, we illustrate the possibility that a native's multi-peaked immigration preferences become single-peaked as congestion costs are accounted for. This is shown in Figure 4 for an unskilled native who is relatively capital-poor at the pre-immigration employment level. We now assume that $L_Y^1 < \underline{L}_Y < \tilde{L}_Y^y$, meaning that all immigration adds to congestion costs, but that employment at which the individual's utility reaches a minimum without congestion costs at point *e* occurs at some positive level of immigration. In fact, as drawn, it occurs when immigration is relatively high. The impact of adding congestion costs is now already so strong at $L_Y \geq \tilde{L}_Y^y$ that it overpowers the positive income-plus-price effects such that $\frac{dU^y}{dI_Y}$ becomes negative for all immigration levels. Hence, with congestion costs, the unskilled native's immigration preferences are single-peaked, indicated by point *B*, at the pre-immigration employment level, $\underline{L}_Y$, whereas they are multi-peaked at *b* and *c* without congestion costs.

The above illustrations of the impact of congestion costs on unskilled capital-owning natives' immigration preferences were presented in support of:

Proposition 3: *Accounting for congestion costs may change the immigration preferences of some natives from single-peaked to multi-peaked and of other natives from multi-peaked to single-peaked. However, there is no systematic tendency for congestion costs to restore single-peakedness of immigration preferences.*

Finally, it should be noted that single-peakedness of preferences is a sufficient condition for aggregating transitive individual into transitive social preferences. And for some applications, such as in the political choice of tariff protection, individual preferences for tariff

rates are indeed single-peaked (Mayer, 1984). However, in regard to immigration of unskilled labor, this desirable property is at risk as soon as we allow natives who compete with immigrants to own some capital in their industry of employment. Loosely speaking, when immigration makes a native capital-owning worker feel more like a capitalist, then her preferences become multi-peaked. The existence of multiple peaks is, however, not necessarily an impediment to the formation of transitive social preferences through majority voting. For example, if a majority of voters is unskilled and they don't own any capital in their industry of employment, then their preferences are also the social preferences chosen through majority voting even if some other voters, who are in the minority, have multi-peaked preferences.

6. The Welfare Effects of Skilled Labor Immigration

The problems of aggregating individual into social preferences are the same with respect to skilled labor immigration as they are with respect to unskilled labor immigration. In the preceding sections, the ownership of capital by unskilled natives in their industry of employment made their preferences on unskilled labor immigration multi-peaked. In the current section of skilled labor immigration, the culprit is the ownership of capital by skilled natives in their industry of employment. We show this again by first examining the effects of immigration on skilled and unskilled natives' incomes, followed by evaluating the corresponding welfare effects from the consumption of private goods. Adding congestion costs has the same implications as discussed in section 5 for unskilled labor immigration.

The *impact of skilled labor immigration on the income of a skilled native*, m^x, is derived by differentiating (3) with respect to I_X:

$$\frac{dm^x}{dI_X} = \left[(m_Y^x)\left(\frac{dP}{PdI_X}\right) + (K_X^x - \frac{K_X}{L_X})X_{KL}\right] \tag{16}$$

where $m_Y^x = r_Y K_Y^x$ is income earned by skilled native *x* from capital ownership in industry *Y* and where $\frac{dP}{dI_X}$ is positive, as stated in (7). Income of skilled natives with no capital ownership in either industry, $K_X^x = K_Y^x = 0$, always declines since since $X_{LL} = -\frac{K_X}{L_X}X_{KL}$is negative. This

negative effect is mitigated and possibly reversed for skilled natives with capital ownership. If the skilled native owns capital in her industry of employment and she is *relatively capital-rich*, such that $K_X^x > \frac{K_X}{L_X}$, then skilled labor immigration always raises the skilled native's income. If the skilled worker owns capital in the service industry as well, $K_Y^x > 0$, there is an additional positive effect on income, as immigration of skilled labor raises the price of the non-traded service and thereby the return on capital in the service industry, $r_Y = PY_K$.

