

Arndt, Sven

Working Paper

Regional Enterprise in Preference Areas

Claremont Colleges Working Papers in Economics, No. 2000-50

Provided in Cooperation with:

Department of Economics, Claremont McKenna College

Suggested Citation: Arndt, Sven (2000) : Regional Enterprise in Preference Areas, Claremont Colleges Working Papers in Economics, No. 2000-50, Claremont McKenna College, Department of Economics, Claremont, CA

This Version is available at:

<https://hdl.handle.net/10419/94627>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



REGIONAL ENTERPRISE IN PREFERENCE AREAS

Sven W. Arndt

The Lowe Institute of Political Economy

Claremont McKenna College

1. Introduction

The initial phases of European integration took place among countries whose economies were quite similar in terms of structure and industrial development. Trade among similar countries tends to have a strong intra-industry element, as different varieties of the same product flow in all directions. The main focus of trade liberalization was to facilitate the flow of goods rather than to improve conditions for cross-border production and the flow of components.

Within the region, however, significant segmentation of national markets persisted. Over the years, additional policy initiatives succeeded in peeling back further layers of the protectionist onion, but it was not until the “Single Market” program of the early nineties that market segmentation due to differences in national standards, laws, and regulations was attacked. That program has made it significantly easier for component production to be moved around the region. Regulatory harmonization has reduced the policy obstacles to cross-border production, while technological innovations in transportation and communications have cut the cost of coordinating such activities. Together, these developments are encouraging the geographical dispersion of production at the component level. While this kind of trade is also intra-industry in nature, it involves trade in components and thus constitutes intra-product trade.

In a region of entirely similar countries, the particulars of such dispersion would contain a significant element of chance. But similar does not mean identical. The differences - in terms

of endowments, historical experience, specialization in product variety, technological advantage, and so on - serve to create significant elements of comparative advantage among participating countries. When countries differ in terms of factor endowments, for example, considerations associated with the standard Heckscher-Ohlin trade model become relevant.

As the European Union has expanded, dissimilarities among economies have become more important. This was true when Greece, Spain and Portugal entered the Union and will continue to be the case in the proposed eastern enlargement. The prospective entrants have relatively abundant supplies of industrial and other “semi-skilled” workers, a fact which has raised fears among similar workers in member countries that enlargement could endanger their jobs and/or their living standards.

Heinz Handler has not only had the opportunity to study these issues from the perspective of the researcher, but he has dealt with them as a policy maker. This paper focuses on the possible effects of eastern enlargement not only on trade between the entrants and current members, but on the location of production in the enlarged union. The key notion is that of cross-border production sharing, also known as cross-border fragmentation¹ of production. Section 2 evaluates the effect on competitiveness in end-product markets of the introduction of component specialization among the region’s member countries. Section 3 examines the implications of investment liberalization in the context of enlargement.

2. Fragmentation in an Integrated Market

Trade among the advanced countries of Europe has always involved a high degree of intra-industry trade, but that trade tended to be dominated by end-use products. Goods with significant similarities could flow in both directions, because varietal differences mattered, especially in the

case of consumer goods. In recent years, another type of intra-industry trade, this time in components, has enjoyed a rising share in total world trade.² In many industries, components move in one direction, while end-use products move in the other. In still others, components of a given industry move in both directions. As a result, growing numbers of products are becoming “globalized,” that is, made up of components from many countries. In the European Union, the Single Market program has played an important role in bringing about this high degree of market integration.

In addition to trade and other policies, which are needed to facilitate the regional rationalization of production, technological barriers must be eliminated. While outsourcing of parts and components has a long and important history within nations, it has until recently been limited in the international arena by the aforementioned regulatory restrictions and by relatively costly cross-border coordination. Recent innovations in telecommunications and transportation technologies, however, have sharply reduced those costs and are contributing to the rapid expansion of cross-border component procurement and production.

