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**WORKING PAPER No. 254**

**THE COHERENCE OF TRADE FLOWS AND TRADE POLICIES WITH AID AND INVESTMENT  
FLOWS**

**A BACKGROUND PAPER**

**By Akiko Suwa-Eisenmann and Thierry Verdier**

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## PREFACE

Meeting international commitments to development co-operation such as the Millennium Development Goals, the Monterrey Consensus on financing for development and the Gleneagles G8 summit agreements to increase aid by around \$50 billion per year by 2010 will require not only increased resources, but also their judicious use. In this context policy makers and others cannot limit their attention to the effectiveness of foreign aid alone; they must broaden the discussion to include the development-related impacts of a spectrum of rich-country policies, including those related to investment, trade and international migration. Such policies can work at cross purposes on the ground in developing countries, thwarting poverty reduction and hindering economic growth. Yet in most cases the policy impacts have been studied separately or independently. The OECD Development Centre's Policy Coherence activities address this knowledge gap by conducting well defined country case studies of the interaction of rich-country policies in poor countries (including their interdependence with local policies), in close collaboration with researchers and institutions in developing countries. To further that end, the Centre has asked leading experts to take stock of what is known about the impact of four key vectors of OECD member policies — those governing official development assistance (ODA), foreign direct investment (FDI), migration and trade — on development in poor and emerging economies. These four background papers, all of which will shortly be available publicly, provide a key input into the Centre's Policy Coherence project. This paper is one of them.

OECD member policies do sometimes work at cross purposes in their development impact. For example, restrictions on developing-country exports under the recently terminated Multifibre Agreement (MFA) cost those exporters an estimated \$50 billion annually, very roughly equal to annual foreign-aid flows to developing countries during the same period. Clearly this shows incoherence between trade and aid policies insofar as one objective of policy making is to promote economic development. The growing number of African doctors in some OECD members suggests another example. It reveals incoherence between foreign-aid policies, which seek to increase the supply of health services in poor countries and in many cases pay to train doctors, and migration policies, which selectively seek out doctors and provide powerful incentives for them to leave their home countries. Of course, OECD member trade and migration policies have objectives other than promoting development in poorer countries, and citizens and policy makers may decide that in some cases those other objectives are more important than development. Yet at the very least, this project seeks to make more explicit the magnitude of the trade-offs among policies. What, in short, is the cost of policy *incoherence*?

In addition to identifying cases where rich-country policies work at cross purposes, a cross-cutting issue is whether policies are complements or substitutes. Policies to promote ODA and

FDI, for example, are complementary if aid flows to a country (to finance port infrastructure, say) increase the attractiveness of that country as a destination for capital flows. Policies are substitutes if the effects of diminished flows from one policy can be offset by increased flows from a second. Many observers wonder whether the considerable remittance flows sent home by migrants might substitute for foreign aid flows, reducing poverty and financing investment. Of course, the complementarity of FDI and ODA or the substitutability of remittances and aid are at this point merely hypotheses. The project aims to study such interactions more carefully; this paper provides one input.

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August 2006

## RESUMÉ

Cet article fournit une vue d'ensemble à la fois théorique et pratique des relations existant entre les échanges, l'aide et les IDE, à la fois en termes d'interactions politiques et d'interactions entre les flux de ressources. Les flux d'aides d'un pays à un autre peuvent avoir des effets positifs ou négatifs sur les flux commerciaux des pays concernés. Ces effets peuvent agir à deux différents niveaux. Il existe ainsi des liens macroéconomiques entre l'aide et le commerce : l'aide fait augmenter l'épargne, ce qui permet plus d'importations, ou alors l'aide fait monter le taux de change réel, ce qui diminue les exportations. Il existe également des mécanismes microéconomiques : une aide liée peut augmenter les exportations si elle est utilisée pour le renforcement des

capacités productives et commerciales, mais d'autres formes d'aide liée peuvent tout simplement aboutir à une inefficacité d'allocation. Les flux d'aide peuvent avoir une influence sur les politiques commerciales des pays en développement qui les reçoivent, s'ils agissent via le syndrome du « mal hollandais » affectant les termes de l'échange, ou via une aide liée explicitement destinée à l'achat des produits des pays donateurs. Les flux d'aides interagissent également avec les politiques commerciales de ces pays donateurs ; ainsi, la manière la plus brutale d'envisager cette question est peut-être de se demander si un pays en développement donnée est mieux placé par l'aide fournie ou par l'accès au marché du pays donateur. La pensée économique indique généralement qu'un dollar d'aide procure le même bien-être à un pays pauvre qu'un montant considérablement plus important de gains à l'exportation (2.29 dollars selon une étude souvent citée). Néanmoins, et sous certaines conditions qui peuvent prévaloir dans de nombreux pays, l'accès au marché du pays donateur peut apporter un plus grand potentiel de développement ; cela dépend en partie de l'ampleur relative des effets négatifs liés aux flux d'aides (par l'intermédiaire du taux de change) et des effets dynamiques positifs de la spécialisation des exportations. Une étude empirique sur ces questions semble frustrante étant donné le manque de consensus constaté, ce qui peut être en partie dû à la difficulté d'en établir les causalités, en d'autres termes de savoir si c'est les échanges qui influent sur l'aide, l'aide qui influent sur le commerce, ou s'ils s'influencent chacun mutuellement.

Cet article aborde ensuite la question des interrelations existant entre les flux d'aide et les politiques, et entre les flux d'IDE et les politiques. Bien que l'œuvre théorique suggère que le commerce et les IDE peuvent être à la fois des compléments et des substituts, en pratique il y a toutes les raisons de penser que le commerce et les flux d'IDE sont complémentaires. Les nouveaux modèles théoriques du commerce suggèrent même que, dans les pays en développement, la libéralisation du commerce et des politiques liées aux IDE ne sont pas des substituts et qu'elles peuvent avoir des interactions complexes : par exemple, la libéralisation des IDE à elle seule peut encourager les IDE « horizontaux » c'est-à-dire dirigés vers le marché, tandis qu'une libéralisation coordonnée des IDE et du commerce serait plus à même d'encourager les IDE « verticaux », à savoir destinés à une réduction des coûts.

## SUMMARY

This paper provides a theoretical and empirical overview of the relationships among trade, aid and FDI, both in terms of policy interactions and interactions among resource flows. Aid flows from one country to another can have positive or negative effects on trade flows between those countries. These effects, in turn, may act at two different levels. There are macro-level links between aid and trade: aid enhances saving, permitting more imports, or aid raises the real exchange rate, depressing exports. There are also micro-level mechanisms: tied aid may increase exports if it is spent on enhancing trade capacity, but other forms of tied aid merely lead to allocative inefficiency. Aid flows can affect trade policy in the developing country that receives them, whether via the Dutch disease effect on the terms of trade, or via the explicit tying of aid to the purchase of donor country goods. Aid flows also interact with donor-country trade policy; perhaps the starkest way to frame this question is to ask whether a given developing country is made better off by aid spending or access to the donor country's market. Economic thinking has generally posited that a dollar of aid provides the same welfare to a poor country as a substantially larger sum of export earnings (\$2.29 according to one widely-cited study). Nevertheless, under certain conditions that may well prevail in many countries, access to the donor country's market may provide greater development potential; this depends in part on the relative magnitude of negative consequences of aid inflows (via the exchange rate) and positive dynamic effects of export specialisation. Empirical research on these issues is frustrating in its lack of consensus, which may arise in part from difficult problems of establishing causality, i.e., does trade affect aid, does aid affect trade, or do they mutually affect each other?

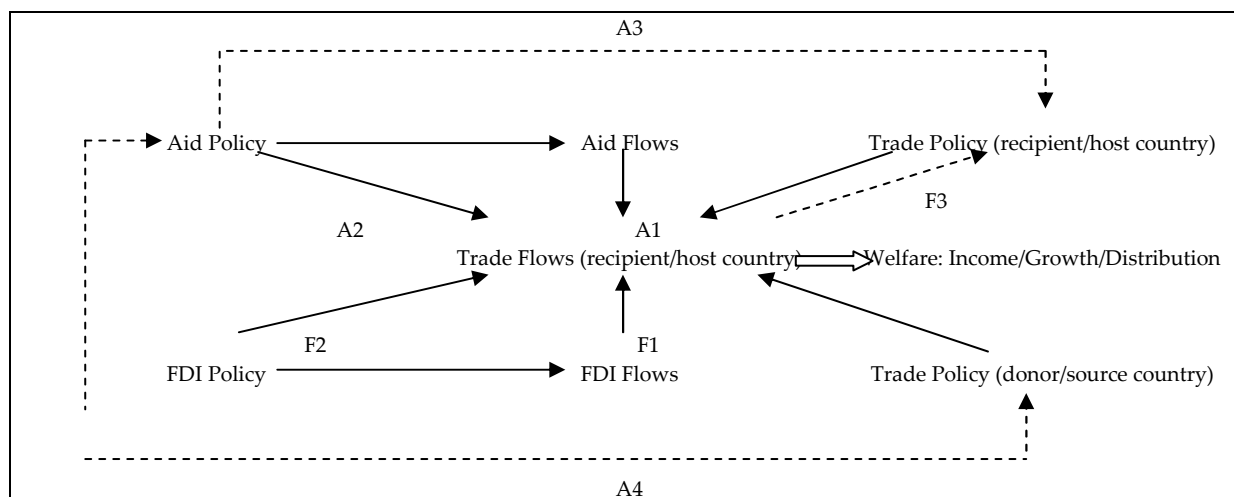
The paper next tackles the question of interrelations among trade flows and policies and FDI flows and policies. While the theoretical literature suggests that trade and FDI may be complements or substitutes, in practice there are compelling *a priori* reasons to suspect that trade and FDI flows are complements. New trade theory models furthermore suggest that liberalisation of trade and FDI policies in developing countries are not substitutes and that they have complicated interactions: for example, FDI liberalisation by itself might encourage "horizontal" or market-seeking FDI, while co-ordinated FDI/trade liberalisation might be more likely to encourage "vertical" or cost-reducing FDI.



## I. INTRODUCTION

This paper provides a theoretical and empirical overview of the interactions among aid policies, foreign direct investment (FDI) policies, trade policies and trade flows, looking at outcomes from the point of view of the recipient or host developing country. Figure 1 summarises and illustrates the types of links discussed. Starting with the interactions between aid and trade, linkage may relate aid and trade flows (A1). It can also go from aid policy to trade flow (A2). A third possibility is an aid policy intended to influence trade policy in the recipient/host country (A3), and an inherent question of clash or coherence connects donors' aid and trade policies (A4). Interactions also appear between FDI and trade (F1, F2, and F3). Based on these various linkages, researchers can assess the joint impact of aid, trade and FDI policies on the welfare of the recipient/host country.