To evaluate the *effect of skilled laborimmigration on a skilled native's utility* when no congestion is present, we again differentiate the indirect utility function of native *x*, as stated in (9), employ Roy's identity, and substitute (16) to obtain:

$$\frac{dv^x}{dI_X} = \frac{\partial v^x}{\partial m^x}\left[(m_Y^x - e_Y^x)\left(\frac{dP}{PdI_X}\right) + (K_X^x - \frac{K_X}{L_X})X_{KL}\right] \qquad (17)$$

where $e_Y^x = \gamma(m_X^x + m_Y^x)$ is expenditure by skilled native x on the non-traded service and $m_X^x = (w_x + r_x K_x^x)$ and $m_Y^x = r_y K_y^x$ are income of native *x* from industries *X* and *Y*, respectively. The term $(m_Y^x - e_Y^x)$ expresses the difference between her income from service industry *Y* and her expenditure on service *Y.* As mentioned, this expression must be negative if, as usual, the skilled native's income share in her industry of employment exceeds her income share in the other industry. Given this "usual" case of $(m_Y^x - e_Y^x) < 0$, immigration of skilled always reduces a skilled native's utility as long as $K_X^x < \frac{K_X}{L_X}$. A necessary condition for gaining from immigration is that the skilled native is relatively capital-rich, i.e. $K_X^x > \frac{K_X}{L_X}$.

A comparison of (17) with (13) reveals that the immigration welfare effects are essentially the same for unskilled and skilled natives when they possess the skills of the immigrants. However, the likelihood of skilled natives gaining from the inflow of skilled labor is much greater than of unskilled natives gaining from unskilled labor immigration. Skilled natives earn, and presumably have earned in the past, higher incomes than unskilled natives. Consequently, skilled natives are far more likely to be owners of capital than unskilled natives. Being relatively capital-rich in one's industry of employment is a necessary condition for gaining

from same-skill immigration. It is far more likely that higher-wage skilled natives than lower-wage unskilled natives satisfy this condition.

Finally, we consider the *impact of skilled labor immigration on income and utility of unskilled natives*. Using (4) and (9), we obtain:

$$\frac{dm^y}{dI_X} = \left[\left(m_Y^y\right)\left(\frac{dP}{PdI_X}\right) + K_X^y X_{KL}\right] \tag{18}$$

$$\frac{dv^y}{dI_X} = \frac{\partial v^y}{\partial m^y}\left[\left(m_Y^y - e_Y^y\right)\left(\frac{dP}{PdI_X}\right) + K_X^y X_{KL}\right]. \tag{19}$$

Recalling that $\frac{dP}{dI_X}$ is always positive and $\left(m_Y^y - e_Y^y\right)$ is positive under "usual" circumstances, immigration of skilled labor raises income and utility of all unskilled natives.

To summarize the information contained in (17) and (19), we state:

Proposition 4: *In the absence of congestion costs, relatively capital-poor skilled natives always lose from the immigration of skilled labor; relatively capital-rich skilled natives, however, might gain. Unskilled natives always gain from the immigration of skilled labor.*

As was the case for unskilled natives with capital-ownership in their industry of employment, the *immigration* preferences of skilled natives with capital ownership in their industry of employment might be multi-peaked. The addition of congestion costs might change the immigration preferences for some skilled natives from single-peaked to multi-peaked and for others from multi-peaked to single-peaked, but it will not systematically restore single-peakedness of preferences.

7. Conclusions

Much of the literature on policy choice through majority voting has focused on multi-dimensionality of issues as the main reason for the emergence of multi-peaked preferences on the part of voters. For one-dimensional issues, on the other hand, multi-peaked preferences are viewed to be the exception. Mueller (2003, p.87), for example, states that "if all issues were unidimensional, multipeaked preferences …. might be sufficiently unlikely so that cycling would not be much of a problem." And Mas-Colell, Whinston, and Green (1995, p. 804) explain that "single-peakedness follows from the strict quasiconcavity of utility functions, a restriction quite often satisfied in economics."

This paper demonstrates that immigration preferences, even if restricted to a one-dimensional issue, such as immigration of just unskilled labor or of just skilled labor, are inevitably multi-peaked for individuals who own capital in the industry in which they work. Although the underlying function which relates an individual's utility to the consumption of goods and services has all the usual desirable properties, the derived function which relates an individual's utility to immigration, may not retain these desirable properties. The assumption that individuals are not just workers but also own capital is quite realistic, especially for countries in which company pensions and individual retirement accounts are common.

The distinguishing features of this paper's immigration model are three. First, individuals may earn income from both labor and capital, in particular in the industry in which they work. Second, the prices of goods and services individuals have to pay as consumers change with immigration. When labor in the service industry is unskilled, the service price rises with the immigration of skilled labor and falls with the immigration of unskilled labor. Third, there are congestion effects when the population becomes too large. Their main impact is that there are limits to gaining from immigration for all natives, including the ones who always benefit from lower service prices and higher incomes.