Trade liberalization affecting import-competing industries always raises concerns among workers about their jobs and livelihood. This is particularly true when trade liberalization involves labor-abundant, low-wage countries. When trade liberalization covers end-products, workers are afraid that cheap imports will take away markets for the goods they produce. But labor leaders in the United States and Europe have expressed similar concerns about trade in components, suggesting that foreign sourcing of components by either import-competing or export industries will also destroy jobs and undermine workers’ livelihoods. In the case of U.S.-Mexico trade relations, for example, these concerns are strongly evident with respect to the maquiladora phenomenon. There, parts made in the United States are shipped to Mexico, where

final products are assembled in U.S. affiliates for exportation to the United States.

As noted above, trade in components has been growing in recent years. Innovations in communication and transportation technologies have reduced substantially the cost of cross-border coordination of economic activities and as a result many end-use products contain heavy dosages of imported components. Rather than “Made” in this nation or that, they are multinational in content. When production is dispersed across borders, the share of components in total trade rises. Countries’ exports incorporate imported components, while their imported end products often contain their own exported components. The automobiles America imports from Mexico, for example, were designed in America and contain components made in America; the airliners exported by Boeing and Airbus contain non-trivial amounts of imported components.

When an advanced, capital-rich, high-wage country joins a free trade area with a developing, labor-rich, low-wage country, welfare benefits flow not only from increased competition in regional markets for end products, but from the integration of area-wide production. By reducing the cost of inputs, components trade improves competitiveness in end-products.

In order to illustrate the basic idea, we turn to Figure 1, in which two countries, A and B, trade good X. Initially, high coordination and transport costs, as well as regulatory barriers, prevent equalization of goods prices. The magnitude of these impediments is given by T . The two countries respective domestic demand and supply conditions are given in the left and right panels. In the middle panel, country A’s import demand curve (M_{xa}) and country B’s export supply curve (X_{xb}) are derived from the respective domestic demand and supply curves. Under conditions of costless trade, the intersection of these two curves would generate the single world

price of X. In the presence of transport and other costs and impediments, however, it is the intersection of the cost-inclusive export supply curve, $X_{xb} + T$, with the import demand curve, M_{xa} , which determines the price of X in country A. The supply price of X in country B is then found directly below that intersection point on curve X_{xb} . The price of X in country A is thus P_a , and that in country B is P_b .

Suppose that a combination of regulatory reform and innovations in communications technologies reduces the cost of offshore sourcing and production of components. Suppose further that commodity X consists of several components with varying factor-intensities and that country A takes advantage of this reduction in impediments to procure a component in which it has comparative disadvantage from country B (or from some third country) instead of producing it at home.³

Suppose that offshore procurement of that component reduces the cost of production of X in A by an amount given by the shift of the X-supply curve from S_{xa} to S_{xa}' in Figure 1. This makes X-producers in country A more competitive against their rivals in country B, which is the major point of this example. In the middle panel, the effect of the cost-improvement is to shift country A's import-demand curve to M_{xa}' . Assuming that the extent of trade obstruction remains at level T, the price of X falls to P_a' in country A, bringing unequivocal gains in consumer surplus. Country B is forced to assume more of the burden of the market-segmenting impediments as the price there declines to P_b' .⁴ Furthermore, production rises in country A's X-industry. The overall inefficiency loss declines.

We turn next to the effect on employment in the industry. Suppose that the outsourced component is relatively labor-intensive. Then, clearly the jobs of workers who produced the component before it was replaced by imports are eliminated. On the other hand, total production

of X has risen, suggesting that more workers will be demanded to make the components that are not procured abroad and that more workers will be needed to assemble the expanded quantity of the end product. In the context of the standard Heckscher-Ohlin set-up for a small country, the adjustment to this type of component specialization has been shown to raise employment in the X-sector and to boost wages there.⁴

This result is governed by the structure of the Heckscher-Ohlin model, including the assumptions of full employment and complete internal factor mobility. Under these conditions, cross-border sourcing has effects similar to those of technical progress. At given relative end-product prices, cost-cutting foreign sourcing changes the factor-price ratio in favor of the factor which is used intensively in the industry in question. It also raises employment of both factors and output in that industry. The basic intuition is simply that foreign sourcing reduces industry costs, making the end-product more competitive in world markets and thereby generating incentives to increase output and employment. To the extent that the rise in output in the industry (together with the decline in the second industry's production) lowers the relative price of the industry's product, the resultant change in the terms of trade has an effect on relative factor prices opposite to that of outsourcing itself. Outsourcing by the labor-intensive industry, for example, raises wages relative to capital rentals (or relative to the wages of skilled workers), but to the extent that the expansion of output in that industry lowers end-product price, the effect is to offset the improvement in the wage rate.⁵