Figure 1. Aid, Trade and FDI Interactions



From a policy point of view one would like to understand whether aid and FDI policy instruments (denoted as A and FDI below) act as complements to or substitutes for trade policy instruments (denoted as T) with respect to a welfare policy objective (W) in the recipient/host economy. This target W can be a static or dynamic long-run aggregate welfare indicator like national real income or growth, or it can relate to the degree of heterogeneity inside the recipient country (poverty, inequality or distributive concerns). In mathematical terms, one seeks ideally information on the sign of the cross derivative:

$$\frac{\partial^2 W}{\partial T \partial A} \text{ or } \frac{\partial^2 W}{\partial T \partial FDI}$$

The arrows in Figure 1 indicate the typical channels through which such complementarities or substitutions can occur. Policy instruments affect economic flows, in turn generating interactions between aid or FDI flows and trade flows. These interactions then should influence the welfare objective. Policies can also link directly when they involve conditionality or additionality. The empirical literature has often focused more on the relationships between flows than on those between policies, because flows are more easily measured.

Two important policy dimensions need acknowledgement. The first concerns the definition and analytical content of trade, FDI or aid policies. In practice, each will likely be a finely grained, multi-dimensional vector of instruments. For instance, trade policy may contain features like tariffs and trade taxes, quantitative restrictions, rules of origin, protective administrative procedures (antidumping, countervailing duties, customs delays), trade restraints, or various domestic discriminatory policies (subsidies, barriers to entry, standards and regulations). Similarly, FDI policy may involve various types of subsidy, tax exemption schemes, factor-content arrangements and investment regulations, while aid policy typically includes an array of bilateral and multilateral instruments including conditional and tied aid, targeted and general funds, safety nets, etc. Most of the literature generally takes an aggregate view of these policy vectors, but it is important to keep in mind that each will find implementation through the interplay of its several instruments. The conclusion of this paper will return more precisely to this issue.

Second, all of these policy areas have important political-economy dimensions. Typically, policy implementation generates gainers and losers within and across countries, in most cases without appropriate compensation. These distributive impacts in turn stimulate rent-seeking and rent-sharing responses among groups or coalitions of agents. Clearly, these aspects are crucial for understanding the internal and external political constraints within which policy coherence or incoherence can occur. The conclusion returns briefly to this point, but most of the paper abstracts from it and therefore neither formally models the political decision-making process nor exhaustively reviews the related political-economy literature.

## II. INTERACTIONS BETWEEN AID POLICY AND TRADE

### II.1 Conceptual Aspects

#### *The Relationship between Aid Flows and Trade Flows*

A first approach is to consider the possible causal relationships between aid flows and trade flows (A1 in Figure 1). Aid may affect trade because it induces general economic effects in the recipient country, because it is directly tied to trade and/or because it reinforces bilateral economic and political links. The first plausible impact goes through the traditional macroeconomic view that aid supplements domestic saving, leading to increased investment that contributes to higher growth than would be possible without aid (White, 1992). The induced growth implies a greater capacity of the recipient country to absorb foreign products including those originating from donors. Along this line, aid flows will likely in the medium run generate more international trade flows for the recipient country. In a related mechanism, aid often carries conditions for structural economic reforms in the recipient country. When the targeted reform is trade liberalisation, the effect of aid on trade is direct, but it could also be indirect as long as reforms stimulate growth, which in turn may increase the import capacity of the recipient economy. Note, however, that this line of reasoning also provides good arguments for a negative rather than positive aid/trade relationship. Aid may in fact have only a negligible macroeconomic effect due to fungibility (Heller, 1975). Even if all aid is saved and invested, it may simply crowd out other domestic investment by increasing the price of investment goods. A similar result may apply if aid is tied to counterpart funds. To raise these funds, the recipient government may have to levy distortionary taxes and/or issue public debt, which can increase interest rates and crowd out private investment.

#### *Aid Dependency*

In the same macroeconomic tradition, the most celebrated argument of a relationship between aid and trade flows is probably that involving the so-called “Dutch disease” and “aid dependency” effects in the recipient economy. It illustrates the potential conflict between aid flows and export competitiveness. The story is quite well known. Aid flows will go to finance expenditures on non-tradable goods and services. With the price of tradable goods given, a relative price shift in favour of non-tradable sectors (a real appreciation of the exchange rate) can occur. The immediate effect occurs on the demand side, where more of the cheaper tradables (especially imports) will be demanded, leading to a deterioration of the external balance that in turn will require more aid flows (the aid dependency effect). At the same time, the real

appreciation of the exchange rate leads to a resource transfer from the tradable to the non-tradable sector, causing a significant squeeze on export producers (the Dutch disease). The impact of aid on trade flows of the recipient country therefore occurs in two steps. First, imports tend to increase in the short run, while in the medium run domestic export capacity tends to decrease. If there is an inter-temporal effect (like a learning externality effect of exports on domestic productivity), the Dutch disease may have long-run negative implications for the trade flows of the recipient country. If the country has idle capacity, however, the income effect of aid might not translate into real appreciation as both the tradable and non-tradable sectors might grow. Moreover, a developing country might even benefit from a real appreciation because of low substitutability between domestic production and imported inputs (Nkusu, 2004). Yet if idle capacity originates from rigidity on the production side, such as price or wage indexation, it is not obvious that the tradable sector would gain in all cases from an aid transfer.

### *Aid Tying*

Formal tying of aid to the recipient's purchase of goods from the donor provides the most direct and obvious link between aid and trade. Because such aid generally takes the form of goods procured by the donor, aid is itself trade in the form of donor exports. Tied aid may also induce dynamic effects by increasing recipient exposure to donor export goods, which in turn may encourage follow-up orders and expand future donor exports. Such aid is an instrument of trade policy (Morrissey, 1991). Tying can also be informal, the result of political goodwill such that the recipient may feel more inclined, if not obliged, to buy the donor's goods. Again, tying may generate important allocative inefficiencies inside the recipient economy. Jepma (1991), notes that exports under tied aid often exceed prevailing world prices by between 10 per cent and 40 per cent. Capital-goods imports priced so highly may retard growth and therefore the subsequent capacity of the country to trade with the rest of the world. Tied aid thus may have differential temporal impacts on trade flows, increasing them in the short run and reducing them in the long run.

Aid-induced trade dependency can also occur. Even when aid is not tied, for example, it may fund projects requiring imports of capital goods produced only in the source country. Food aid, it has been argued, tends by reducing local prices to distort the allocation of resources in recipient countries away from local food production. Over time, this can exacerbate and prolong the very shortages that the aid is intended to solve, with the outcome of prolonged dependence on trade flows from donor countries.

### *Reverse Causality*

As several authors have recognised (see the survey in Lloyd *et al.*, 1998), the causality between aid and trade flows obviously can also go the other way around. This paper focuses on the causality link from aid to trade, but it is useful to remember the main arguments for reverse causality. Trade can affect aid allocation in different ways. Lobby and business groups, which may have particular trade interests, can influence aid allocation in donor countries, or donors can simply give aid-allocation preferences to countries with which they have the strongest

commercial ties. A donor might want to reward a recipient for the purchase of its export goods, or it might want to consolidate or expand its markets where the expectations of aid-induced trade dependency are highest. Conversely, the causal relationship can reverse if the donor uses aid to promote export ties in countries with which it has weaker commercial links.

### *How Do Aid Flows Interact with Trade Policy in the Recipient Country?*

Given the plausible channels of interaction between aid and trade flows, what about the direct interactions between policy instruments? The route from aid instruments to aid flows seems quite direct and needs little discussion. The interplay between aid flows/policies and trade policies of the recipient or donor country (A3, A4 in Figure 1) is more complex. This subsection reviews what theory has to say about foreign aid and trade policies in recipient countries and their consequences for the recipients' welfare as measured by aggregate national real income. The next subsection investigates the links between aid and donor trade policies.

### *The Transfer Paradox*

The conceptual background stems from the theory of income transfers in international trade theory. How a transfer of real resources from one country to another affects both the source and recipient countries has now become part of a well-established tradition in international economics, well known since the Keynes-Ohlin controversy on German reparation payments after World War I and Samuelson's clarification (1952). Beyond its direct income effect, an international transfer will likely have important terms-of-trade effects on both the donor and the recipient, the sign of which depends on the relative size of the marginal propensities to consume in the two economies. The so-called "orthodox" view holds that the donor's terms of trade should deteriorate because each country should have a larger domestic marginal propensity to consume its exportable good (Keynes, 1929). Subsequent, significant work has considered the "anti-orthodox" view that an income transfer improves the donor's terms of trade (see Jones, 1970; Chipman, 1974; Jones, 1975; and Li and Mayer, 1990).

A major issue involves how income transfers affect the welfare levels of the donor and recipient countries. The literature has given considerable attention to the conditions under which an international transfer is immiserising for the recipient country (the "transfer paradox"). As is well known from Leontief (1936), Samuelson (1947) and Mundell (1960), in a two-country world with free trade and no distortions, immiserising transfers from abroad cannot arise when markets are stable<sup>1</sup>. In the interactions between aid instruments and trade policies, however, transfers that worsen welfare in the recipient country become possible when one departs from the distortion-free world<sup>2</sup>. First, consider a multilateral world economy and enlarge the set of countries to more than the two economies participating in the transfer. Several contributions have shown the possibility of perverse transfer outcomes in a three countries/agents context (Gale, 1974; Chichilnsiky, 1980; Brecher and Bhagwati, 1981; and Yano, 1983). Bhagwati *et al.*

1. Stability means that in global markets an excess demand for a particular good leads to an increase in the price of this good in order to restore the initial competitive equilibrium.
2. For more details, see the survey in Brakmann and Marrewijk (1998).

(1983), however, demonstrate in their integrating analysis with a theory of distortions and welfare that the transfer paradox cannot arise in a three-agent framework if the recipient and the donor countries uniformly impose an optimal tariff policy jointly against the non participant country. This result suggests a certain degree of complementarity between foreign aid and regional trade policies crafted to avoid perverse welfare outcomes in a recipient economy.

