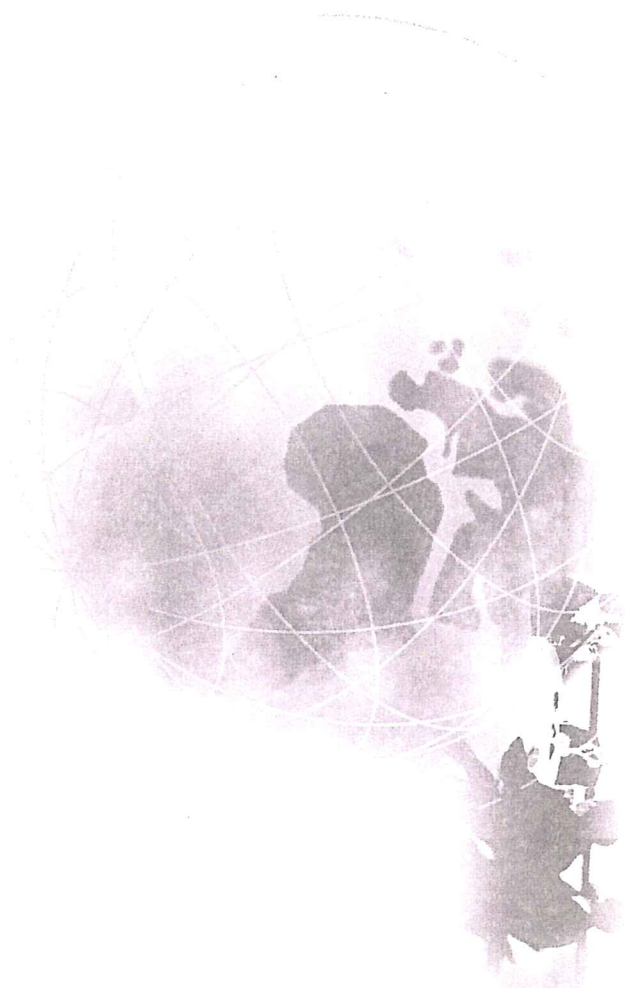


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Exploring the links between
subsidies, trade and the WTO



II SUBSIDIES, TRADE AND THE WTO

A INTRODUCTION

Subsidies are one of many policy instruments subject to rules in the multilateral trading system, but they present more complex issues for policy-makers than many other instruments subject to GATT/WTO rules. One reason for this is that subsidies can be defined in different ways. Another is that they are used in pursuit of a wide array of objectives. Even where they are not aimed at trade, they can affect trade flows. The kinds of subsidies of primary concern to this Report are those that impart an advantage to some domestic producers and thereby affect trade. The challenging task of determining which sorts of subsidies are problematic from the perspective of the trading system, and what might be done about them, has occupied an important place on the agenda of the WTO/GATT system.

This Report aims to provide an overview of the use of subsidies in different regions of the world and according to different economic activities. In order to analyse existing data on subsidies it is necessary to understand the different definitions used for subsidies and their economic effects. This is why the Report starts with a discussion of the definition of subsidies and an examination of the most important economic concepts related to subsidies. The analysis also considers the main reasons why governments appear to use subsidies and what the trade and economic implications may be of such policies. The Report will examine the WTO rules on subsidies, their evolution over time, their content from an economic perspective, and how WTO disputes have helped to shape national policies in this area.

Data on the use of subsidies are scarce in general and difficult to compare across countries and sectors because of methodological differences and data gaps. Nevertheless, the limited evidence available indicates that subsidies may have a significant impact on trade flows. According to some estimates global subsidies may amount to more than a trillion dollars per year, or 4 per cent of world GDP. Other estimates indicate that subsidies represent on average around 6 per cent of expenditure by governments and 1 per cent of their GDP. These values vary significantly across countries and sectors. The economic inefficiencies created by subsidies are potentially significant. Both developed and developing countries could benefit from reducing those subsidies that are not necessary to correct for market failures or to pursue valid policy objectives.