Foreign Sourcing in the Export Sector

Figure 1 offers some insights into foreign sourcing by the export industry. Suppose that the exporter of good X, depicted in the right-hand panel of Figure 1, is able to reduce costs by

offshore sourcing of a component in which it suffers comparative disadvantage. The resultant cost reduction is represented by a shift in the supply curve to S_b' . In order to reduce clutter in the figure, the magnitude of the supply shift in country B has been drawn so that it generates price P_b' in country B and thus price P_a' in country A. The difference between the two prices is a measure of the effect of the market-segmenting impediments discussed in the preceding section. Output rises in country B and so does the volume of trade.

At initial prices, the effect of foreign sourcing by country B's export industry, represented by the outward shift of supply, is welfare-improving. However, since good X is country B's export product, the decline in its price represents a worsening of the terms of trade and thus a reduction in welfare as the loss in producer surplus exceeds the gain in consumer surplus. The net welfare effect depends on the relative magnitudes of the two effects. From the point of view of the importing country A, the fall in the price of X is, of course, a welfare gain.

A lesson to be drawn from this analysis is that reforms which reduce the cost of foreign production and procurement are welfare-enhancing in the country in which they take place. Since the shift to foreign sourcing raises output at initial prices, its effect will be to reduce the price of the product if the country in which the output increase occurs is large. Such a price decline will represent a terms-of-trade improvement to the importing country and a terms-of-trade deterioration to the exporting country. The net effect on welfare then depends on the relative magnitudes of the price and sourcing effects.

The smaller countries of the European Union often are price takers in the markets for end products. The foregoing analysis of foreign sourcing by the export industry is helpful in assessing the likely effects of eastern enlargement. If a country like Austria can use cross-border sourcing of components in order to exploit lower wage costs in entrant countries and thereby

reduce the cost of the goods it exports to the European Union, then output in its export industries will expand. National welfare will improve at given prices. If the industries involved are skill- or capital-intensive, then relative factor prices will move against labor.

For their part, the entrant countries can improve the competitiveness of their labor-intensive products in the wider EU market by sourcing the more skill- or capital-intensive components in Austria. Output will rise in these industries. National welfare will increase and the relative factor-price relationship will move in favor of workers.

This suggests that Austria and such entrant countries can gain by coordinating production of a given end-product in such a way as to allow each country to focus on components in which it has comparative advantage, while procuring components with comparative disadvantage in the partner country. This implies that in each country, output levels of disadvantaged components will decline, while outputs of advantaged components will expand. If component production is subject to scale economies, then the opportunity to raise production levels will enable firms on both sides to reap additional scale benefits.

The geographic dispersion of production that results will call for more intense coordination, implying that service links of the sort described by Jones and Kierzkowski (1990, 2000) will have to be established. Which of the two countries provides those links will depend on their factor-intensity. One can imagine an important role for Austria in this realm if coordination is relatively skill-intensive.

The analysis of this section suggests two countries can also gain from foreign sourcing on the part of their import industries. If each country sources the disadvantaged component of its import good in the partner country, industry output will rise at given EU prices for end products. Imports will fall. If Austria resorts to foreign sourcing of the labor-intensive components of its

import-competing product, the factor-price ratio will move in favor of workers.

If both import-competing and export sectors resort to this kind of foreign sourcing, relative factor prices will change less than in each case separately, because the effects will be offsetting. If the foreign sourcing has the effect of conserving labor in both sectors at unchanged relative factor prices, then productive resources will be redistributed to the labor-intensive sector. If, in the entrant country, economy-wide foreign sourcing conserves skilled labor or capital, then productive resources will be redistributed to the skill- or capital-intensive sector. In other words, in the “Austria” of this world, the shift to skill-intensive industries will slow down, while in the “Hungary” of this world the shift to skill-intensive sectors will be accelerated.