Second, the transfer may take place in the presence of exogenous domestic distortions, of which trade policies in the recipient or the donor countries represent an important case. As Ohyama (1974), Brecher and Bhagwati (1982) and more generally Bhagwati *et al.* (1985) show, exogenous price distortions such as tax and/or subsidy policies, can lead to the transfer paradox and a recipient-country loss from the aid transfer. This is quite easy to grasp intuitively in the case of a recipient's tariff policy, for example. Recall that an immiserising transfer occurs basically because, after the transfer, the recipient faces deterioration in its terms of trade. This leads to increased production and reduced consumption of the recipient's importable. Under domestic tariff protection, however, this commodity already is "over produced" and "under consumed". The change in relative international prices therefore exacerbates this existing situation, and the extra cost may suffice to ensure a welfare decline in the aid-receiving country<sup>3</sup>. When this occurs, the preceding discussion suggests that trade liberalisation by the recipient can act as a complement to the foreign aid instrument. Indeed, a reduction of the recipient's tariff must accompany the transfer from abroad in order to minimise the possibility of a transfer paradox in the recipient country<sup>4</sup>.

Probably the most interesting situation arises when the transfer itself creates domestic distortions. Aid tying is of course the classical example. Ohyama (1974), Brecher and Bhagwati (1982), Kemp and Kojima (1985), Schweinberger (1990) and Tajoli (1999) all are welfare analyses of the general phenomenon. For instance, Brecher and Bhagwati (1982) consider a small open economy where aid is accompanied by "production additionality requirements" — e.g. food aid whose donor may require more domestic food production as a condition for the aid. In such a case, production shifts away from its efficient allocation, and the recipient may end up poorer after the transfer. When the donor demands that local imports be increased by the amount of the aid provided, however, the use of an appropriate import policy to match this requirement prevents immiserisation. Kemp and Kojima (1985) consider a situation where the tying takes the form of an expenditure pattern forced on the recipient government, i.e. to spend a certain fraction of the transfer on the importable good. In such a case, if the government's marginal propensity to spend associated with the tying is larger than that of private agents, the

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3. An important necessary condition for the transfer paradox to occur in such a context requires the recipient's importable to behave like an inferior good in donor-country consumption. This may initially appear rather pathological, but two remarks can make the case empirically plausible. First, some products (like some foods) may well be inferior for individual consumers, implying that inferiority at the national level cannot be automatically dismissed. Second, even when each good is normal at the individual level, national consumption may well exhibit inferiority when there is a certain pattern of individual heterogeneity.
  4. More specifically, the recipient cannot be impoverished if the tariff rate is adjusted to hold imports or exports to their pre-aid level (Ohyama, 1974).

deterioration of the terms of trade may be strong enough to induce a transfer paradox. This can occur without existence of inferiority in national consumption patterns<sup>5</sup>.

Lahiri and Raimondos-Moller (1995) emphasise the importance of the form of trade policy in its interaction with foreign aid. They consider the effect of aid when the recipient country imposes a quantitative restriction on the importable good. A first result reveals that an increase in untied aid unambiguously benefits the recipient country. Contrasting results emerge under tariff or price distortions and with quantitative restrictions, where a transfer has no effect on the wastage caused by the pre-existing distortions. Under a tariff restriction, a deterioration of the terms of trade can reduce domestic imports, which already are too small compared with the first-best level, therefore increasing further the wastage from the pre-existing tariff distortion. This introduces the possibility of a transfer paradox. With a quantitative restriction, however, as long as the restriction remains binding after the transfer, imports will not change and consequently the transfer will generate no additional wastage. Because, in a stable two-country world economy, the terms of trade effect can never by itself overcome the direct income effect of a transfer, no possibility of an immiserising untied transfer can arise when the recipient country uses quantitative restrictions.

Lahiri and Raimondos-Moller (1995) also consider tied aid that requires the recipient country to increase imports of the commodity subject to quantitative restrictions. Such a transfer reduces a pre-existing distortion, and one can see immediately that it improves world welfare. Moreover, when the quantitative restriction is an import quota at less than the optimum level, aid tied to more imports clearly also makes the recipient better off. More generally, a condition to prevent immiserisation of the recipient country in such a situation is that the price elasticity of the donor's export supply function must be high enough. Yet in such a case the rise in the price of the recipient's importable necessary for the donor to be able to supply the additional demand because of the tied transfer is relatively small. The secondary effects of the transfer *via* changes in the terms of trade will be limited, and this ensures that the recipient benefits.

In many cases, donors earmark foreign aid to finance public consumption and public inputs in recipient countries. This kind of aid tying can also generate endogenous distortions. Again, changes in the terms of trade between donor and recipient open the possibility of an effect on trade flows and the transfer paradox (Hatzipanayotou and Michael, 1995)<sup>6</sup>. Schweinberger (2002) considers the effect of foreign aid in an economy with a public good whose labour costs are financed by a tariff levied on a private importable good. Two interrelated distortions are present in such an economy. First, the public good is under-supplied because of lack of

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5. Schweinberger (1990) considers an alternative tying rule, which constrains the spending of the income by the private sector of the economy. This type of rationing creates a wedge between domestic and foreign consumer prices and thus opens again the possibility of a transfer paradox. It also requires, however, that the domestic consumer price in the recipient country be lower than the consumer price in the donor country, a situation that is clearly unsustainable under free trade.
  6. More precisely, Hatzipanayotou and Michael (1995) show that when the imported and public goods are net complements, and the consumer's marginal willingness to pay for the public good is larger than its unit cost of production (which may be expected to hold in countries with few public goods), then a small aid transfer can reduce the welfare of the recipient country.

information or for political-economy reasons. Second, the trade policy distortion is implemented on budgetary grounds. Tied aid in the form of an increase in the stock of the specific capital used in producing the public good then will likely raise recipient welfare because it reduces the twin distortions. It increases the production of the public good. If consumption of the importable is complementary to consumption of the public good, then the transfer may in turn stimulate imports, hence relaxing the initial tariff distortion and financing more production of the public good.

Given the importance of the terms-of-trade effects induced by foreign aid, most of the transfer literature has focused essentially on the two-country case. Yet some attention has also gone to the impact of tied aid in a small open economy where the terms of trade remain fixed by definition. In the seminal contribution, Johnson (1967*a*) showed that an exogenous increase in the stock of a domestic resource (e.g. aid tied to this resource) may bring a welfare loss in a small, tariff-ridden, open economy if it exacerbates overproduction in the protected import-competing industry. Yano and Nugent (1999) extended this analysis, emphasising the importance of “non traded goods” effects, meaning an expansion of the non-traded sector caused by foreign aid. They again underline the possibility of immiserising transfer if non-traded goods are net substitutes for protected importable goods. In such a case, the decline in the relative price of the non-traded good resulting from the aid-induced expansion of the non-traded sector tends to reduce the “already too low” imports of the recipient economy, leading to increased economic distortions. They present empirical evidence suggesting that their non-traded-good effect appears as more important than the standard Johnson effect in generating the possibility of welfare-worsening impacts of foreign aid on small, open economies. Schweinberger (2002) extends their analysis by showing how different assumptions about the mobility or immobility of factors across industries affect the sign and magnitude of both effects. This channel for potentially harmful effects of tied aid on trade flows and welfare contrasts with the usual “Dutch disease” effect and real appreciation of the exchange rate generally mentioned in the macro literature.

### *Aid versus Trade: Aid Flows Interacting with the Donor’s Trade Policy*

This sub-section considers the frequently debated issue of “Aid *versus* Trade”. What is the better way to help a recipient country — foreign assistance or export access to the donor’s markets? Formally, one needs to compare the worth to the recipient of exports to the donor’s market with that of an equal amount of foreign assistance. Johnson (1967*b*) again produced the first, seminal attempt along those lines. Thirwall (1976) and Yassin (1982) extended his analysis. The treatment here follows Mosley (1985). To compare trade with aid, three types of economic effects have relevance. First, the direct economic effects involve how a dollar of aid compares with a dollar of foreign exchange earned by exporting. Second, indirect effects on the recipient’s economy can occur, in particular on the public sector, the supply of savings and domestic prices affecting the private sector. Third, more general political-economy considerations relate to the intrinsic worth of “self-sufficiency”.



*Direct Effects*

If aid is offered as a pure gift with no tying, it places additional resources for investment directly in the hands of the recipient government. It thus saves the recipient country the excess cost of import substitution, i.e. the cost of making at home the goods that aid makes it possible to import. Following Johnson (1967b), the value of an amount of aid  $A$  is therefore equal to  $(1+c)A$ , where  $c$  is the excess cost of import substitution. Exports do not provide additional resources for investment directly. They do so only indirectly to the extent that they offer the possibility of transforming domestic resources into goods more cheaply than domestic production of importable goods, saving the excess cost of import substitution. The value of an amount  $X$  of exports to the economy is therefore  $cX$ , and the relative worth of exports compared to pure aid can be expressed as the  $cX/(1+c)A$ . From this, it follows that the value of exports can never exceed the value of an equal amount of pure aid. At the margin, foreign aid is always worth more than trade (Johnson 1967b).

Aid is rarely pure, however. It very often has a tied component related to the purchase of goods in the donor economy or to some other potentially distortive policy action by the recipient government, as the foregoing analysis shows. In that case, if  $r$  is the ratio of the price of goods supplied by aid to the best competitive price obtainable on free markets, the relative worth of exports becomes:  $[cX/(1+c)A] \cdot r$ . In that case, the value of exports can exceed the value of aid when  $cr > 1+c$  which will hold only for relatively high values of  $c$  and  $r$ , that is, for countries "far enough" from world markets (costly imports) and receiving relatively efficient aid (small degree of tying). Moreover, much aid is not given on pure grant terms but as soft loans with below-market interest rates. If  $F$  is the nominal amount of foreign assistance and  $g$  is the aid component of assistance, the relative worth of exports becomes  $[cX/(1+c)Fg] \cdot r$ , and the condition for trade to dominate aid becomes  $cr > c(1+g)$ . As Thirwall (1976) and Mosley (1985) argue, it remains the case that  $c$  and  $r$  would have to be quite high and  $g$  relatively low to make such an inequality true. For instance, for an excess import-substitution cost of 50 per cent ( $c = 1/2$ ) and with no aid tying ( $r = 1$ ), trade would dominate aid only if the ratio of aid to assistance falls below 0.3, suggesting as Thirwall (1976) says that aid is very likely to dominate export market access as an effective policy.