B DEFINING SUBSIDIES

At the origins of the GATT, little attention was given to the trade impact of subsidies. However, contracting parties soon appreciated the need to deal with subsidies in order to secure the value of their agreed tariff concessions. A country can undermine its market access commitments by providing subsidies to import-competing industries. In addition, subsidies given to competing exporters in third countries can divert trade away from a country that had relied on negotiated market access to another market. These concerns led to the development of more stringent disciplines on subsidies than those initially provided for under the GATT (1947). A major step was the negotiation of the plurilateral "Subsidies Code" during the Tokyo Round and, thereafter, of the WTO Agreement on Subsidies and Countervailing Measures (SCM) and the Agreement on Agriculture (AoA).¹

In much of this Report the term "subsidies" refers to the concept of subsidies used in the WTO Agreement. Yet, the Report inevitably has to deal with other definitions of subsidies, in particular when it comes to the description of national or international data on subsidies or of national policies with respect to subsidies. This Report therefore starts with a discussion of the different concepts and definitions of subsidies used in the literature. Particular attention will be paid to those definitions relevant to the rest of the study, such as the definition of subsidies used in the System of National Accounts and the concept of producer subsidy equivalent (PSE) frequently used in OECD statistics. This Section ends with a short discussion of the WTO definition of subsidies under the SCM Agreement in the light of the concepts and alternative subsidy definitions introduced previously.

1. THE DEFINITION OF SUBSIDIES: CONCEPTUAL ISSUES

Although the term "subsidy" is widely used in economics, it is rarely defined. Often it is used as an antonym to a tax, i.e. a government transfer of money to an entity in the private sector. This seems, for instance, to be the case in the Oxford Online Dictionary² where a subsidy is defined as: "a sum of money granted from public funds to help an industry or business keep the price of a commodity or service low".³ But many would argue that tax concessions are also a form of subsidization. Indeed, for the relevant recipients it may not make much difference whether they are made better off by receiving money or through the reduction of their tax bill. Both forms of "assistance" also represent financial transfers by the government. Border protection, e.g. tariffs, on the other hand does not result in any such financial transfer from the government, and instead results in fiscal revenue. Yet it could be argued that the imposition of a tariff represents a form of subsidization for the import-competing sectors that are thereby protected from foreign competition. To define subsidies in terms of government transfers or fiscal expenditure is thus not necessarily complete.

An alternative approach is to consider that a "subsidy" arises any time a government programme benefits private actors. The main difficulty with this approach is that recipients of, for instance, a cash transfer or a tax concession, are not necessarily the ultimate beneficiaries of the policy. For example, housing allowances, such as the German "Eigenheimzulage", consist in transfers or tax concessions to consumers who build a house. In their ultimate effect, however, they are not unlike direct payments to construction companies. Similarly, the main beneficiaries of subsidized intermediate goods may not be the recipients of the subsidies, but rather downstream firms utilizing these products as inputs in their own production. Such indirect effects may or may not be intended by the government. The more specifically designed a programme, the more likely it is that the intended beneficiary (objective) and the actual beneficiary (effect) coincide. But it is not necessarily

¹ The development of subsidy disciplines under the GATT has been left for the built-in negotiations that commenced in 2000 and currently forms part of the ongoing trade negotiations under the Doha Development Agenda.

² Panels and the Appellate Body commonly rely on the Oxford English Dictionary to define the ordinary meaning of words used in the Agreement. See, for instance, *Canada—Dairy*, Appellate Body Report, paras. 104, 107 and 108, for the definition by the Oxford English Dictionary of the word "payment" (appearing in AoA Article 9.1(c) as "the remuneration of a person with money or its equivalent"). The Appellate Body noted further that a "payment" which did not take the form of money was commonly referred to as a "payment in kind" and that the ordinary meaning of the word "payments" in Article 9.1(c) was consistent with the dictionary meaning of the word.

³ This definition assumes that subsidies received are "passed through" i.e. have an effect on sales prices. This assumption may not always hold, and pass-through may be a matter of degree, as it is conceivable that at least part of a subsidy is put to entirely different uses.

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easy to design well targeted programs. The literature provides numerous examples of subsidy programmes that have unintended side effects. Adams (2000), for instance, examines the possibility that owing to improper targeting of inferior goods in the case of food subsidies to assist the poor, part may be leaked to high-income people, where they free up funds for other uses. Dewatrian and Swaroop (1998) illustrate how official development assistance (ODA), even though targeted at a specific project, may indirectly finance other activities in cases where the government would have implemented the relevant project anyway and ODA has the effect of releasing government resources that can be spent elsewhere.