Owning labor and capital in one's industry of employment is the reason multi-peaked immigration preferences emerge. When labor employment is low, enlarging an industry's labor employment through immigration first lowers a capital-owning worker's utility before raising it.

Immigration alters the critical relationship between an individual's capital-labor ownership and the industry's capital-labor employment ratio. It transforms a relatively capital-poor into a relatively capital-rich worker, making her feel more like a capital owner than a worker. The addition of price effects changes the rate of immigration at which a worker becomes relatively capital-rich. It might reduce the incidence of multi-peakedness for some individuals within the range of immigration proposals under discussion, but it will not eliminate multi-peakedness altogether. Congestion effects, in turn, can also reduce the incidence of multi-peaked preferences as the negative impact of congestion costs might overpower the benefits from rising income due to increased industry employment. At the same time, congestion effects might transform an individual's immigration preferences from single- to multi-peaked.

Finally, it must be emphasized that there are many factor owners who always have single-peaked immigration preferences. They include all the workers who have the same skills as the immigrants and, like the immigrants, don't own any capital. They also include all workers whose skills differ from those of the immigrants, irrespective of their ownership of capital. Although all members of these two groups have single-peaked preferences, their respectives peaks occur at very different immigration levels. Workers with the same skills as immigrants and no capital are best off if there is no immigration; workers with different skills from the immigrants favor very high immigration. Hence, the third group of workers who share skills with immigrants and own capital in their industry of employment might be pivotal in deciding the country's immigration policy. It is this third group's individuals who have the troubling multi-peaked preferences.

Appendix

1. **Signing ($m_y^i - e_y^i$):**

Define $m_X^i = w_X L_X^i + r_X K_X^i$ and $m_Y^i = w_Y L_Y^i + r_Y K_Y^i$ as income received by individual *i = x,y* from work and capital supplied to industries *X* and *Y*, respectively, where $L_X^x = L_Y^y = 1$ and $L_X^y = L_Y^x = 0$. We also define total income generated by industries *X* and *Y* as $M_X = X$ and $M_Y = PY$, respectively. Furthermore, $e_Y^i = \gamma\left(m_X^i + m_Y^i\right)$ is expenditure by individual *i* on service *Y*, where $\gamma = PY/(X + PY)$ is the propensity to spend on the non-traded service *Y*. For identical homothetic utility functions, γ is the same for all individuals. Given these definitions, it follows that:

$$m_y^y > e_y^y \quad \text{if} \quad \frac{m_Y^y}{M_Y} > \frac{m_X^y}{M_X} \tag{A.1}$$

$$m_y^x < e_y^x \quad \text{if} \quad \frac{m_Y^x}{M_Y} < \frac{m_X^x}{M_X}. \tag{A.2}$$

where $\frac{m_j^i}{M_j}$ measures the income share of individual *i* out of all income generated by industry *j = X,Y*. It usually is the case that $\frac{m_Y^y}{M_Y} > \frac{m_X^y}{M_X}$ and $\frac{m_Y^x}{M_Y} < \frac{m_X^x}{M_X}$.

2. **The Relationship between $\tilde{L}_Y^y$ and K_Y^y:**

For an unskilled native who owns capital $\widetilde{K}_Y^y > 0$ in his industry of employment, but no capital in the other industry, it follows from (13) that utility from unskilled labor employment is at a minimum at $\tilde{L}_Y^y$, where

$$\left[\left(\tilde{m}_Y^y - \tilde{e}_Y^y\right)\left(\frac{dP}{PdI_Y}\right) + \left(\widetilde{K}_Y^y - \frac{K_Y}{L_Y}\right)(PY_{KL})\right] = 0, \tag{A.3}$$

where $\tilde{m}_Y^y = (w_Y + r_Y\widetilde{K}_Y^y)$ and $\tilde{e}_Y^y = \gamma(w_Y + r_Y\widetilde{K}_Y^y)$. Rewriting (A.3) as

$$\widetilde{K}_Y^y\left[(1-\gamma)r_Y\left(\frac{dP}{PdI_Y}\right) + PY_{KL}\right] + \left[(1-\gamma)w_Y\left(\frac{dP}{PdI_Y}\right) - \left(\frac{K_Y}{L_Y}\right)(PY_{KL})\right] = 0, \tag{A.4}$$