*Indirect Effects*

Export revenues and aid income also of course have indirect economic effects on the recipient country. They may influence the propensity to save and thereby the growth rate. They may also affect relative prices, in particular the real exchange rate, as with the Dutch disease. They may affect public-spending patterns as well. Clearly, if these effects differ for export revenues and aid income, then they will certainly affect the relative worth of trade compared to aid. They also take time to emerge, over a number of periods  $T$ . In that case, the new formula becomes:

$$\frac{\sum_{t=1}^T [(rcX) s_x + p_{xt}]}{\sum_{t=1}^T [(1+c)Fg] s_a + p_{at}}$$

where  $s_x$  and  $s_a$  are the propensities to save out of exports and out of aid respectively, and  $p_{xt}$  and  $p_{at}$  are the respective values of the indirect effects of exports and of aid, in period  $t$ . When one takes plausible values for  $r$  ( $r = 50$  per cent in Thirwall, 1976), the aid component  $g$  ( $g = 60$  per cent in OECD, 1986) and an excess cost of import substitution  $c$  ( $c = 50$  per cent in Little, Scitovsky and Scott, 1970), then even for a propensity to save at say  $s_x = s_a = 0.6$ , export inflows  $X$  will exceed the effects of aid inflows  $Fg$  of equivalent dollar value when the combined indirect effects of aid on the recipient economy  $\sum_{t=1}^T p_{at}$  are less than 0.4 of the indirect effects  $\sum_{t=1}^T p_{xt}$  of exports on the recipient private sector. While estimates of these side effects are quite primitive, this simple example indicates that it is no longer obvious that aid dominates trade for all possible parameter configurations.

The last effect to take into account reflects general political-economy considerations of the relative merits of trade *versus* aid for the recipient country. If, for self-sufficiency reasons, the recipient economy attaches an intrinsic weight  $w > 1$  to the value of a dollar earned by exporting in relation to the value of a dollar received as overseas aid, then the formula needs amendment to reflect that concern, and the value of aid obviously diminishes relative to trade.

#### *Aid or Market Access?*

The previous approach is useful to derive a simple, rule-based comparison of the relative worth of export revenues and foreign assistance for a recipient country, but from a policy point of view it fails to place the discussion in a full cost-benefit context from the perspective of the donor country. Kemp and Shimomura (1991) discuss this in a fully specified two-country, two-goods general-equilibrium trade context. Formally, they consider the following problem. Given a situation in which both countries impose effective but sub-optimal taxes on trade, which instrument should the home country use to secure a given increase in welfare of the foreign country – a lump sum transfer or an adjustment of its border tax? While a precise answer depends on the initial pattern of trade taxes implemented by the two countries, Kemp and Shimomura show that in general it is optimal for the home country to adjust both instruments at the same time, suggesting a degree of complementarity between aid and trade policies.

Adam and O'Connell (2004) have also challenged the general Johnson presumption that aid is unambiguously better than trade to assist a recipient country. Taking an explicitly dynamic perspective and emphasising the role of learning-by-doing externalities, they show that the balance in such a context shifts decisively in favour of market access rather than aid. Their starting point is the observation that, other things equal, aid reduces export competitiveness in the recipient country by an appreciation of the real exchange rate in a variant of the classical Dutch disease (Van Wijnbergen, 1985). Hence a dollar of donor resources transferred *via* the donor's own import liberalisation is better for the recipient's exports than a dollar transferred

through grants. When externalities to exporting not internalised by an export subsidy exist, a shift from aid to trade by increasing the recipient's export-sector productivity may actually make both parties better off. The authors then extend their basic theoretical setting to a more fully articulated dynamic computable general equilibrium (CGE) model of a stylised African economy and examine the effects of a shift at the margin from aid to tariff preferences. They calibrate the externality spillover parameter such that the optimal subsidy fully internalising the spillover effect corresponds to the average duty of 11.5 per cent imposed on developing countries by the United States between 1980-85. For such values of the dynamic externality, they show that "trade" is superior to "aid" in terms of welfare for both economies. Allowing for capital accumulation in the model magnifies the relative knowledge externality effect. On the other hand, when the recipient country can finance infrastructure and public capital accumulation only through distortionary taxation, "aid" regains some interest because of its direct effect on the public budget.

### *"Aid for Trade": The Complementarity between Aid and Trade Liberalisation*

Despite much policy discussion on the importance of aid flows as a way to facilitate trade (the so-called trade facilitation issues) and market access, little analytical work has dealt formally with the subject. One exception, Lahiri *et al.* (2002), uses a standard two-country, two-goods trade model in which countries can decide strategically their optimal trade policies. (This is the usual tariff-war argument, which can be generalised to more sensible political-economy arguments). Additionally, one country can make an international transfer (foreign aid) to the other, which is free to accept or refuse that aid. Given that aid is given and received only if it increases welfare in both countries, there can be no transfer paradox. Therefore, without altruism, the only value of aid for the donor comes from the strategic spillover effects it has on the choice of trade instruments between the two countries.

A result of the analysis is that when its level is decided before that of tariffs, foreign aid may induce in the recipient country a more open trade policy and therefore give the donor an incentive to give aid in the first place. The insight relates to standard ideas on optimal tax policies. The recipient designs its optimal trade policy such that its marginal cost in terms of dead-weight loss on domestic production and consumption is equal to its marginal benefit, which produces a shift in the terms of trade to its advantage. It is well known that a transfer may under certain circumstances induce a terms-of-trade effect in favour of the recipient country. In such situations, because the terms of trade have already moved in the right direction, the marginal benefit to the recipient country of using trade policies to affect its terms of trade additionally is reduced. It chooses a more open trade policy at any level of the trade policy of the other (donor) economy. In other words, transfers do in part the work that optimal trade taxes do; they affect world prices and are in some respects a substitute for them. As a result, foreign aid may shift downward the tariff reaction function of the recipient economy, providing a strategic value for the donor economy. Whether trade flows increase between the two economies then depends on the optimal response of the donor country to less protectionism in the recipient country. In such a setting aid tied to reduced protection in the recipient country may be Pareto-improving for both economies, as it can be viewed as a commitment device towards trade

liberalisation. "Aid for trade", in such a case, implements a better world economic resource allocation in a way which is both credible and politically feasible.

## II.2 Empirical Aspects of the Interaction between Aid and Trade

### *From Aid Flows to Trade Flows*

A growing literature investigates empirically the link between aid and trade flows (A1 in Figure 1). Most of the papers study the determinants of aid allocation, i.e. causality going from trade to aid<sup>7</sup>. A few look at the reverse effect from aid to trade (Morrissey, 1993). One motivation for these papers is to assess the efficiency of tied aid, the use of which the donor determines, generally in the form of increased imports of services or goods from the donor. A special case is mixed credits (a mix of commercial export credit, concessional loans and pure grants). Food aid is also a type of tied aid (see below). Other intermediary types include aid loans, soft loans, partial grants and concessional export credits. All in all, 48 per cent of bilateral EU aid is tied on average.

Some papers use the gravity model, with bilateral exports as a dependent variable and bilateral aid as an explanatory variable (see Nilsson, 1997, for EU countries and Wagner, 2003 for a larger sample of 20 donors and 109 recipients). Wagner estimates an equation that takes into account the possibility that the amount of aid is zero for some (donor, recipient) pairs, on a repeated cross-section for five years during 1970-90:

$$\ln X_{dr} = \ln \Gamma_{dr} + 0.163 \ln (\max \{1, A_{dr}\}) + 1.75 [A_{dr} = 0] + \varepsilon_{dr}$$

where  $X_{dr}$  represents exports from the donor  $d$  to the recipient  $r$ ,  $A_{dr}$  is the amount of aid given by  $d$  to  $r$ ,  $\Gamma_{dr}$  is a linear function of the usual variables in a gravity model such as the GDP of donor and recipient, distance and dummies for a common language, remoteness of the donor and remoteness of the recipient. Wagner controls for unmeasurable common factors by introducing in the gravity equation the residual of a preliminary regression on imports from the recipient to the donor. He finds an elasticity of 0.163: increasing aid to a country by 10 per cent increases donor exports to it by 1.63 per cent. This elasticity translates into an average of 1.85 cents of exports generated per additional dollar of aid. The effect is mostly contemporaneous. Nilsson, on a sample restricted to EU countries during 1975-92, finds that \$1 of aid generates \$2.6 of exports from donor to recipient. The average estimate hides huge discrepancies, ranging from \$0.67 for Denmark to \$3.85 for France. All in all, the impact on

7. These determinants respond either to recipient needs (humanitarian motives) or to donors' interests (McKinley and Little, 1979). The donor might be willing to extend its political influence (aid could, for instance, incite the recipient country to join the donor's positions in UN voting), comfort a military ally or increase its export market share. Dudley and Montmarquette (1976) build a structural model where aid enters in the utility function of the donor country and test it in a cross section of developing countries for 1970 considering one donor at a time (hence, a small number of observations). Most papers deal with reduced-form estimations, however. A good example with multiple donors, recipients and years (1980-99) is Berthélemy and Tichit (2002). They find that aid will go to countries attracting FDI from the world generally and linked to the donor by strong bilateral trade.

exports is greater, the larger the donor country. The effect of aid on exports arises mostly from bilateral aid as opposed to multilateral aid, for which the coefficient on exports is negative and significant for Denmark, Italy and France.

#### *Aid and Trade: What Is the Causality?*

The causality between aid flows and trade flows clearly can go both ways, and assessing its main direction is important. Lloyd *et al.* (2000) and Arvin *et al.* (2000) use Granger causality tests. They find that the direction of causality depends on the pairing of donor and recipient countries. In a sample of aid commitments between four EU donors and 26 African recipients over 1969-95, Lloyd *et al.* find that trade determines aid for only 15 of 87 pairs (17 per cent), aid determines trade for 13 per cent and the causality runs both ways for 7 per cent. It is hard to get a clear picture of the link between aid and trade, even for a given donor. France could be the only exception, where for a larger share of recipients (seven of 20, or 35 per cent) the causality runs from aid to trade.