Another drawback of defining subsidies purely in terms of "benefits" is that such a definition should in principle take into account the other side of the ledger – the numerous government programmes that impose costs on those same "actors", either in the form of taxes or regulations that pose a burden on private activity.⁴ Many governmental services, such as road infrastructure, are tax-financed by users, in this case through such levies as excise duties on cars and road tolls. The provision of road infrastructure should thus not be seen as a subsidy in its entirety, but it may contain an element of subsidization that is in most cases difficult to measure. Some subsidy programs even appear to be designed in order to counterbalance distortions created through other government interventions. In many countries, for instance, savings beneath a certain threshold are exempt from taxes. Such tax concessions serve in part to redress the discrimination of saving *vis-à-vis* consumption, which may explain why the German Government in its periodic subsidy reports excludes such tax exemptions from its subsidy calculation.⁵

The previous paragraphs illustrate some of the difficulties in defining the concept of subsidies. Although there appears to be agreement that subsidization involves the government and results in benefits for somebody, approaches differ when it comes to the details. Indeed, the relevant literature is full of references to the difficulties of defining the term "subsidy", as reflected in the frequently quoted statement by Hendrik S. Houthakker: "My own starting point was also an attempt to define subsidies. But in the course of doing so, I came to the conclusion that the concept of a subsidy is just too elusive".⁶ What Houthakker wrote several decades ago still holds today. Rather than trying to pin down one specific definition of subsidies, this Section therefore discusses a range of characteristics of subsidy definitions used in the literature or in policy documents and analyses how different subsidy definitions make reference to these characteristics.

Depending on the context, a large number of government programmes may be considered subsidies. For simplicity, these programmes can be grouped into at least three categories: firstly, the government may transfer funds to producers or consumers, resulting in direct or potential budgetary expenditure, or use its power to instruct private entities to make a transfer. Direct transfers, like re-training grants or child allowances, would fall into this category. An example of potential expenditure is the provision of loan guarantees.⁷ The latter may or may not lead to actual disbursements, but even if they do not, an official guarantee artificially lowers default risks of potential buyers and stimulates consumption that otherwise would not take place. If a government instructs a private bank to provide loans at preferential interest rates to certain private entities, this would not result in government expenditure. Yet this can be considered to be a government transfer as it would not have taken place without the intervention of the government and as it has the same effect as if the government itself had provided the loan at preferential rates.

Secondly, the government may provide goods or services at no cost or below market price, such as university education, public transport or food stamps. Such transfers also involve expenses for the government, with the difference being that beneficiaries receive in-kind contributions as opposed to funds they can freely dispose of.⁸

⁴ Sykes (2003).

⁵ Boss and Roenschon (2002).

⁶ See quote in Steenblik (2003) p.4.

⁷ See, for instance, Frehtman et al. (2003).

⁸ Also the public provision of goods or services, e.g. electricity, can have intended or unintended indirect effects. It can, for instance, affect competition in industries that use the relevant goods or services as an input, as it affects producers differently depending on how intensively they use the input.

Thirdly, regulatory policies may be seen as subsidies, if they create transfers from one group to another. Border protection, for example, allows for price discrimination and pooling of revenues to producers that are implicitly financed by domestic consumers (Schluep and De Gorter, 2000).⁹ In this context, Cadot et al. (2004) point out that regulatory instruments can circumvent forms of direct subsidization, leading to the same effects but at higher welfare costs. The authors demonstrate that preferential rules of origin amount to export subsidies for intermediate goods industries in the preference-providing country. This category of transfers caused but not paid for by the government may also comprise implicit subsidies arising from the failure by governments to internalize externalities, such as air pollution by industry, or rents associated with untaxed exploitation by private parties of publicly-owned or managed resources.¹⁰

2. THE DEFINITION OF SUBSIDIES IN NATIONAL AND INTERNATIONAL DATA SOURCES

Most definitions of subsidies in statistical sources or national legislation are rather explicit on whether they include or not each of the three subsidy categories distinguished above. But within these categories, an impressive range of different instruments are available to governments to grant subsidies. Many subsidy definitions would not embrace all of the possible instruments within one category because they define the term subsidy also along other lines. Indeed, subsidy definitions tend to make reference to one of the following characteristics of government interventions in order to confine the concept of subsidies: the recipients of subsidies, the form of subsidies, their objectives and their effect. Using the example of the banking sector, Box 1 gives a flavour of the variety of instruments that can be used within one particular sector.

Box 1: Possible subsidy instruments in the banking sector

Category 1:

Direct money/transfers to certain banks:

In both, industrialized and developing countries, restructuring aid has frequently been given to banks during the process of privatization. More generally, governments intervene to rescue private banks that are in trouble, thus avoiding bank closure or the sale of assets to new investors. The "systemic risk" related to bank closure is most of the time given as an argument for public intervention. This type of intervention often takes the form of direct financial transfers to the establishment in trouble.

Institutional guarantees to certain banks:

Governments may provide guarantees to certain financial institutions, thus ensuring that the government steps in if the institution defaults on a loan. Such guarantees allow beneficiary banks to obtain better ratings from credit-rating agencies and as a result the banks can make considerable savings on the cost of refinancing. Institutional guarantees were, for instance, provided by the German Government for certain local and regional banks that were expected to serve small and medium enterprises (SME), a market segment that may be underserved by financial markets without government intervention.