3. Regional Integration and Investment Liberalization

Although standard customs union theory still focuses mainly on trade liberalization, most preferential trade arrangements build in at least some liberalization of investment and of rules governing business activities by foreigners. The easing of restraints on business activity can create important incentives for cross-border production sharing. That has been true in the case of NAFTA, and is relevant as well in the proposed eastern enlargement of the EU.

In the debate on NAFTA, the opposition expressed concerns about investment outflows and their possible repercussions for employment and wages. The pessimists saw the issue as a simple zero-sum game in which a flow of foreign direct investment from the U.S. to Mexico would be financed by an equivalent reduction of capital formation in the United States. Such pessimism is excessive, however, because the feared outcome would be unlikely even if all investment activity in Mexico were financed in the United States, and it is especially wide of the mark in Mexico where huge sums have come in from Asia and Europe.⁶ It is also unlikely to be

the outcome in the proposed eastern enlargement of the European Union.

It is to be expected that preferential trade arrangements between developed countries and emerging economies will generate capital outflows. However, such flows are not necessarily detrimental to workers in the advanced country. The outcome depends on the nature of the flows. In this section we examine the effect on employment and wages of offshore production by the import-competing industry, when foreign production is preceded by an outflow of direct investment capital. This is an area in which multinational firms play an important role.

Suppose that capital markets are integrated in both countries, with capital freely mobile between the import-competing sector and the rest of the economy in the source country and between the export sector and the rest of the economy in the host country. (We briefly consider the case of sector-specific capital below.) The interaction between the two sectors of the source country's economy is represented in Figure 2 in terms of the familiar Lerner-Pearce set-up.

The initial equilibrium in the source country is represented by output levels X_0 and Y_0 with the resource endowment at point E. Suppose that capital is exported in order to set up the production facilities for making component x_2 abroad. The outflow of capital and its effects are represented by point E' and output levels X_1 and Y_1 , on the assumption that relative goods prices remain fixed. This is the well-known Rybczynski (1955) result, according to which a decline in factor endowments at unchanged relative commodity prices reduces output in the industry which uses the declining factor intensively. Output of Y falls, that of X rises, and factor prices remain at their original level, w/r , in order to preserve the unique relationship between relative factor-prices and relative commodity prices. Note, that from the point of view of workers in the X-industry, which is the labor-intensive, import-competing industry in this country, the capital outflow leaves the wage-rental ratio unchanged and increases output and employment in the

industry. As before, a rise in output may change prices, in this case lowering the relative price of X.

When the additional capacity comes on-stream, production of the component is abandoned in the advanced country, to be replaced by imports from the new source. Abandonment of the labor-intensive component raises the capital-intensity of production in the advanced country's X-industry at the original wage-rental ratio. At given relative commodity prices, the factor-price ratio now changes in order to accommodate the improvement in cost-effectiveness in the X industry. The wage-rental ratio rises to $(w/r)'$ and the capital/labor ratio increases in both sectors (as indicated by the expansion paths superscripted with a prime).⁷ This adjustment not only expands output further in the X-industry (to X'), but raises wages relative to capital rentals. This is hardly the outcome predicted by opponents of investment-financed offshore sourcing by the import-competing industry.

The foregoing discussion assumed that the country was small. In general, it is to be expected that formation of a preferential trade arrangement (PTA) will change relative commodity prices. We saw earlier that the price of X will fall. Such a fall in price will be beneficial from the point of view of economy-wide economic welfare, because it represents an improvement in the country's terms of trade. As noted before, however, its effects on employment and wages are opposite to those of offshore sourcing. It shifts productive resources from X to Y and causes the wage-rental ratio to decline.

Effect on the Host Country

The main effects on the emerging country are given in Figure 3. The initial resource endowment is indicated by point E^* and initial output levels are at X_0^* and Y_0^* . The inflow of

foreign direct investment shifts the endowment point to E^* .