As a consequence of this time-series heterogeneity, one should examine the aid/trade relationship on data pre-tested to identify sub-panels according to the direction of causality and not, as is usually the case, on pooled panel data. When the causality goes from aid to trade, Lloyd *et al.* (2001) find that the effect is first negative and becomes positive after two years. For changes in a recipient's shares of aid and imports respectively from a donor, an increase in the share of aid seems indeed to have a positive effect on the share of imports. The negative effect of aid-flow on trade-flow levels is completely ignored if the estimation is performed on the whole sample, regardless of preliminary Granger causality tests. This means that a positive impact of aid on trade is a spurious result that appears if the estimation coefficients are constrained to be the same for all pairs of countries. When the causality goes from trade to aid, the effect of a change in the trade level on aid is not significantly different from zero with control for other variables. In contrast, a change in the import share does seem to have a positive impact on the share of aid. Donors give more aid to recipients that buy proportionately more imports from them, reflecting the strategic motive in aid allocation. This last result is also found on the total sample, suggesting that it is a robust finding

#### *Food Aid*<sup>8</sup>

Food aid has received special attention in the empirical literature. It is defined as an international sourcing of concessional resources in the form of or for the provision of food (Barett and Maxwell, forthcoming). It comes in various types: programme aid, emergency aid or project aid, such as food for work or supplementary feeding programmes for children and pregnant women. It has been much criticised. It is a second-best instrument and quite expensive, even compared with other forms of aid, because of high agricultural prices on EU and US markets. Moreover, a rising share of processed goods in food aid favours agri-business and monopolistic competition in food shipping. The most important distinction with respect to trade is between

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8. This section draws on Barett and Maxwell (forthcoming), chap. 4.

food aid in kind or through money transfers. The first type can be either distributed directly or monetised and sold on local markets. The second entails buying food either on local markets or in third countries (triangular purchase).

The FAO ensures that food aid respects the Usual Marketing Requirements (UMR), which are commitments to maintain normal levels of commercial food imports. The philosophy behind the UMR is that food aid must be aid that would not otherwise be forthcoming in cash and food that would not otherwise be purchased (Maxwell and Singer, 1979)<sup>9</sup>. The UMR are based on the assumption that the marginal propensity to consume out of in-kind aid is higher than that for money transfers. Empirical evidence suggests that this is not the case and that food aid adds to food consumption at roughly the same rate as cash transfers, the order of magnitude being from 30 per cent to 60 per cent of the food aid shipped. This has to do with Engle curve and income effects (the rise in income does not translate entirely into demand for food). Yet it might change over time, and thus the impact of food aid on trade needs study in a dynamic perspective. Barrett *et al.* (1999) do this using a vector auto-regression approach fitted on US cereal-programme food aid sent to 18 developing countries between 1961-95. They find that in the short run commercial imports of the recipient country indeed decrease (-30 per cent of food aid), but in the long run a J-curve appears, and commercial imports resume after five years. This rise in imports benefits third countries more than the donor country. A possible explanation for this long-term rise comes from induced shifts in consumer tastes, income effects and transaction costs reduced by the development of distribution channels<sup>10</sup>. Yet there are considerable differences in the magnitudes of aid, production and trade. The mean aid volume in the sample is only 9 per cent of mean production and 17 per cent of commercial imports. Therefore, even if the conditional expectation of food aid's effect on commercial imports does follow a J-curve, one cannot say that food aid drives recipient-country trade patterns.

From the viewpoint of a developing country, if food aid could substitute for commercial imports it would in fact ease the balance of payments constraint and free resources for imports — of investment goods, for example. It would then equate with untied financial aid, which might be a more efficient instrument. “There is a certain inconsistency in proposals which talk about food aid as providing balance-of-payments support while insisting that developing countries cannot be helped to pay for the food imports they are forced to make commercially.” (Maxwell and Singer, 1979). Analysts of this issue need a clearer picture of recipient countries' food trade with donors as well as third countries. A first step in this direction is an OECD study (2004), which suggests that the effect of aid depends on the modalities of delivery (grant or loan, programme,

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9. In practice, the UMR sets a limit to food aid, namely average recipient-country imports of the commodity over the preceding five years. The UMR is waived for non-governmental organisations (NGOs) and for emergency aid.

10. Food aid, according to Barrett and Maxwell, is akin to “a free-sample marketing campaign”. They cite anecdotal evidence of the United States encouraging the shift from rice to wheat or from soft wheat to hard wheat in which North America has a comparative advantage. Genetically modified (GM) food aid provides another example. In 2002, Mozambique and Zimbabwe accepted potentially GM food aid from the United States under certain conditions (food must be milled before shipping), but Zambia turned it down because it feared denial of market access for its own products in Europe.

project or emergency, bilateral or multilateral) and on the product types (cereals, pulses or oils and fats)<sup>11</sup>.

To summarise, the literature on aid and trade flows suggests that most the impact of aid on trade and even the direction of the causality are driven by factors related to specific donor/recipient pairs. This justifies the use of case studies, which would scrutinise the non-economic factors (institutions or historical ties) that could explain the specificity of the relationships and its likely impact on trade *via* aid. The general empirical studies also highlight the importance of the sectoral structures of recipient countries, distinguishing between tradables (both exportable and import-competing goods) and non-tradables, the evolution of their relative prices and the extent of factor mobility between the two sectors. A recipient's overall macro environment matters too; the transfer paradox illustrates how aid can interfere with balance-of-payments and fiscal constraints. Important features of aid in that respect concern whether it is spent on traded or non-traded goods (say, health or education expenditures), and how it is distributed domestically among various groups of the population. From a practical point of view, because of the differences in magnitude between aid and trade in many countries, the significance of the impact of aid on trade will likely depend on the types of calculation – marginal *vs.* mean effects, in levels or in shares.

#### *Aid for Trade: Trade Facilitation and Tariff Compensation Schemes*

Trade facilitation is aid meant to alleviate the cost of suppressing barriers to trade. The first type of such aid involves compensating schemes or monetary transfers proportional to the losses incurred by recipient countries during trade liberalisation. This aid resembles structural adjustment loans, which are often conditioned on indicators of trade liberalisation, but they take place during economic crises and their conditionality extends beyond trade policies to macro stabilisation, budgetary issues and financial-system reforms. Some regional trade agreements include compensating transfers, e.g. the EU's structural funds<sup>12</sup>. In another example, the EU put in place the MEDA funds directed to Mediterranean countries that joined a common Free Trade Area (the Barcelona Partnership). Mediterranean countries were expected to face sharp losses in tariff revenues following the suppression of their duties on European industrial imports. These losses could be significant for some countries like Tunisia, which sources 70 per cent of its imports in the EU and where tariff duties represent over 20 per cent of total fiscal revenue. MEDA commitments for the Mediterranean countries in 1995-01 amounted to 1 805 million euros. Of this, 59 per cent went to alleviate the macroeconomic and social costs of trade liberalisation (balance of payments and social safety-net support), and 40 per cent was allocated to private-sector development (vocational training, business centres and guarantees for loans by small and medium enterprises).

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11. The methodology used in OECD (2004) has flaws. Commercial net imports, domestic production and consumption of the recipient country are estimated separately, taking into account neither the simultaneity of the three equations' variables nor the possible endogeneity of aid.

12. The evaluation of the impact of structural funds on the convergence of members of a regional agreement is beyond the scope of this paper, which focuses on trade-related technical assistance.

Trade facilitation activities cover two main categories<sup>13</sup>:

- Trade policy and regulations: support to aid recipients' effective participation in multilateral trade negotiations, analysis and implementation of multilateral trade agreements, trade policy mainstreaming and technical standards, trade facilitation including tariff structures and customs regimes, support to regional agreements and human resources development in trade; and
- Trade development: business development, access to trade finance, trade promotion in some sectors.

Until the creation of the WTO, GATT technical assistance largely took the form of trade-policy courses. Bilateral co-operation provided the channel for most trade-related assistance. In 1996 the Integrated Framework for Trade-Related Technical Assistance to Least-Developed Countries (IF) was launched. The IF brings together six-international agencies<sup>14</sup> to collaborate with bilateral donors to ensure greater coherence in the provision of trade-related technical assistance. The core of the IF is the provision of diagnosis reports, which include action matrices stating with priority rankings the various tasks offered to external funding. An action matrix is established at least theoretically after discussion with local stakeholders co-ordinated by a Focal Point (usually in the Ministry of Trade). Another initiative is the Joint Integrated Technical Assistance Programme (JITAP), launched by the WTO, UNCTAD and the ITC in selected Least-Developed and other African countries<sup>15</sup>. In 2001, the Doha Development Agenda Global Trust Fund was launched, and the IF and JITAP were revamped and expanded in 2003. Bilateral and multilateral trade-assistance commitments increased to a total of almost \$2.8 billion in 2003 (see WTO/OECD, 2004, for details on the distribution of these activities by donor, recipient and category of assistance).

Trade-related assistance has faced many critiques. According to Prowse (2002, p. 1 239), it "has been delivered frequently randomly, indiscriminately and more often than not on a stand-alone basis". She points to the lack of co-ordination between multilateral agencies involved in capacity building, such as the IMF, ITC, UNCTAD, UNDP, the World Bank and the WTO, not to mention other specialised agencies (BIS, FAO, ISO, UNIDO, WCO, WIPO), regional bodies and bilateral donors. Within the WTO, the implementation of the Special and Differential treatment, by which a least-developed country might be given longer transition periods for the implementation of GATT/WTO obligations and maintain some trade restrictions or subsidies, is handled by each relevant WTO committee. For instance, the Committee on Sanitary and Phytosanitary Standards will implement an assistance programme independently from the

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13. Activities to enhance the infrastructure necessary for trade, such as transport, storage, communications or energy are excluded.

14. These are UNCTAD, ITC, UNDP, WTO, IMF and the World Bank. The International Trade Centre (ITC) is a joint venture of the WTO and UNCTAD. The IF received \$19 million in pledges through 2003, of which around \$10 million was disbursed through 2003.

15. The JITAP is a more a results-oriented programme than the IF. By September 2003, the JITAP had received \$12.6 million in its Common Trust Fund.



committee on Intellectual Property Law. A consequence of this fragmentation of aid is that it is often short-lived and is not integrated in a global development strategy of the country.

The IF initiative, intended to overcome these issues, remains mostly donor-driven and lacks local ownership. The process involves Geneva-based representatives more than local governments, and the local IF co-ordinator (the “Focal Point”) usually resides in the trade ministry, which most often has less political muscle than Ministries such as Planning or Finance (and Customs). More profoundly, trade-related assistance suffers from conflicting rationales (Shaffer, 2005). One is to facilitate trade liberalisation and the implementation of WTO agreements; the other supports trade-related aspects of development, including the capacity to re-negotiate WTO rules from a development perspective. The present emphasis rests clearly on the former. The first domain in which the WTO designed trade assistance activities was the Singapore Issues, among them intellectual property rights, which might not be a first-rank concern for the least-developed countries (LDCs). A temptation even arose to link the continuation of trade assistance to the conclusion of the Doha negotiating round.