⁹ Border protection has budgetary impacts and some may therefore consider it to be a form of subsidization that falls into the first category. In contrast to the other forms of subsidies within category one, however, subsidization through border protection results in an increase in government revenue and not in a decrease in revenue or an additional outlay.

¹⁰ See Steenblik (2003) for a discussion of this issue.

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Loan guarantees:

State guarantees to banks for loans to companies are frequently used as a form of public intervention to support companies in difficulty. The advantage of state guarantees over direct subsidies is that they avoid immediate commitments from the public budget. In the case of state guarantees for bank loans to companies, the state becomes a lender of last resort and is obliged to pay the guarantee if the borrower is not able to pay a debt. While it is generally accepted that such state guarantees may contain an element of assistance to the borrower, there is no agreement as to whether they also involve assistance to the lending bank itself.

Equity injections to avoid bankruptcy:

Governments are often minority or majority shareholders in banks and governments have frequently assisted such banks through equity injections in times of financial difficulties. It has been argued that such assistance results in subsidization if it is provided under terms and conditions that a private investor would not find acceptable acting under normal market conditions.¹¹

Category 2:

State-owned banks:

In the past, banking services were often provided by state-owned banks and this is still the case in numerous countries, particularly in the developing world. Public ownership of banks has, for instance, been justified on the grounds of the "systemic risk" that bank activities can involve. The presence of information asymmetries in financial markets, with respect to the credit worthiness of potential clients, has also been used as an argument in favour of public supply of financial services.

Category 3:

Specific prudential regulation for certain establishments: the example of microfinance institutions (MFI):

Micro-credit schemes have proliferated in many developing countries as a surrogate to standard financial services and in response to the low penetration of traditional bank accounts. One of the major functions of MFIs is to provide borrowing opportunities to poor households and small firms which would otherwise not have access to credit. These borrowers can then invest the new resources for productive use and increase their revenues in the short to medium term. Microfinance institutions often act in a different regulatory environment than other financial institutions: if they face any prudential regulation at all, it is often less restrictive and thus less costly, thereby counterbalancing the fact that MFIs are only active in a small and not very profitable market segment.

¹¹ See, for instance, the definition of the "market economy investor test" as used by the European Commission and described in Bourgeois (2001).

Subsidy definitions often distinguish between two categories of recipients: producers and consumers. They also sometimes make explicit reference to the nationality of individuals, i.e. by making a distinction between domestic and foreign recipients.¹¹ Any given subsidy programme may in addition limit subsidization to certain subgroups within these categories. The more narrowly defined the group of (potential) recipients, the more "specific" a subsidy programme is considered to be. Subsidy programs with a wide range of (potential) recipients, instead, are often referred to as "general" subsidies.

¹¹ Odedokun (2003), for instance, points out that official development assistance (ODA) amounts to subsidization of specific activities in foreign markets leading to distortions, such as the increased consumption or use of certain commodities.

There is a tendency to assume that more "specific" programs are more distortionary, but whether this is the case or not may depend on the programme's objective. Boss and Rosenschon (2002), for instance, argue that in the case of redistributive activities the more narrowly defined the beneficiary group, such as handicapped people, the less transfers, say free public transport, should be seen as subsidies. If on the other hand, resources are redistributed within the public at large, for instance, in order to financially support theatres or hospitals, subsidization should be deemed to exist. Yet, this criterion may be hard to operationalize: targeted support to farmers or coal-miners may principally be socially motivated, but have large distortionary effects on resource allocation in the economy at large. It is more common, therefore, to consider the subsidy content of policies lower the wider the range of beneficiaries, as is explicitly the case in the German Government's Annual Subsidy Report (BMF, 2003) and is, arguably, the case in the WTO definition of subsidies that will be discussed in more detail below.

In particular, within the first category of subsidies defined above, a significant range of different forms of subsidization can be found. The most direct form of subsidization is cash subsidies referring to money transfers from the government to the recipient. Alternatively, governments can provide subsidies through tax concessions. Indeed, when a government provides a tax exemption, credit, deferral or other forms of preferential tax treatment to an individual or group, its budget is affected in much the same way as if it had spent some of its own money. A third form of subsidization consists in the assumption of contingent liabilities. These occur, for instance, when governments give institutional guarantees or loan guarantees with respect to the loans taken by certain institutions in the market place. Both practices reduce the financial cost of carrying out a certain business and thus constitute subsidies. In the case of a loan guarantee, for instance, the borrower need not pay a risk premium commensurate with its actual default risk, but instead obtains the loan at the risk-free interest rate.¹² This results in a subsidy for the borrower, even if the government agency is never requested to step in and repay the loan. Governments can also provide subsidies through procurement policies at administered prices such that a mark-up over free-market prices is afforded to certain producers. Last but not least, subsidies can be provided through equity injections into businesses if this results in maintaining the price of the relevant equities artificially high.