The assumption of inter-sectoral capital mobility is important in this set-up. It means that, after the economy has had time to adjust, capital will be relocated between the two sectors until return rates are equalized. The perspective of this section, therefore, is especially appropriate for analysis of the long-run effect of capital inflows. In the short run, when sector-specificity of capital is more likely to be present, the bulk of the capital inflow will be employed in the X-sector.

For given relative commodity prices, relative factor prices are fixed. Under conditions of inter-sectoral capital mobility, the effect of a rise in the endowment of capital follows the Rybczynski rule. The only way the economy can absorb all of the incoming capital and maintain full employment at given factor prices is by shifting resources into the capital-intensive sector, which for the developing host country, is its import-competing sector, Y. The new output levels are given at points X_1^* and Y_1^* , with production declining in the X-sector and expanding in the Y-sector. Not surprisingly, the result is opposite to that seen in the source country.

Further, the decline in X-output in the recipient country will be welcome to workers in the source country's import-competing industry. This reduction in the host country's X-output is another example of the complex nature of economic interactions between the two sets of countries. It underscores the argument that capital transfers are not uniformly and inevitably detrimental to workers in the country of origin. In this example, foreign investment in component production enables industry in the investing country to improve its competitiveness and thereby to raise output.

The results are, of course, influenced by the assumptions built into the model, some of which are quite restrictive. But the outcome is by no means intuitively implausible. When the

capital stock rises (falls) relative to the supply of labor in an economy (in level terms, as in this instance, or in terms of relative rates of growth, otherwise), the gain (loss) of capital has to be absorbed mainly by the capital-intensive sector. In order to maintain full resource utilization at given world prices (and thus at given factor prices⁸), the capital-intensive industry must absorb (shed) additional capital and some labor to be relocated from (to) the labor-intensive industry.

It may be a constraint to assume that relative commodity prices are given, but how much of a price effect should a transfer of capital from the U.S. to Mexico or from the EU to Poland have on relative prices? The amount of capital transferred is likely to be small in relation to EU or U.S. stocks. Hence, the production block of the large country will be little affected and that means that relative prices will also be largely unaffected. In this integrated region, it will be adjustments in the large member economies that will determine the movement of prices throughout the region.

4. Concluding Remarks

The early discussion of regional integration focused on liberalization of restrictions on trade. As experience in Europe, North America, and elsewhere has shown, trade liberalization will not on its own eliminate market segmentation and thus large price differentials across regions. The European response to this recognition was the Single Market program ("Europe 1992"). In a fully integrated regional economy, not only goods would flow freely but production could be spread throughout the region, provided that the costs of cross-border coordination of production could be reduced. In the years since the inception of Europe 1992, significant innovations in transportation and telecommunication have helped to reduce the cost of cross-border coordination.

Trade with the emerging economies of eastern Europe has increased significantly as a result of the various Association agreements. It is therefore likely that for both sides the major gains from entry will come not from freer trade along established patterns, but from the reorganization of production and the consequent integration of those economies into the production network of the European Union.

As trade barriers have fallen away and the obstacles to and costs of moving production abroad have declined, firms have responded by dispersing the various elements of production over wider regions. Around the world, products are losing their national identity and becoming truly global. This paper examines the welfare effects of this cross-border fragmentation of production. It shows that across a broad array of situations, production sharing among countries will be beneficial to all. This modern form of globalization offers new possibilities for trade arrangements between advanced and developing countries. When the law of comparative advantage is extended beyond products to the realm of parts and components, new opportunities of raising welfare emerge. In the context of regional integration, the availability of co-production arrangements offers important new ways of enhancing the global competitiveness of the region's producers on both regional and world-wide markets.

End Notes

1. See Jones and Kierzkowski (1990)
2. See Yeats (2000).
3. For a detailed exposition of the effects of cross-border sourcing, see Arndt (1997, 1998). See also, Jones and Kierzkowski (2000).
4. See Arndt (1997, 1998). See also Deardorff (2000) and Jones and Kierzkowski (2000)
5. See Kohler (2001) for an analysis of fragmentation in the context of specific factors.
6. See Graham and Wada (2000)
7. For detailed analyses, see Arndt (1997, 1998)
8. Note that this does not necessarily imply factor-price equalization.

