

THE ECONOMICS OF THE "GUEST WORKER" PROBLEM: A NEO HECKSCHER-OHLIN APPROACH

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Abstract

This paper is concerned with the phenomenon of guest workers in Western Europe. Recently, guest workers have come to play an important role in Western European labor markets, with such Northern countries as Switzerland, West Germany and The Netherlands importing workers from such Southern countries as Portugal, Turkey and the *Mezzogiorno* region of Italy. As the name implies, guest workers represent a situation where the foreign worker is expected to reside in the host country for a relatively brief time period, and remit his earnings minus a small maintenance allowance to the country of his permanent residence. The phenomenon under investigation therefore is one of short-run labor migration.

I. The dominant approach to the theory of labor migration has been the human capital approach.¹ There is a serious question, however, as to whether human capital models are well-suited to the analysis of short-run labor migration. Structurally, human capital models are concerned with exchange between present and future time periods for a given economic actor; but while their emphasis on the time dimension of a phenomenon makes them particularly valuable in the *a priori* analysis of long-run migrational decisions, they would seem less well-adapted to an investigation of short-run human migration, which consists in an exchange between different economic actors (countries) at a given moment in time. It is contended in this paper that an orthodox exchange model, such as that of Heckscher-Ohlin, is better suited to the analysis of guest workers.

To analyze short-run human migration, the Heckscher-Ohlin model must be modified to allow for factor mobility. In theory, two cases must be distinguished when there is factor movement; that where the factor-owners

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¹ See Bowman-Myers (1971), Grubel and Scott (1966), Johnson (1967), and Sjaastad (1962).

move with their factor service, and that where the factor-owners export their factor service but remain at home. The former assumption is better suited to the analysis of permanent migration; the latter to short-run human migration. Geographically stationary factor-owners of internationally mobile labor can be justified either by assuming that during the period in which the worker is abroad, the right to his earnings reside in his family, or that the "independent" worker produces in the foreign and consumes in the home country, with labor remittances providing the connecting link between these two activities.¹

The prototype of the analysis of factor mobility in the Heckscher-Ohlin model is that of Robert Mundell, who demonstrated the potential welfare equivalence of two patterns of inter-country exchange—that of commodities for commodities, and that of commodities for capital services—in a two-factor model that assumed only capital to be mobile.² The assumption that only one factor in the model is internationally mobile removes an important indeterminacy in the Heckscher-Ohlin model—that of which factor will move when relative (and absolute) factor prices differ between countries. A second indeterminacy in the model is whether under free trade and labor mobility the gains from trade will be realized via factor movement or commodity trade. Ricardo, in his classic analysis, focused on commodity trade by assuming factor immobility caused by "... the fancied or real insecurity of capital, when not under the immediate control of its owner, together with the natural disinclination which every man has to quit the country of his birth and connections, and entrust himself, with all his habits fixed, to a strange government and new laws ...".³ Mundell focused on factor mobility, on the other hand, by assuming an autarkic tariff on goods imports, though an autarkic export or production tax also would have been sufficient for his purpose. The present analysis introduces an alternative vehicle for focusing on factor mobility—that one of the goods produced in the two countries is a non-traded good.

II. The model employed in the present analysis assumes there are two goods, one a capital-intensive tradable and the other a labor-intensive non-traded

¹ Failure to recognize the possibility of separating the owners of labour from labor services has led at least one writer into the error that Mundell's analysis, discussed below, does not generalize past capital. James Rakowski writes, "In his discussion Professor Olivera seems to assume that a proposition of Mundell that movements of the *one* factor *labour* are a substitute for trade ... As a matter of fact, however, it appears that Mundell's result is not applicable without modification to labour mobility. The reason for the complication lies in the fact that displacement of trade by capital mobility implies some movement of goods between countries as returns to the stationary capitalists. On the other hand, displacement of trade by labour mobility implies no movement of goods between countries, *since the owners of labour services are assumed to move with their services*", James Rakowski, "Is Labour Mobility A Substitute For Trade", *Economic Journal*, LXXIX (March 1969, p. 174, last emphasis mine). Also, as early as 1933, Bertil Ohlin wrote about Belgian workers who crossed over to Northern France to work and returned to Southern Belgium to consume.