The most widespread, standardized information on "subsidies" is provided in National Accounts Statistics for which country data are available worldwide. National Accounts Statistics (NACC) define subsidies as follows: "Subsidies are current unrequited payments that government units make to enterprises on the basis of the level of their production activities or the quantities or values of the services which they produce, sell or import. They are receivable by resident producers or importers...".¹³ This subsidy definition is restricted to the first category of subsidies defined above and only to one specific form of intervention within this category. It only includes direct payments in its definition and thus ignores transfers through tax breaks or soft loans.¹⁴ The definition is also very explicit about the recipients of subsidies: Transfers are only considered to be subsidies if they are given to producers, while transfers made directly to households are considered as social benefits. In addition, recipients of transfers need to be resident in the country whose government is making the transfer, in order for the transfer to be considered a subsidy. Last but not least, it only refers to payments linked to the level of commercial activity and not to "decoupled" payments, such as pure income support. The definition only makes indirect reference to the effect of a subsidy, as subsidies are considered to be "unrequited" payments, i.e. no equivalent contribution is received in return.

In numerous subsidy definitions transfers pursuing certain policy objectives are implicitly or explicitly excluded. It has, for instance, been argued in the subsidy literature that payments for public goods¹⁵ may not be considered subsidies and most definitions limit the use of the term "subsidy" to transfers to firms, including producer

¹² See also Box 1.

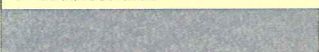
¹³ United Nations, 1993 System of National Accounts, chapter VII, D.3, para. 7.7.2. See <http://unstats.un.org/unsd/sna1993/totoc6.asp?L1=7&L2=4>, visited on 20 January 2006.

¹⁴ The NACC subsidy definition, for instance, does not include grants governments provide to finance the capital formation of enterprises, or to compensate them for the damage or loss of their investment. While the public supply of goods or services is not included either in the NACC subsidy definition, transfer payments made by governments to cover losses of state owned enterprises are considered to be subsidies according to the definition.

¹⁵ Public goods display the characteristics of non-rival consumption and non-excludability. A classic example of a public good is knowledge, when one person's acquisition of knowledge does not influence the ability of another person to acquire the same knowledge (e.g. to read a book), and where nobody can be denied access to the good (i.e. anybody can read the book).

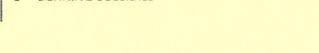
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households, not-for-profit organisations, state-owned enterprises, such as hospitals, and the government as a provider of goods and services that could be supplied commercially (Boss and Rosenschon, 2002). According to the bi-annual subsidy report of the German Government (BMF, 2003), defence expenditures (in pursuit of national interests) are, for instance, not considered to be subsidies. Conversely, if private provision of a good or service is possible, government funding may be presumed to result in subsidization. In practice, it is however not necessarily easy to make this distinction. For example, fundamental research carried out within companies may be commercially profitable and, in addition, produce positive external effects for society at large. Government support to R&D can be justified on the ground of the existence of such positive externalities. Yet, it is difficult to identify the exact compensation that allows companies to internalize positive spillovers. Any assistance beyond that amount results in subsidization of R&D activities that would in any case be profitable.

The effects of a transfer are relevant for a number of subsidy definitions that play a role in this Report, including the definition of subsidies that is known as the "producer subsidy equivalent" (PSE). The PSE is used by the OECD among others to quantify support to agricultural producers (OECD, 2005a).¹⁶ This measure is based on the difference between domestic producer prices and world market prices and thus includes the effects of border protection. The effect of transfers is also relevant in the EU definition of "state aid", where "subsidies" are limited to (actual and potential) financial transfers to firms (i) if an economic advantage is obtained that a company would not have received in the normal course of business and (ii) if it affects the balance between certain firms and their competitors. The EU prohibits such "state aid", as it implies that certain economic sectors, regions or activities are treated more favourably than others (European Commission, 2002a). Hence, conferral of a benefit with selective access differentiates "state aid" by EU countries from financial transfers under market conditions, as well as horizontal measures open to all companies such as public education programmes.¹⁷ Not surprisingly, the definitional criteria used in the WTO under the Agreement on Subsidies and Countervailing Measures (SCM) are similar to such laws seeking to preserve a level playing field among companies in different jurisdictions (see below). Given the importance the SCM Agreement attaches to the effects of transfers, the degree to which benefits are "passed through" from (direct) recipients of transfers to others (indirect recipients) has played an important role in WTO disputes.¹⁸