The fragmentation of trade-related assistance does not help an overall assessment of its impact on trade, not to say growth. The methodology used in the few available studies estimates the costs of trade transactions and simulates the impact of a decrease in them. No study known to the present authors directly evaluates the impact of trade assistance on reducing trade transaction costs. An OECD report (2003) gives some estimates of those costs. They range from 1 per cent to 15 per cent of traded goods’ value. The computations are based mostly on business surveys and make some assumptions for the opportunity costs (in monetary terms) of time delay or inventory holding. Trade transaction costs seem higher for agricultural products (due to additional sanitary and phytosanitary inspections). They also are higher for developing countries, and considerable variation in border waiting times exists particularly for countries with per capita incomes of less than \$9 000.

Researchers have taken two routes based on these evaluations of trade transaction costs:

- Introducing trade transaction costs in a gravity model of bilateral trade, along with the usual variables such as tariffs or distance. Examples are Wilson *et al.* (2003) for APEC and Wilson *et al.* (2004) for a larger sample of 30 developed countries and 45 developing countries.
- Introducing trade transaction costs in a CGE model (Hertel, 2004). Trade facilitation is introduced as technical progress in trading activities that reduces the cost of trading (indirect effect) and can entail a reduction in logistics duties paid to the public sector (direct effect). Examples appear in Fox *et al.* (2003) and OECD (2003).

Wilson *et al.* (2004) derive their measures of trade facilitation from cross-country business surveys and build four indices — for port efficiency, the customs environment (hidden barriers or bribes), the regulatory environment (corruption) and the service infrastructure (speed and cost of internet access and its contribution to inventory reduction). These indicators correlate highly with each other and with per capita incomes. The gravity model, which does not control for the endogeneity of trade costs, shows that higher trade-facilitation index values indeed have a

positive impact on bilateral trade, especially the service infrastructure and the regulatory environment. Full elimination of the 8.5 per cent average tariff would equate for the importing country to improvements of 15.6 per cent in port efficiency, 17 per cent in the regulatory environment and 6.6 per cent in the service infrastructure. The corresponding gains for the exporter are 5.2 per cent, 2.5 per cent and 7.8 per cent. The tariff elimination also is equivalent to a 10 per cent better customs environment for the importer. When the sample is restricted to South-North trade, variables of the North as importer, such as tariffs, are not significant. Thus, the regression would suggest that tariffs are not an impediment to South-North trade. A high coefficient on the regulatory environment in the exporting country (from the South) points to possible large gains following its reform. In South-South trade, tariffs are significant and the service infrastructure is important for trade in both directions. The estimates of the gravity model are then used for simulation. If below-average countries are put at a level halfway to the average for the entire set of countries, the volume of trade will increase by 9.7 per cent (\$377 billion). The gain will be smaller for Middle Eastern and North African (MENA), sub-Saharan African and Latin American exports than for South Asian exports, because they have less access to OECD markets.

The CGE simulations in OECD (2003) take into account a loss in logistic duties and reduced corruption following trade facilitation. Thus, the positive impact is attenuated by an adjustment in the government sector. They also model diversity in trade transaction costs due to sectors' and firms' heterogeneity. They show that an overall and uniform reduction of trade transaction costs by 1 per cent of the value of world trade would entail a trade gain of \$38 billion. Reducing border waiting times accounts for 80 per cent of it. Most of it would go to OECD countries (69 per cent) and to a lesser extent the Asia-Pacific Region. MENA and the Latin America/Caribbean (LAC) region would each get 5 per cent of the benefit and sub-Saharan Africa a mere 2 per cent. If the improvement in trade facilitation results in closing the gap to best practice (that is, the lower the initial level, the larger the improvement), non-OECD countries receive 63 per cent of the gain in trade (Table 1). In turn, these trade gains result in a welfare improvement of 0.13 per cent of GDP worldwide. This figure can rise to 0.85 per cent of GDP for sub-Saharan Africa in a scenario with differential improvement in trade transaction costs. Again, however, the study reports no results on growth or income distribution.

For least-developed countries, including many sub-Saharan African countries, the potential benefit of trade facilitation programmes (or reductions in trade transaction costs) seems to depend on improvement of their market access<sup>16</sup>. Industrialised countries have designed preferential schemes to facilitate access to their markets for developing countries, such as the generalised system of preferences (GSP), or more recently, the EU's "Everything but Arms" initiative and the US African Growth Opportunity Act (AGOA). Recent studies point to under-use of these preferences (Brenton, 2003; UNCTAD, 2003; Candau *et al.*, 2004). Reasons include the extent of product coverage (especially for agriculture and textiles) and the costs of

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16. Anecdotal evidence points to contradictory objectives in trade-related assistance and market-access policies. Bogart and Trzeciak-Duval mention that the EU announced in February 2004 an Action plan on Commodities to favour diversification in exports from the developing countries. Yet the EU restricted market access for some of the commodities targeted by the action plan, such as sugar and rice (Bogart and Trzeciak-Duval, 2004, p.12).

implementation (administrative costs, rules of origin, sanitary and phytosanitary norms). Other possible reasons lie in the temporary nature of GSP and AGOA and the contingency of some GSP schemes on the developing exporters' performance.

Table 1. **Scenario Results on the Income Effects of Trade Facilitation**  
(Income gains in million of dollars; distribution in per cent)

	Uniformity	Country Diversity
Worldwide Income Gains	38 454	41 844
– due to direct cost reduction	6 041	7 689
– due to indirect cost reduction	32 413	34 155
Distribution (per cent)		
OECD	69	37
OECD Asia-Pacific	8	7
OECD Europe	43	17
OECD North America	18	13
Non-OECD	31	63
Former Soviet Union	2	7
MENA	5	11
LAC	5	13
Non-OECD Asia-Pacific	16	24
Sub-Saharan Africa	2	7
Rest of World	1	1

Source: OECD (2003).

To summarise, despite some attempts to estimate the nature of trade transaction costs and the effect of their reduction on trade flows, no study known to the authors so far has tried to evaluate directly the impact of trade-assistance aid on the reduction of these costs. This is a significant gap in the literature. Case studies planned for the present OECD Development Centre project may help to bridge the gap by gathering country-level data. The many possible indicators should include shipping and customs costs and delays at different times, including before and after the implementation of IF or JITAP programmes. In the absence of complete evaluation of how trade-facilitation activities affect trade flows and development outcomes, the existing papers tend to hope that reduction in trade transaction costs will have a significant effect provided that developing countries have sufficient market access in the North. Such arguments might point to a possible complementarity between aid and market-access policies in the North.

### III. INTERACTIONS BETWEEN FDI AND TRADE

#### III.1 Conceptual Aspects

##### *Standard Trade Theory and Factor Mobility*

One can consider FDI as simply a factor movement between two countries and examine how it affects trade volumes between them (F1 in Figure 1). In the standard Heckscher-Ohlin model of trade with two countries, two factors and two goods, the traditional view is that factor mobility (particularly capital mobility or FDI) substitutes perfectly for goods mobility, i.e. trade. In the first formal exposition of this idea Mundell (1957) noted that in the presence of tariffs, the relatively low-priced factor in each country will be that country's abundant factor. Factor mobility in response to international factor-price differences would thus lead to the elimination of trade by eliminating the factor-proportion basis for it. Perfect factor mobility would produce an international equilibrium in which factor prices and commodity prices are identical to those characterising a free-trade equilibrium with factor immobility. According to this view, factor movements and commodity trade are substitutes in both the welfare and volume-of-trade senses, and more FDI flows should associate with less trade. In an important contribution Markusen (1984) extends the Mundell analysis to show a number of situations in which factor movements (FDI in particular) and goods trade in fact complement one another in the sense that increased factor movements between two economies lead increased trade flows. The basic idea considers the following set of assumptions:

- a) countries have identical relative factor endowments;
- b) countries have identical technologies;
- c) countries have identical homothetic preferences;
- d) production has constant returns to scale;
- e) production is characterised by perfect competition; and,
- f) there are no domestic distortions in either country.

Under these assumptions, two countries have no reason to trade with each other. Relaxing only assumption a) provides the standard Heckscher-Ohlin motive for trade in commodities. Markusen (1984) showed that retaining a) but relaxing assumptions b), d), e) or f) provides a reason for a complementarity between factor movements and trade. The basic intuition is that, in all of these cases at the initial trading equilibrium with no factor mobility, there is no factor-price equalisation; a country will have a relatively high factor price for the

factor used intensively in the production of its export sector. Thus factor mobility must lead to an inflow of the factor used intensively in the production of the export good. This in turn adds a factor-proportion basis for trade and an increase in the volume of trade between the two economies. Taken together, these different models suggest the general idea that trade flows and FDI flows are substitutes in only a restricted set of circumstances. They will most likely be complements when technologies differ across countries, when there are external or agglomeration economies of scale, when firms compete in oligopolistic fashion and when there are local distortions in product or factor markets.

### *Standard Trade Theory and Interactions between FDI and Trade Policies*

The ideas outlined above deal with commodity trade and factor movements, but they do not address the interactions between FDI and trade policy instruments and their welfare impacts on the host country. Johnson (1967b) showed in an early contribution that an exogenous increase in the stock of a domestic resource, capital for example, might bring a welfare loss in a tariff-ridden, small and open economy if it exacerbates overproduction of the protected import-competing industry. Clearly, if a discrepancy also arises between domestic product and national income because the increase in the capital stock is foreign-owned (FDI), then it is even more likely that national welfare may decrease. Brecher and Diaz-Alejandro (1977), Markusen and Melvin (1979) and Brecher and Bhagwati (1981) all note that tariff-generated FDI may reduce the real income of the host country or even of the world as a whole. Tariffs imply that a reduction of imports at constant terms of trade depresses national income by lowering the volume of trade. If tariff-generated FDI has the Mundell effect of curtailing trade, this tends to lessen income in the absence of a favourable terms-of-trade change. This result therefore reveals situations where a tariff reduction in the host economy tends to increase the welfare gain associated with FDI flows. Looking at instruments, this suggests that a trade liberalisation policy may complement an FDI policy promoting capital movements.

Bhagwati and Brecher (1980) and Brecher and Bhagwati (1981) show that free trade may be inferior to subsidised trade or no trade for a large country when it has a foreign-owned domestic factor of production (like FDI capital). This comes from the discrepancy in the volume or pattern of trade between the economy as perceived in the aggregate (with both domestically and foreign-owned factors) and the economy as perceived from the national point of view (domestic factors only). All this line of research suggests that trade liberalisation (and even subsidisation in some cases) in the host country may at the margin complement FDI liberalisation from the welfare point of view, because it decreases the likelihood of the Johnson/Bhagwati-Brecher phenomenon when an FDI inflow occurs.