² Mundell (1957).

³ David Ricardo, *The Principles of Political Economy and Taxation* (Homewood, Illinois: Richard D. Irwin, 1963), p. 72.

home good. The two countries, which produce both these goods, are assumed to be identical in every respect except relative factor endowment. The home country is assumed to have a greater relative endowment of labor, and the foreign country capital, so that in closed economy equilibrium the relative price of tradables is higher in the home country by comparison with the foreign country. Perfect competition and full employment are assumed to prevail in both countries.

The possible equilibrium conditions of the economy under conditions of factor mobility are illustrated in Fig. 1. Point *E* represents the closed economy equilibrium point on the home transformation curve *HH* and community indifference curve U_1^H . Assume initially that both goods are tradable, and that the slope of *TT* represents the international terms of trade. Under conditions of factor immobility, the production point shifts to *P* and the consumption point to *C*—the trade triangle being *PJC*. The gain in potential welfare from commodity trade thus is equal to $(U_2^H - U_1^H)$.

The same gain in potential welfare can be realized if from the initial closed economy equilibrium labor services are exported instead of *Y* the labor-intensive good. The Rybczynski Theorem is useful in demonstrating this point. According to the Rybczynski Theorem, the effect on production of increasing the endowment of a factor of production (with the other factor fixed) at constant prices is to increase the output of the commodity that uses the augmenting factor intensively in its production, and decrease the output of the other commodity.¹ This can be represented in commodity space by a line, called the Rybczynski line, that shows the locus of outputs as the endowment of one factor varies at constant prices. The Rybczynski line *RR* in Fig. 1 shows the locus of outputs in the home country, measured at the terms of trade given by the slope of *TT*, as labor services are exported. Since good *X* is assumed to be capital-intensive and good *Y* labor-intensive, a decrease in the supply of labor services is reflected on the Rybczynski line by a decrease in the output of *Y* and an increase in the output of *X*. Hence, the Rybczynski line *RR* is depicted as a negatively sloped line that lies inside the transformation curve for exports of labor services (below point *P*) and outside the transformation curve for imports of labor services (above point *P*).

Assume that factor-owners continue to reside at home as labor services are exported. The Rybczynski line *RR* is drawn through point *P* cutting the base of the right triangle at point *P'*. Point *P'* therefore represents a possible equivalent equilibrium position for the economy, since labor remittance in-payments of *P'C* when added to the output coordinates at point *P'* permit consumption at point *C*. If all of labor's income earned abroad is repatriated, this result must follow, since *P'C* represents labor's income earned abroad

¹ For a complete discussion of the Rybczynski Theorem as well as the Heckscher-Ohlin model, see M. B. Krauss and H. G. Johnson, *General Equilibrium Analysis* (London: George Allen and Unwin Ltd., 1974).