In sum, in comparing subsidy statistics from various sources, the definitional differences need to be kept in mind. Definitions may be narrower or wider as regards recipients, form, objectives and effects of government support, such that the relative size of transfers covered by one definition compared to another is not easy to tell.¹⁹ Subsidy definitions are context-specific, and the same country may adopt a variety of definitions for different purposes. For instance, in order to ensure international comparability, German National Accounts Statistics do not include preferential tax treatment and soft loans. But these items are included in the Annual Subsidy Report of the German Government, which is geared towards measuring government financial flows other than administration-related expenses. By the same token, the German Subsidy Report excludes support to research and development (unless provided to individual companies for research projects the commercial exploitation of which is imminent or likely in the foreseeable future), but such payments are captured in national accounts irrespective of the beneficiary. Finally, in regard to impact, the Subsidy Report of the German Government includes a range of budgetary outlays that need not be notified as state aid pursuant to Articles 87 and 88 of the EC Treaty, since they are not considered to affect competition in the internal market,

¹⁶ Based on Steenbleik (2003): Timothy Jolliffe (1973) was the first to apply the PSE. The concept was then extended and refined by agricultural economists in the Directorate for Food, Agriculture and Fisheries of the OECD (1987) and the Economic Research Services of the US Department of Agriculture. It has since been applied to measure subsidies to coal production (Steenbleik and Wigley, 1990) and was eventually tried in the case of fisheries.

¹⁷ While the latter, in reality, may lower the cost of labour for some firms and not for others, they are primarily targeted at the creation of equal opportunities for workers. In fact, Farges et al. (2003) have shown that properly designed education policies, while leading to large transfers from advantaged to disadvantaged workers, result in relatively small losses to economic efficiency.

¹⁸ See Section F for a more detailed discussion of WTO rules and disputes related to subsidies.

¹⁹ For statistical definitions it also matters which administrative unit dispenses the subsidy, as some subsidy definitions include all administrative units at federal/central, state and local level, while others only refer to subsidies provided by the federal/central government. This aspect is further discussed in Section E.1.

such as social adjustment measures in the coal sector.²⁰ The various definitions used in national and issue-specific contexts and their statistical implications will be further touched upon in Section E on the incidence of subsidies.

Last but not least, it may be worthwhile noting that economic analysis is not usually very concerned with the different type of subsidy instruments and the way they work in practice. Rather, it tries to identify so-called market failures and ask the question whether a government intervention can be justified from a welfare point of view. If the market failure can be corrected through a change in price signals given to certain actors, subsidies can represent a valid policy option. Usually it is then assumed that the correct amount is given to the appropriate recipient, and little attention is given to the various forms that a subsidy may take in practice, although this aspect is not unrelated to its ultimate impact. Subsidies are, for instance, often modeled as a transfer reducing the recipient firm's marginal cost of production with the aim of achieving a predefined allocative impact.²¹ In practice, it is rather difficult to design government programmes having such a precise impact, and pragmatic criteria, like the ones discussed above, have to be used to restrict the scope of what measures constitute a "subsidy" in any given context.

3. THE DEFINITION OF SUBSIDIES IN THE WTO

Neither the GATT nor the Tokyo Round Subsidies Code contained a definition of the term "subsidy". This changed when the WTO SCM Agreement came into being. SCM Article 1 is entitled "Definition of a subsidy" and spells out the conditions under which a subsidy is deemed to exist. First of all, there must be a "financial contribution by a government or any public body" (SCM Article 1.1(a)(1)).²² The different forms of financial transfers that were mentioned above are listed explicitly, namely (i) direct transfers of funds, including potential transfers, such as loan guarantees, (ii) foregone revenues that are otherwise due and (iii) goods and services provided by the government other than general infrastructure. Under the last point, government purchases are also mentioned. Article 1.1(a)(1)(iv) specifies that subsidies are also deemed to exist if a government makes payments to a funding mechanism, or entrusts or directs a private body to carry out one or more of the type of functions illustrated under (i) to (iii). In addition to financial contributions by a government within the meaning of Article 1.1(a)(1), SCM Article 1.1(a)(2) mentions any form of income or price support in the sense of Article XVI of GATT 1994, i.e. support which operates directly or indirectly to increase exports of any product from, or reduce imports into, a Member's territory. SCM Article 1.1(b) stipulates that any such financial contribution or income or price support pursuant to Article 1.1(a) must confer a benefit to the recipient if it is to be considered a subsidy in the sense of the Agreement.²³

Thus, in terms of the terminology used above, the SCM Agreement appears to exclude from its subsidy definition transfers falling into the third category (i.e. regulatory policies), but seems to take a rather inclusive approach with respect to the forms transfers can take within the other two categories.²⁴ The Panel in *US-Export Restraints*, for instance, concluded that export restraints did not constitute a subsidy, as they did not

²⁰ See BMEF (2003), in particular Annex 1 and Annex 8, Section 4, for a comparison of the subsidy definition used by the German Government in this with the definitions embraced for the purposes of national accounts, EC State Aid and a review undertaken by the Kiel Institute of International Economics.