### *The New Trade Theory and Multinationals*

Research in the early 1980s saw the beginning of the industrial-organisation approach to trade. It brought increasing returns to scale and imperfect competition into the general equilibrium model of trade. Two branches of this line of research discuss the relationship between trade and FDI. The first describes multinational and FDI activities as “vertical FDI” in the sense that single-plant firms fragment the production process into stages based on factor intensities and locate activities according to international differences in factor prices (Helpman,

1984, 1985; Helpman and Krugman, 1985). Multinational activity will arise between countries that differ in factor endowments. The second branch considers “horizontal FDI” and emphasises the role of firm-level and plant-level economies of scale as well as trade costs between countries (Brainard, 1993; Markusen and Venables, 1998, 2000). Contrary to the vertical FDI model, the horizontal FDI model predicts that, given moderate to high trade costs, multinational activity arises between countries similar in size and relative factor endowments. Markusen (1997, 2001) integrated the two branches into what is now known as the “capital-knowledge” approach, stressing the role of skill-intensive, knowledge-based assets that can be fragmented from production and become joint inputs into multiple production facilities.

What does this new approach tell us about the complementarity or substitutability between FDI and trade flows? Clearly, affiliate production and trade flows should be substitutes in the “horizontal” approach, although the relationship can become subtler when the firm produces both intermediate and final goods. It is also reasonable to say that affiliate production complements trade in the “vertical” approach. Markusen and Maskus (2002) draw out the implications of how FDI liberalisation affects trade flows. The type of FDI (and therefore the impact on trade flows between two countries) depends on differences in country size, relative skill endowments and trade costs. More precisely, when countries are similar in size and relative factor endowments and trade costs are moderate to high, FDI liberalisation tends to stimulate “horizontal FDI” and to reduce exports from the source country to the host country. On the other hand, when countries differ in relative factor endowments and in size and trade costs are low, then FDI liberalisation will likely stimulate “vertical FDI” and promote trade — through exports of intermediates from the source to the host country or of assembled products from the host-country export platform back to the source country or to a third destination.

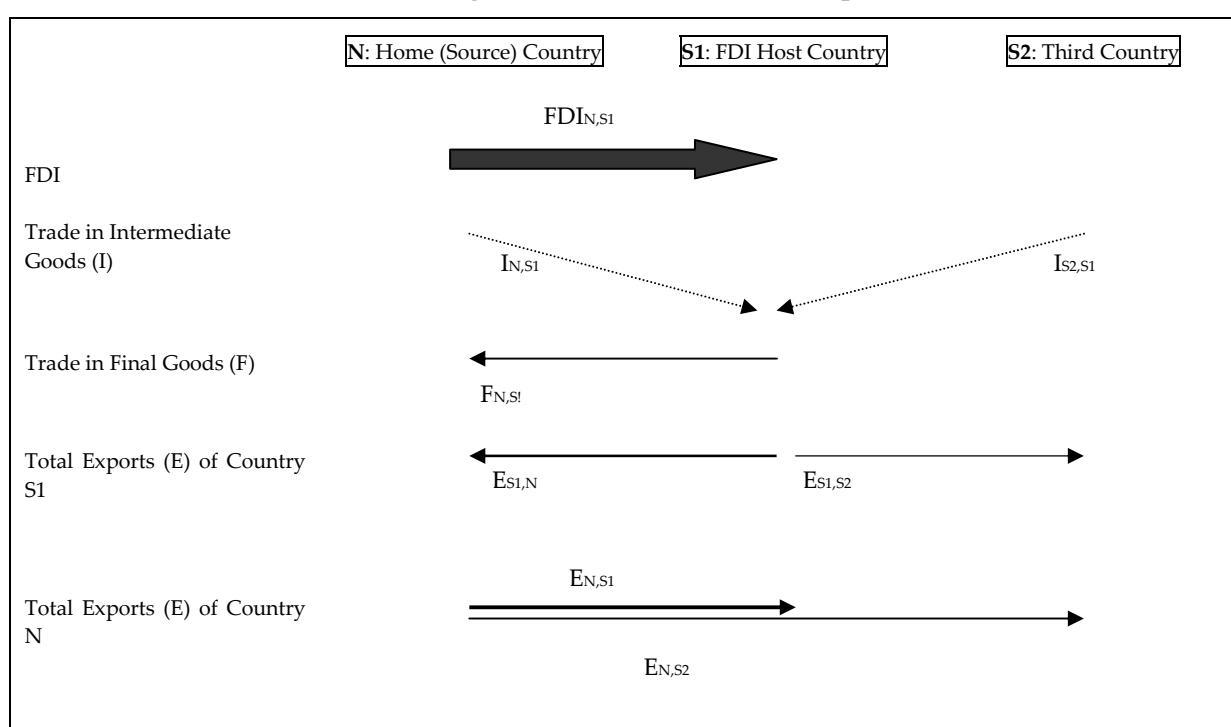
### *The New Trade Theory and Interactions between FDI and Trade Policies*

Markusen (1997) provides a variation of the same argument, concentrating directly on the relationship between trade and investment liberalisation from the viewpoint of a small, developing host economy facing a large, developed source country. This is one of the very few papers that explicitly consider the degree of complementarity or substitutability between two policy instruments rather than the relationship between trade and FDI flows (the policy outcomes). While precise results derive from numerical simulations and therefore depend on the configuration of parameters, three general conclusions emerge. First, investment and trade liberalisation do not seem to be substitutes in that they often have opposite effects on important variables (like sectoral outputs, factor rewards, etc.). Second, they have quite different effects together than does either one alone. For instance, FDI liberalisation alone may lead to horizontal FDI, but coupled with trade liberalisation it may promote vertical FDI. In a welfare sense, trade and investment liberalisation serve as complements. Finally from a distributive point of view, they may together avoid the curse of Stolper-Samuelson, in the sense that the real incomes of all factors can rise under full liberalisation, even if the relative price of one factor may fall.

### III.2 Empirical Analyses of FDI and Trade

Many empirical studies have examined the relationship between trade and FDI. As with the aid and trade relationship, the outcomes are quite mixed. The difficulty arises because empirical work must take into account different stages of production, intra-firm and inter-firm trade and the effects on third countries. Therefore it needs very disaggregated data. The first studies looked at the impact of FDI on exports from the point of view of the source country, i.e.  $FDI_{N,S1}$  versus  $E_{N,S1}$  in Figure 2. They found that trade and investment are complements. Lipsey and Weiss (1981), for instance, found a positive effect of US firms' foreign production on US exports.

Figure 2. FDI/Trade Relationships



The picture changes however, when one introduces different stages of production and disaggregates exports into flows of intermediate and finished goods. Lipsey and Weiss (1984) found a strong complementarity between affiliate production and exports of intermediate goods, but no significant relationship between affiliate production and exports of finished goods. Belderbos and Sleuwaegen (1998) find evidence of substitution between foreign production and trade at the firm level when import protection or voluntary export restraints (VERs) threaten firms in the destination market. This “tariff jumping” investment substitutes for trade, as they show for Japanese electronic firms in Europe during 1986-88. On the other hand, Japanese firms that acquired European firms or invested in distribution subsidiaries exported relatively more to Europe. Blonigen (2001), looking at product-level data on Japanese automobiles and automobile parts exported to or produced in the United States, identifies large substitution effects in consumer goods between US-based affiliates and Japanese exports. On the other hand, increased demand for imported inputs in vertical relationships stems from complementarity.

In a dynamic perspective, Bergsten *et al.* (1978) found that an initial complementarity turns to substitution as the host country gains competitiveness and becomes an export platform. Their analysis introduces the effects on third countries (in Figure 2,  $E_{S2,S1}$ ). Trade between affiliates (say, in countries S1 and S2) might eventually replace trade between the home country and the affiliate in S1. Integrating both the different stages of production and the third-country effect, Svensson (1996) shows with Swedish data that exports of intermediate goods from the source country increase ( $I_{N,S1}$ ), and exports of final goods decrease ( $F_{N,S1}$ ), the net effect being close to zero and negative when the third-country effect is taken into account (the replacement of exports from the source country to the third country,  $E_{N,S2}$ , by exports from the host country,  $E_{S1,S2}$ ).

The relevant question for developing countries will concern the impact of inward FDI on their exports and imports. In terms of Figure 2, answering it would require data on gross exports and imports of source and the host countries and restricting the sample to North-South FDI. Fontagné and Pajot (1997, 1999) take a first step in this direction by distinguishing inward and outward FDI on the one hand and exports and imports on the other. They show clearly asymmetric effects for a given country. The samples, however, contain data on 14 industrial countries (11 in Europe, the United States, Japan and the EU12) and one “partner country” which accounts for the rest of the world. In fact, they work with two datasets, one disaggregated at the industry level for France only, the other taking FDI as a whole for 14 declaring countries facing 15 partners over the years 1984-93. Their regression takes the form:

Table 2. FDI and Trade: Effects of A \$1 FDI Flow on Bilateral Trade  
(In US dollars)

	Exports to Partner Country	Imports from Partner Country	Trade Surplus with Partner Country
France : Effects of FDI on bilateral trade flows, 15 manufacturing industries (1984-94)			
\$1 FDI outflow to partner country	0.59	0.42	0.35
\$1 FDI inflow from partner country	0.22	0.34	-0.12
Net effect of FDI balance on bilateral trade			0.23
France; Effects of FDI on bilateral trade flows, all sectors (1984-94)			
\$1 FDI outflow to partner country	2.28	1.85	0.43
\$1 FDI inflow from partner country	3.52	4.34	-0.82
Net effect of FDI balance on bilateral trade			-0.39
<b>Pooled data (14 declaring countries, facing 15 partners, 1 aggregate sector, 1984-93)</b>			
	Exports of Partner Country	Imports of Partner Country	
\$1 FDI outflow to partner country	0.430	2.025	
\$1 FDI inflow from partner country	2.166	0.311	

Note: Sectors include 15 manufacturing industries, three energy industries and agriculture.