one can see that the terms inside the second bracket of (A.4) are always negative which implies that the terms inside the first bracket of (A.4) must be positive. Furthermore,

at $\tilde{L}_Y^y$, the terms inside both first and second brackets are the same for all unskilled natives with different capital ownership $K_Y^y \neq \tilde{K}_Y^y$. Consequently, at $\tilde{L}_Y^y$ the expression $\left[\left(m_Y^y - e_Y^y\right)\left(\frac{dP}{PdI_Y}\right) + \left(K_Y^y - \frac{K_Y}{L_Y}\right)(PY_{KL})\right]$ must be positive for unskilled natives with $K_Y^y > \tilde{K}_Y^y$ and negative if $K_Y^y < \tilde{K}_Y^y$. Unskilled natives who own more capital than $\tilde{K}_Y^y$ already gain from adding labor to employment level $\tilde{L}_Y^y$ whereas unskilled natives who own less capital than $\tilde{K}_Y^y$ still lose from adding labor to employment level $\tilde{L}_Y^y$. The utility-minimizing employment level for unskilled native, L_Y^y, is inversely related to her capital ownership K_Y^y.

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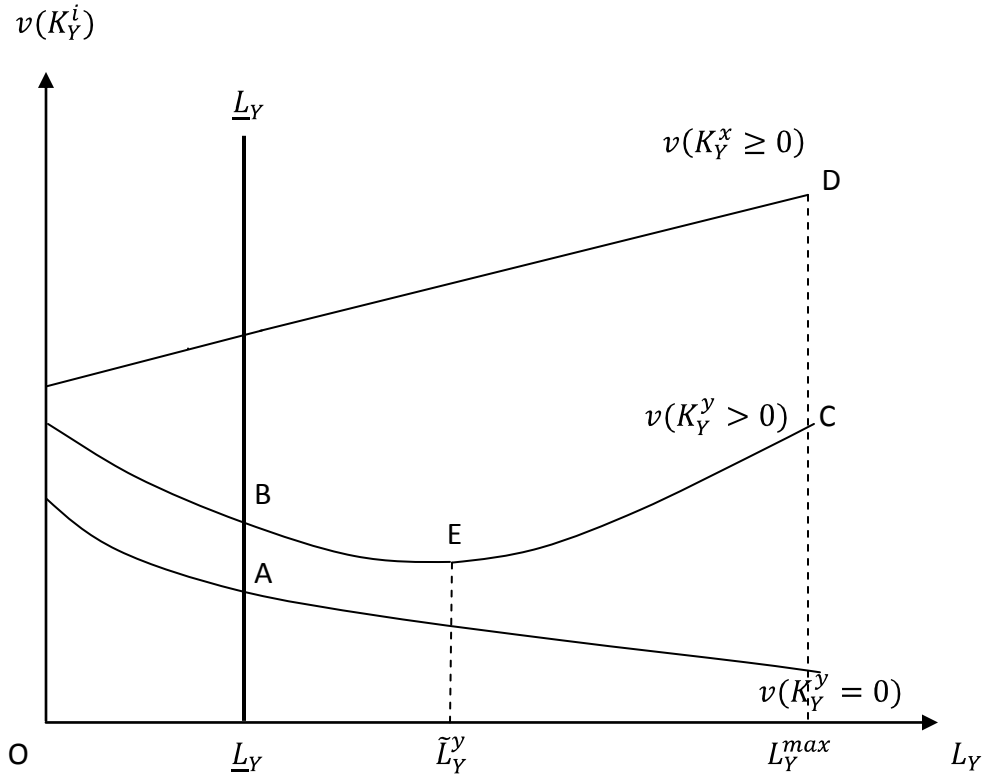