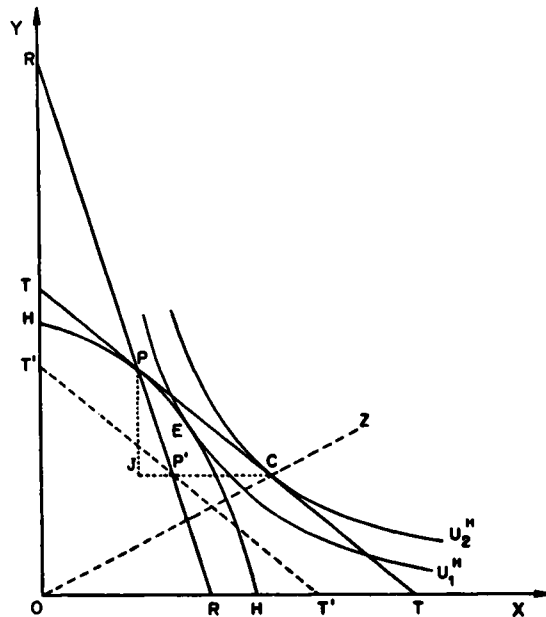


Fig. 1

measured in terms of good X . That this must be the case follows from the fact that $P'C$ equals the decrease in domestic national income due to the export of labor services (the decrease in labor multiplied by the marginal product of labor in the home country). Now the decrease in labor in the home country must be equal to the increase in labor in the foreign country, and the domestic marginal product of labor is equal to the marginal product of labor in the foreign country, because of the assumption of identical technologies in the home and foreign country. Hence, the decrease in domestic national income due to the export of labor services must be equal to labor's income earned abroad. The home country therefore exports labor services and imports good X to achieve the gain in potential welfare ($U_2^H - U_1^H$).¹

Point P' , however, is not the only possible equivalent equilibrium production point under the aforementioned conditions. Indeed, so long as the factor-owners are assumed to continue to reside at home, all points on RR (below P) are potential equilibrium production points, in the sense that they are reconcilable with the consumption point C by the labor remittance in-payments implied by the export of labor services to achieve the respective production points (the amount of labor service exports to equalize factor prices in the

¹ Labor remittances to the home country can be viewed either as unrequited transfers, and thus analyzable by the transfer problem mechanism, or as part of an exchange between countries (labor services for goods). The former is appropriate to long-run human migration; the latter to short-run human migration.

model is *a priori* indeterminate). But only a range of these points are relevant, depending on the assumption made to justify the absence of goods trade (goods for goods). With an autarktic export tax on good *Y*, for example, all points on *PR* southeast of *P'* are relevant, in that reconciliation of production points on *PP'* and the consumption point *C* require the export of good *Y*.¹

The case where one of the goods is a non-tradable also can be illustrated in Fig. 1. Assume *Y* to be the non-tradable labor-intensive good, and *X* to be tradable and capital-intensive. At international prices *TT*, the home country demonstrates a demand for imports in terms of non-tradables equal to *JC*—an unrealizable position without factor mobility. If labor services are assumed to be exported (capital services also can be imported but this is excluded by assumption), equilibrium occurs at point *P'* if the factor-owners do not move with factor services. Labor remittance in-payments must be in tradables in this case, and are equal to *P'C*—the decrease in national income due to the export of labor services measured at constant prices in terms of good *X*. Consumption is at point *C*, and the potential welfare gain ($U_2^H - U_1^H$) the same as that when good *Y* is a tradable. Labor mobility has fully compensated for the non-traded good.

III. Guest workers represent a case of short-run human migration that involves an exchange of labor services for goods between countries that benefits *both* countries. If as assumed in the present paper, each country has a large non-tradable sector, guest workers move because the non-traded good prevents «goods for goods» trade. Hence, the analysis helps answer the positive question of why there is short-run labor migration. The gains from guest workers, however, do not depend on the assumption of the nontradable good. Guest workers are a substitute for commodity trade between countries, and the reason why the gains from trade are realized via the guest worker route or some other route is not relevant to this normative question. What is relevant is the normative effect that guest workers have on participant countries.

The gains from guest workers are illustrated in Fig. 2 where non-tradables are represented on the vertical and tradables on the horizontal. The transformation functions and commodity indifference maps with respect to both these goods are referred to the origin O_H in the southwest corner of the box for the home country, and O_F in the northeast corner of the box for the foreign one. Points *E* and *E'*, the respective closed economy equilibrium points for the home and foreign countries, indicate that initially the relative price of tradables is higher in the home country by comparison with the foreign country. Hence, at the equilibrium international price ratio given by the slope of *TT*, the home country desires to export *PJ* nontradables in exchange for

¹ For a discussion of the issue of commodity trade and factor mobility when factor-owners are assumed to move with their factor services, see Krauss (1974).