References

- Arndt, S.W. (1997), "Globalization and the Open Economy," North American Journal of Economics and Finance, 8 (1)
- (1998), "Super-Specialization and the Gains from Trade," Contemporary Economic Policy, XVI (October)
- (2000), "Offshore Sourcing and Production Sharing in Preference Areas," in S.W. Arndt and H. Kierzkowski (eds.), Fragmentation: New Production Patterns in the World Economy (forthcoming, Oxford University Press)
- Deardorff, A.V. (2000), "Fragmentation Across Cones," in Arndt and Kierzkowski
- Graham, E.M. and E. Wada (2000), "Foreign Direct Investment in Mexico," The World Economy, 23 (June)
- Jones, R.W. and H. Kierzkowski (1990), "The Role of Services in Production and International Trade: A Theoretical Framework," in R.W. Jones and A.O. Krueger (eds.), The Political Economy of International Trade (Oxford: Blackwell)
- (2000), "A Framework for Fragmentation," in Arndt and Kierzkowski
- Kohler, W. (2001), "A specific-factors view on outsourcing," North American Journal of Economics and Finance, forthcoming.
- Rybczynski, T.M. (1955), "Factor Endowments and Relative Commodity Prices" Economica, 22, (pp. 336-41)
- Yeats, A.J. (2000), "Just How Big is Global Production Sharing?" in Arndt and Kierzkowski