²¹ See, for instance, Collier (2000) in this article on prohibited state aid in the European Union.

²² SCM Article 1.1(a)(1)(iv) also provides for the fact that a private body may make the financial contributions on behalf of the government.

²³ Therefore, government programmes that constitute financial contributions but do not improve on the market conditions available to the recipient are excluded from the applicability of the Agreement. In *Canada-Alcraft*, the Appellate Body confirmed that a financial contribution had to make the recipient "better off" and that the appropriate basis for comparison was the marketplace in order to identify its trade-distorting potential (Appellate Body Report: para. 157).

²⁴ Certain aspects from the list of financial contributions contained in SCM Article 1.1(a)(1)(i)-(iv) were disputed on several occasions. For instance, a normative benchmark was found to be necessary in order to determine what constituted foregone tax revenue that is "otherwise due". Here, the Appellate Body held that the fiscal treatment of legitimately comparable income needed to be contrasted with the treatment of income subject to the contested measure. Importantly, it cautioned that for the purposes of this comparison, it might not always be possible to identify a general tax rule that would apply to the revenues in question in the absence of the contested measure (*US-FSC*, Appellate Body Report: paras. 89-91).

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represent a financial contribution by the government. Moreover, export restraints could not be considered to represent a financial contribution in the sense of Article 1.1(a)(1)(iv) of the SCM Agreement.²⁵ The Panel Report stressed that government entrenchment or direction was "different from the situation in which the government intervenes in the market in some way, which may or may not have a particular result simply based on the given factual circumstances and the exercise of free choice by the actors in that market".²⁶ Using a hypothetical example, the panel illustrated that a "tariff" could not constitute a financial contribution, even if it conferred a benefit to specific downstream producers. It added that if the concept of financial contribution were about the effects, rather than the nature of a government action, this concept would effectively be eliminated, leaving "benefit" and "specificity" as the sole determinants of the scope of the Agreement.²⁷

The SCM Agreement makes limitations as to the range of (direct or indirect) recipients of subsidies when it comes to determining whether subsidies as defined in SCM Article 1.1 are subject to the further provisions in the SCM Agreement. Indeed, even if the existence of a subsidy has been established according to the definitional criteria in Article 1.1, Article 1.2 restricts the application of further disciplines to those subsidies that are "specific" to individual or groups of "enterprises or industries", as specified in SCM Article 2.²⁸

This and other provisions in the Agreement referring to producers of subsidized products imply that transfers to consumers may not be covered. Also, the references to "enterprises located ... within the jurisdiction of the granting authority" contained in SCM Article 2.2 and to a Member's own "territory" in GATT 1994 Article XVI appear to preclude the applicability of these disciplines to ODA benefiting firms in other countries. SCM Article 2 provides a number of principles to guide the determination of "specificity". Most notably, a subsidy is to be considered "specific" if access to it is explicitly limited to certain enterprises. Conversely, if eligibility of enterprises is based on objective criteria and conditions, such as size,²⁹ and if it is automatic, specificity does not exist. SCM Article 2 acknowledges that, according to these principles, a subsidy programme may appear non-specific, but turn out to be specific in the way it is implemented. SCM Article 2.1(c) illustrates some of the factors to be examined in that regard, such as the use of a subsidy programme by a limited number of certain enterprises or the manner in which discretion has been exercised by the granting authority in making the awards.

The intricacies of this definition became apparent in a number of WTO disputes. Interpretations of different aspects by panels and the Appellate Body will be further discussed in Section F.

²⁵ *US-Export Restraints*, Panel Report: para. 8.69.

²⁶ *US-Export Restraints*, Panel Report: para. 8.31.

²⁷ *US-Export Restraints*, Panel Report: paras. 8.37-8.38.

²⁸ SCM Article 2.3 states that all prohibited subsidies under SCM Article 3 – i.e. subsidies contingent on export performance or on the use of domestic over imported goods – are deemed to be specific.