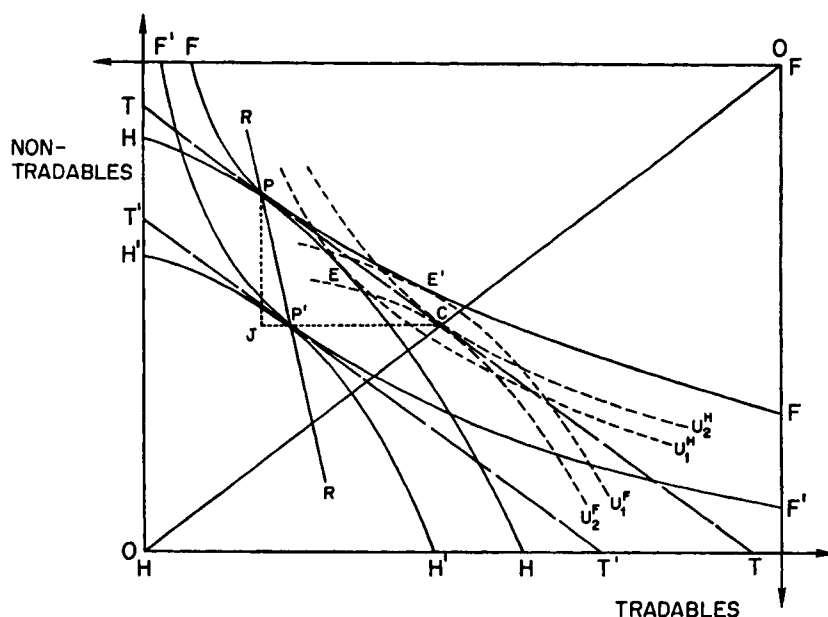


Fig. 2

JC tradables, and *vice-versa* for the foreign country, in order to reach the consumption point *C* from the production point *P* (identical homothetic tastes between countries is indicated by point *C* lying on the diagonal of the box). Had the non-tradable in fact been tradable, the potential welfare gain would be $(U_2^H - U_1^H)$ to the home country and $(U_2^F - U_1^F)$ to the foreign country—a Pareto optimal position from a comopolitan or world welfare point of view, as indicated by the tangencies of U_2^H and U_2^F , and HH and FF , both with respect to themselves and to one to the other.

The fact that one of the goods in the model is a non-tradable makes the aforementioned equilibrium non-viable; but the identical consumption point *C*, and identical increases in potential welfare in both countries still are possible, since factor mobility can substitute perfectly for the asymmetry in the technical nature of the two goods in the model. *RR* represents the Rybczynski line in *both* countries but referred to different origins (the slope is the same in both countries since technologies are the same). Labor services are exported from the home country and imported by the foreign one until the production point *P'* on *RR* is reached. The new home country transformation curve *H'H'* is tangent to the terms of trade line *T'T'* at *P'*, as is *F'F'* the new transformation curve in the foreign country. By comparison with free trade factor-immobility (both goods being tradable), gross domestic product, measured at constant prices in terms of either tradables or non-tradables, falls in the home country and rises in the foreign country by the same amount *TT'*. But national income, similarly measured, remains the same in both countries, since

TT' represents labor remittance in-payments to families in the home country from guest workers in the foreign one, on the assumption that the maintenance costs of guest workers are abstracted from.¹ Thus by producing at P' and consuming at C , the gains from trade are realized by both countries by exchanging labor services for tradable goods; and this equilibrium also is Pareto optimal from a cosmopolitan point of view, since the slope of the common tangency of $H'H'$ and $F'F'$ at P' is equal to that of the common tangency of U_1^H and U_2^F at C .

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¹ Alternatively, TT' can represent labor remittances carried across the border by the guest worker who produces in the foreign country but consumes in the home country.