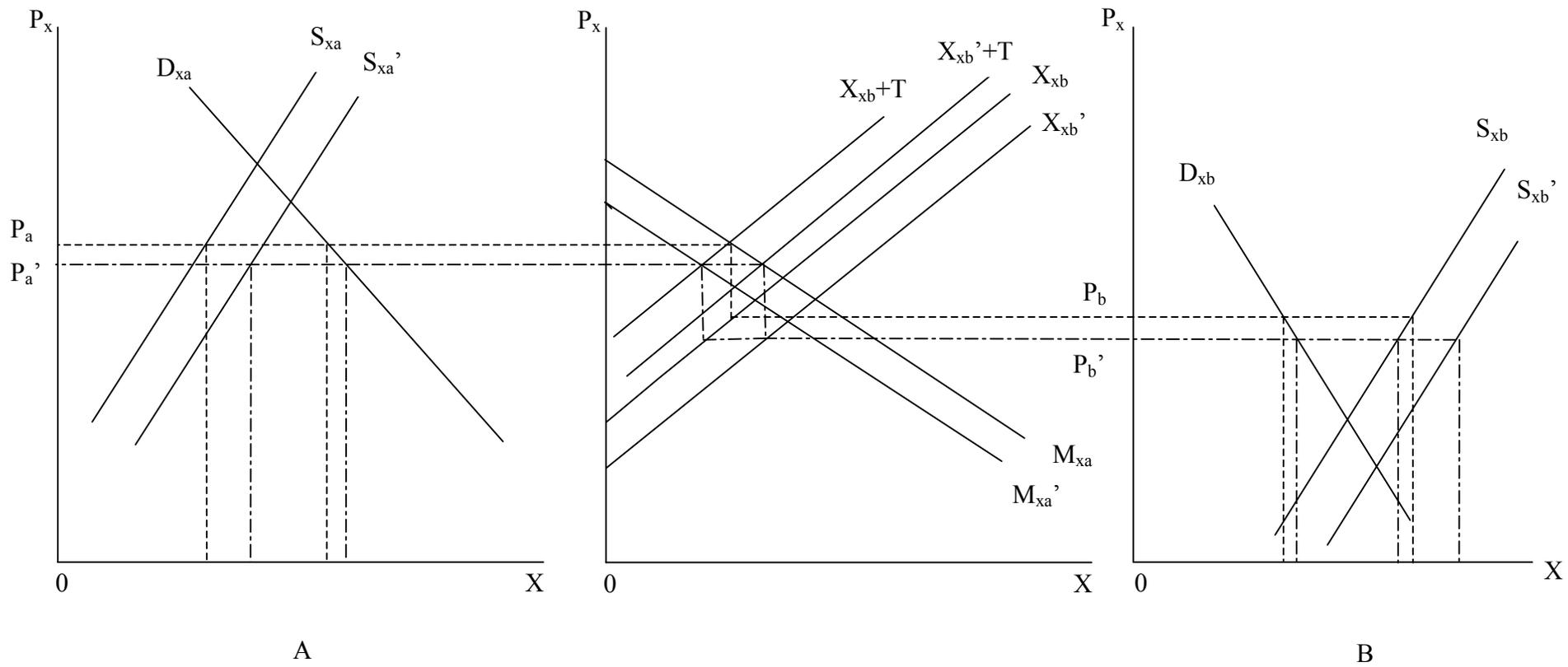


Figure 1

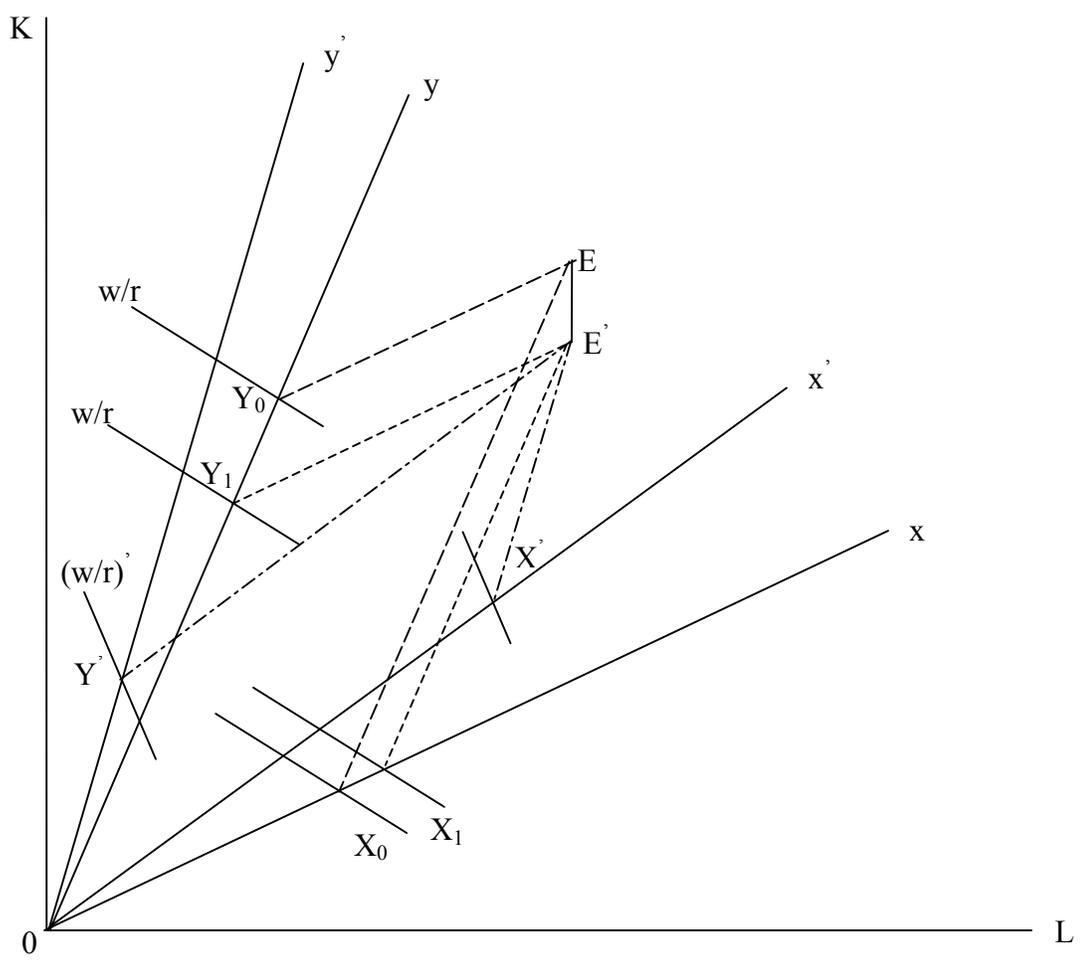