Figure 1

Voter Preferences for Unskilled Labor Immigration with no Congestion Costs

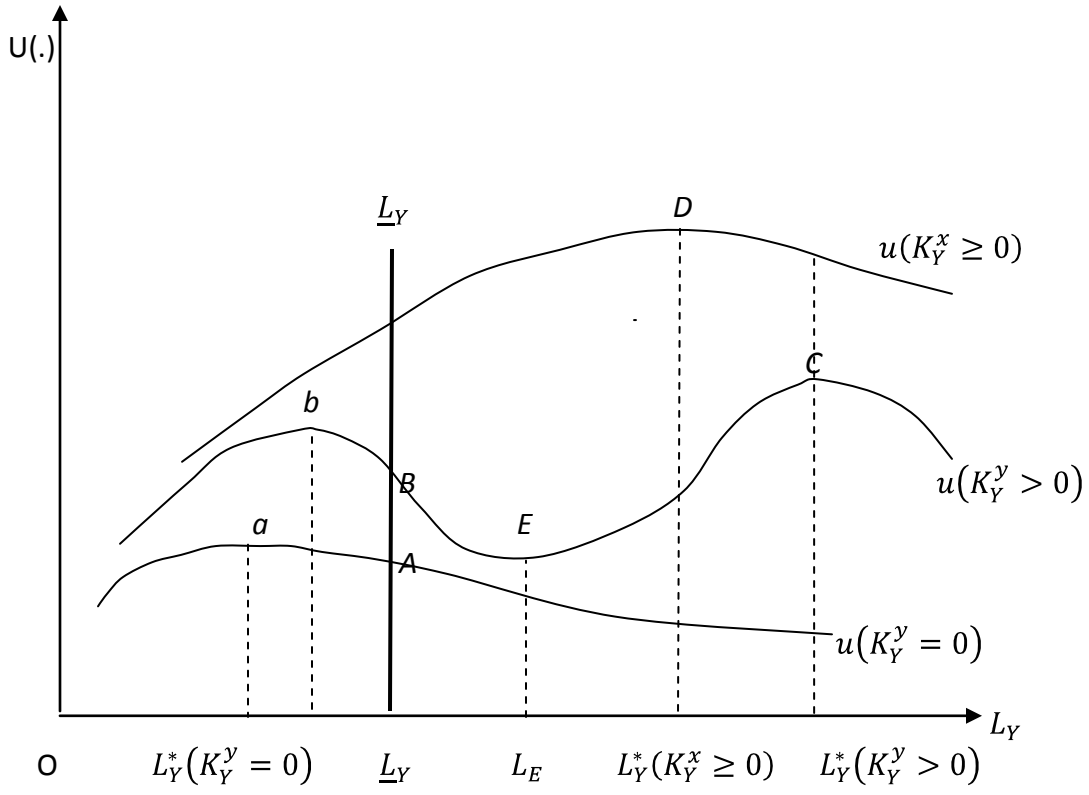

Figure 2

Voter Preferences for Unskilled Labor Immigration with Congestion Effects

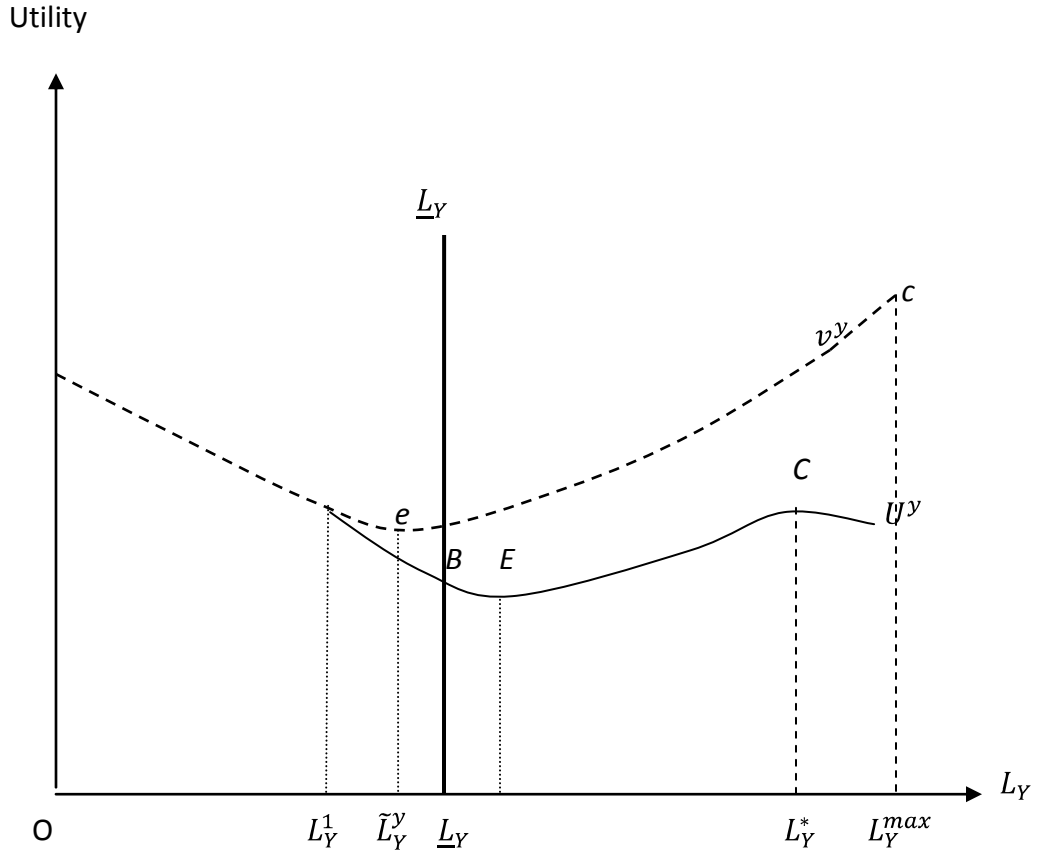