Source: Fontagné and Pajot (1997).



$$T_{ij} = T(\text{GDP}_i, \text{GDP}_j, \Delta\text{GDP}_{ij}, Y_i, Y_j, \Delta Y_{ij}, \text{DIST}_{ij}, \text{REG}_{ij}, \text{PROD}_i, \text{FDI}_{ji}, \text{FDI}_{ij})$$

where  $\text{GDP}_i$  is the GDP of country  $i$ ,  $\Delta\text{GDP}_{ij}$  is the difference in GDP between the two countries,  $Y_i$  is income per capita in country  $i$ ,  $\Delta Y_{ij}$  is the difference in per capita income,  $\text{DIST}_{ij}$  measures distance,  $\text{REG}_{ij}$  is a dummy indicating a regional trade agreement,  $\text{PROD}_i$  is average industry productivity,  $\text{FDI}_{ji}$  is inward FDI and  $\text{FDI}_{ij}$  is outward FDI.

Table 2 summarises the results. In manufacturing, a \$1 FDI outflow from France generates 24 cents of imports from the host country, but the trade balance is in favour of France, with a net export of 35 cents. The result is robust to the introduction of productivity effects (economies of scale) or to considering all sectors. In the larger data set, an FDI outflow of \$1 generates 31 cents of imports. But again, the foreign investment creates net exports from the source country of \$1.86 (=2.17-0.31). Thus foreign investment creates net exports for a source country, revealing a complementarity between FDI and trade for the source country and a substitution for the host country. This analysis ignores potential productivity benefits arising from importing inputs that might be sophisticated enough to entail technology transfers.

A proper testing of the FDI-trade relationship is difficult in a way similar to testing the aid and trade relationship, because of problems of simultaneity (endogeneity of FDI in the trade equation) and direction of the causality. Moreover, theory predicts that firms' heterogeneity matters. If FDI is vertical, multinational firms split their stages of production among various locations, which will likely enhance trade. If FDI is horizontal, they produce final goods in multiple locations, which will likely substitute for trade. Unfortunately, there is no way to distinguish between horizontal and vertical FDI in the data.

Amiti and Wakelin (2003) address these problems in a novel way. They start from Markusen's model (1997) and derive testable implications for complementarity or substitution between trade and FDI depending on the size of the countries, differences in factor (skill) endowments and trade costs. They estimate a gravity model of bilateral exports as a function of trade and investment costs in the countries of origin and destination of exports. They measure investment costs by an index of various impediments to investment (government restrictions on foreign companies, immigration rules, restrictions on raising capital and anti-trust laws)<sup>17</sup>. They also introduce interaction terms of investment costs with differences in country size and in skill endowments. The interaction terms are meant to capture the non-linearity in the relation between trade and FDI liberalisation. The model is estimated for each year from 1986-94 on a sample of 36 countries including 13 developing countries. Of particular note are the partial derivatives of exports with respect to investment costs in the destination and origin countries of the trade flows (reproduced here for 1994):

$$\frac{\partial \ln X_{ij}}{\partial \ln IC_j} = -5.15 + 0.13 \ln DY_{ijt} - 0.27 \ln DSKILL_{ijt} + 0.81 \ln TC_{jt}$$

17. The investment cost index is the simple average of scores from the World Economic Forum surveys on foreign investor controls, immigration laws, cross-border ventures, hiring practice, anti-trust laws, state of justice, state of capital markets, and protection of intellectual property rights. The index ranges from 0 to 100 with higher values indicating higher investment impediments.

for investment costs in the destination country, and

$$\frac{\partial \ln X_{ij}}{\partial \ln IC_i} = -7.47 + 0.40 \ln DY_{ijt} + 0.816 \ln TC_{it}$$

for the investment costs in the origin country,

where  $X_{ij}$  is the export of manufactured goods from country  $i$  to country  $j$ ,  $DY_{ijt}$  is the difference in real GDP,  $DSKILL_{ijt}$  is the absolute difference in relative skill endowments and  $TC_i$  is the trade cost in country  $i$  defined as an index ranging from 0 to 100, constructed from the World Competitiveness Report, where companies are asked whether national protectionism prevents foreign goods from being imported<sup>18</sup>.

An investment liberalisation in country  $j$  stimulates exports to it when the origin and destination countries differ in relative labour-skill endowments (the coefficient on  $\ln IC_j^* \ln DSKILL_{ij}$  is negative) but reduces exports when trade costs are high (the coefficient on  $\ln IC_j^* \ln TC_j$  is positive). Therefore, investment liberalisation in the North should enhance exports from developing countries, as long as trade costs are not too high. On the other hand, if country  $i$  reduces its investment cost, the difference in skills between the two countries does not matter for trade flows and the trade-cost variable switches sign from negative in the early years to positive after 1991. The interactive term between investment cost and country size ( $\ln DY_{ij}^* \ln IC$ ) has an unexpected positive sign. Amiti and Wakelin relate that finding to the replacement of national firms likely to be big exporters by multinationals when investment costs fall.

To summarise, Amiti and Wakelin find that when factor endowments are different in two countries and trade costs are low, vertical FDI will occur, enhancing intra-firm trade and increasing exports, provided that the difference in country size is not too large. When the two countries are similar in factor endowments and trade costs are high, horizontal FDI that will substitute for exports becomes more likely. Using data from 1994, they show that 70 per cent of

their sample exhibits a negative derivative for  $\frac{\partial \ln X_{ij}}{\partial \ln IC_j}$ , i.e. a complementarity between

investment liberalisation and trade. The average elasticity was  $-0.15$  in 1994, down from  $-0.53$  in 1986. As country characteristics and trade costs change over time, the impact of investment liberalisation on trade does not stay constant either. The implication for a developing country would be that investment liberalisation should accompany trade liberalisation in order to magnify the complementarity between trade and investment, which the difference in factor endowments will enhance. All in all, the empirical literature on the impact of FDI on trade suggests complementarity for developing countries. The result is specific, however, to the type of FDI (horizontal or vertical), the stage of production (intermediate or final) touched by the FDI inflow and the potential technological spillovers associated with it. Third-country effects seem important, as well as the evolution over time. All these parameters are difficult to gather, but doing so might be feasible for some case studies.

18. The index ranges from 0 to 100, with higher values representing higher barriers.

## IV. CONCLUSION

This survey has some implications for the case studies envisioned in the current OECD Development Centre project. What has this review of the literature revealed? A first, quite robust element is the identification of complementarity between trade and FDI flows and policies. There are theoretical arguments for it, and the few empirical papers addressing this issue directly support them. An important policy implication, however, lies in the risk of a two-tier system in which emerging developing countries (East Asia, South Asia and China) would attract both investment and trade while other less-developed economies (in sub-Saharan Africa) would not.

On the other hand, the literature so far does not provide straightforward and robust results on complementarity between aid and trade flows. Yet there is a presumption of possible complementarity between aid and trade policy that would reduce domestic distortions in the developing country (e.g. provision of a public good or domestic market reforms). In the classical “aid *vs.* trade” debate, the theoretical arguments would urge aid, a more direct instrument, over market access. The balance might change, however, if countervailing terms-of-trade effects are significant (immiserising aid) and if learning through exports is possible through productivity gains in exporting firms that might spill over to non-exporting firms. These conditions seem relevant for a stylised African economy but remain to be verified in real cases. The reasoning treats only marginal effects, however.

The cross-country empirical literature, while suggesting some complementarities across policy areas like trade, FDI and aid policies, faces a number of important limitations that more detailed case-study analyses may overcome. First, most complementarity results are based on measures of flows rather than of the policy instruments. This causes problems because many different unobserved factors may affect the relationships between instruments and observed flows. Second, these analyses do not take into account how institutional details may affect the pattern of complementarities across policy areas in a given country. This may be crucial for policy implementation. Third, cross-country analyses give an aggregate view of the policy areas under investigation. They do not distinguish between various instruments within a given policy area (trade, FDI or aid) and therefore give at best an average view of the impacts of these instruments and their interactions. They also are ill suited for understanding the impact of lagged effects and interactions, because the identification power of the regressions often comes more from inter-country variability than from time variability. Finally, they consider aggregate policy impacts in countries without discussing the distributive implications within them. This precludes the consideration of political-economy issues, which again may be quite important.

Country case studies can overcome some of these problems, particularly by disaggregating policy instruments. Policies for trade, FDI and aid are in fact multidimensional

vectors. More formally, for a given country  $i$ , policy vectors could be defined as  $[T_{rdkt}]$ ,  $[F_{rdkt}]$  and  $[A_{rdkt}]$ , where  $T$ ,  $F$  and  $A$  correspond to trade, FDI and aid policies, and  $r$  refers to the recipient or host country,  $d$  to a donor or source country interacting with  $i$ ,  $k$  to a particular policy instrument and  $t$  to a time period. The disaggregation of the policy vector  $Z \in \{T, F, A\}$  between policy instruments may have important implications for bringing to light the issue of substitutability or complementarity between two instruments within and across policy areas. First, two different instruments,  $Z_k$  and  $Z_k'$ , within the same policy area,  $Z \in \{T, F, A\}$ , may indeed have differential impacts when interacting with another policy area,  $W \in \{T, F, A\}$ . Think, for instance, of tariffs *versus* quantitative restrictions within the trade policy vector  $T$ . It is well known that they may have different economic impacts, making it quite likely that they may also have different interactions with another policy vector like  $F$  (FDI) or  $A$  (aid). Second, two instruments,  $Z_k$  and  $W_k$ , in two different policy vectors,  $Z \in \{T, F, A\}$  and  $W \in \{T, F, A\}$ , may also generate different forms of complementarity or substitution than two other instruments,  $Z_{k'}$  and  $W_{k'}$ , in their respective policy areas. Disentangling these finely grained forms of interaction goes beyond analyses based on average measures of policy and may be quite important for effective policy implementation. The disaggregation of the policy vectors of the source/donor country,  $Z_d$  and  $Z_d'$ , is also important. It should naturally illuminate the question of policy coherence and complementarity in these countries. It may also reveal how for a given country different instruments within or across policy areas interact with those of another source/donor country. Finally, the time dimension  $t$  is obviously important, to exploit the dynamics of interactions across policy areas and understand the nature of lags and delays that may appear in country  $i$ .

Country case studies can more closely investigate three key issues. First, they can characterise more precisely the local determinants of complementarity between policy areas. Case studies may allow more focus on how other domestic market distortions (like labour or capital market distortions) and local governance problems (corruption, local capture and politics) may interfere with policy and the implementation of particular instruments within each policy area. Second, they can explore distributive and political-economy questions. Typically, one may expect from case studies a more disaggregated view of the impact and interactions of various policies. Understanding who are the likely winners and losers can be important for the political feasibility of implementing policy reforms. Finally, case studies can detect how interactions across policy areas diffuse over time within the economy and how temporary or permanent shocks may affect them. Here, the task is to identify the importance of lags and delays and the role of expectations of future policy changes.

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