Figure 2

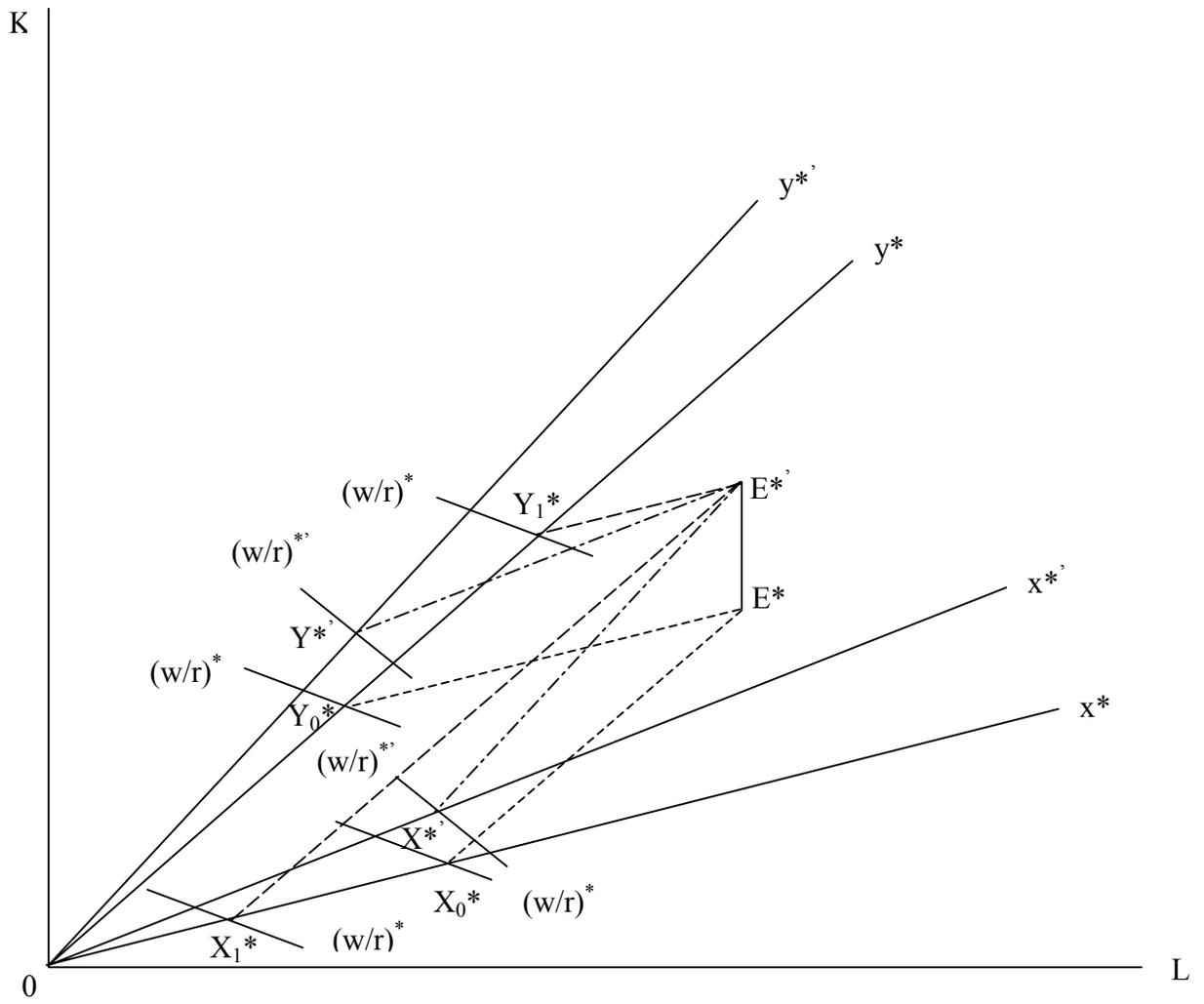


Figure 3