Figure 3
Immigration Preferences:
Single-Peaked without and Multi-Peaked with Congestion Costs

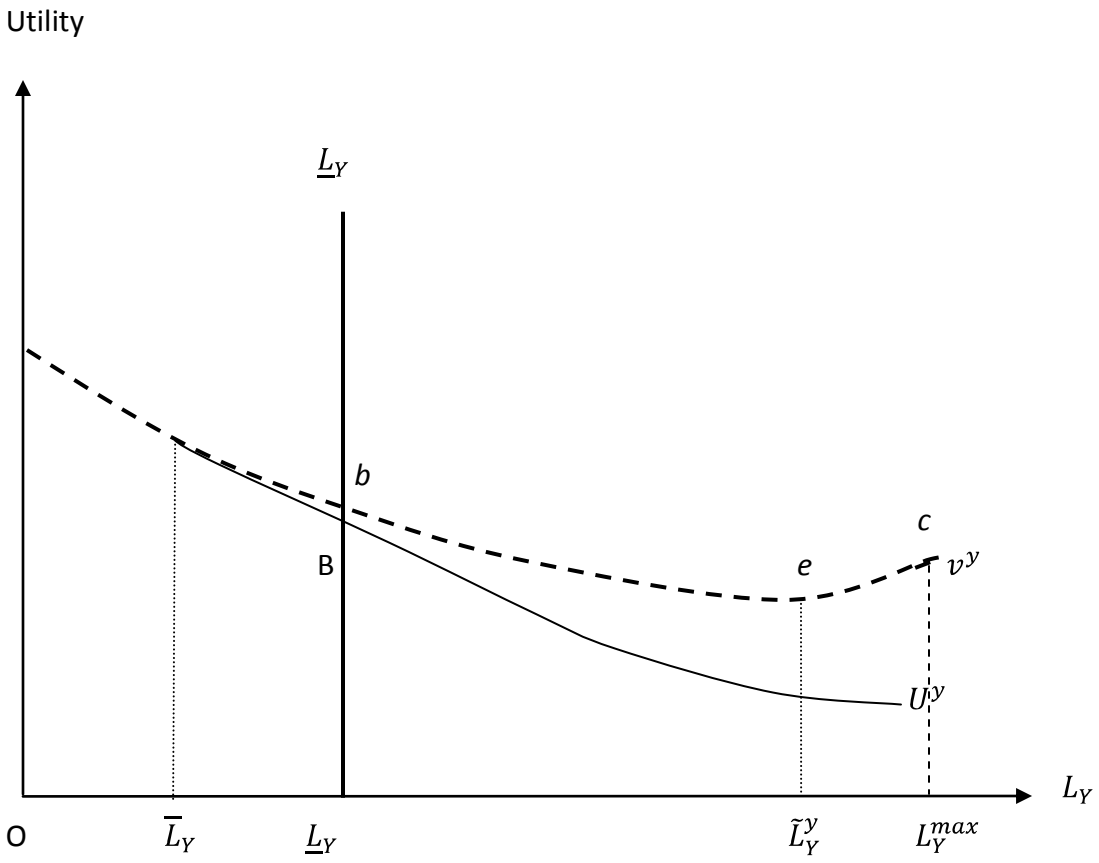

Figure 4
Immigration Preferences:
Multi-Peaked without and Single-Peaked with Congestion Costs