²⁹ However, SCM Article 2.2 makes it clear that a subsidy that is limited to certain enterprises located within a designated geographical region is to be seen as specific.

II SUBSIDIES, TRADE AND THE WTO

A INTRODUCTION

Subsidies are one of many policy instruments subject to rules in the multilateral trading system, but they present more complex issues for policy-makers than many other instruments subject to GATT/WTO rules. One reason for this is that subsidies can be defined in different ways. Another is that that they are used in pursuit of a wide array of objectives. Even where they are not aimed at trade, they can affect trade flows. The kinds of subsidies of primary concern to this Report are those that impart an advantage to some domestic producers and thereby affect trade. The challenging task of determining which sorts of subsidies are problematic from the perspective of the trading system, and what might be done about them, has occupied an important place on the agenda of the WTO/GATT system.

This Report aims to provide an overview of the use of subsidies in different regions of the world and according to different economic activities. In order to analyse existing data on subsidies it is necessary to understand the different definitions used for subsidies and their economic effects. This is why the Report starts with a discussion of the definition of subsidies and an examination of the most important economic concepts related to subsidies. The analysis also considers the main reasons why governments appear to use subsidies and what the trade and economic implications may be of such policies. The Report will examine the WTO rules on subsidies, their evolution over time, their content from an economic perspective, and how WTO disputes have helped to shape national policies in this area.

Data on the use of subsidies are scarce in general and difficult to compare across countries and sectors because of methodological differences and data gaps. Nevertheless, the limited evidence available indicates that subsidies may have a significant impact on trade flows. According to some estimates global subsidies may amount to more than a trillion dollars per year, or 4 per cent of world GDP. Other estimates indicate that subsidies represent on average around 6 per cent of expenditure by governments and 1 per cent of their GDP. These values vary significantly across countries and sectors. The economic inefficiencies created by subsidies are potentially significant. Both developed and developing countries could benefit from reducing those subsidies that are not necessary to correct for market failures or to pursue valid policy objectives.

C THE ECONOMICS OF SUBSIDIES

1. INTRODUCTION

The purpose of this Section is to assist the reader to better understand the twin questions of why governments use subsidies and how subsidies impact international trade. As is frequently the case in economic analysis, the starting point for what follows is a “benchmark” economy featuring perfectly competitive markets.³⁰ This approach provides the basis for general insights into the impact of policy interventions such as subsidies. As discussed further below, under the condition of a perfectly competitive market, no case can be made for a subsidy. Introducing a subsidy or some other government measure within a perfect market framework will be inefficient and welfare-diminishing. But if the perfect market assumption is relaxed, situations may arise where a government measure like a subsidy improves welfare. An efficient subsidy would correct a market failure, bringing social and private costs and benefits into alignment.

Neither in this Section nor elsewhere in this Report have we undertaken a systematic analysis of how subsidies compare with other policy interventions that might be used to achieve similar objectives. References to this question are, however, made in several places in the Report, notably in Section D dealing with objectives. It may nevertheless be useful to mention here that the choice of policy instrument to attain a particular objective can be important from an efficiency standpoint. This can be illustrated by a simple example.

Suppose that a government decided to protect a particular domestic industry on the grounds that there were learning-by-doing effects associated with the activity from which the wider economy would benefit, and that these benefits were not properly reflected by the market. In this case, a government might choose between imposing a tariff on competing imports or directly subsidizing the industry concerned. A tariff would raise the domestic price of imports and allow the protected industry's output price to rise to the same level. Domestic consumers would then have to pay the higher price. But if a subsidy were used, the domestic price would still be the duty-free import price, and the subsidy received by the domestic industry would allow it to compete with imports at world prices. Consumers would not be taxed, and the subsidy option would be regarded as the more efficient one. This is an application of the theory of optimal intervention (Johnson, 1965; Bhagwati 1971).

One issue that is not dealt with in the above example is the costs associated with financing and distributing a subsidy. It is assumed that this can be done costlessly, which will not be the case. Economic costs will still be incurred, even if taxes are levied in a non-distorting manner. Moreover, developing countries in particular may face difficult administrative hurdles in collecting revenue to be disbursed as subsidies. Similarly, identifying recipients of subsidies and implementing subsidy programmes are also not without their costs. Taken together, however, if the assumption of zero-cost subsidy collection and disbursement is removed, it will not affect the key arguments that are put forth in this Section.

A final point to be made here relevant both to this Section and other parts of this Report concerns a key distinction in terms of the incidence of two types of subsidies – export subsidies and production subsidies. Export subsidies are contingent upon exports only and will have different resource allocation and efficiency implications than production subsidies. Production subsidies apply to output regardless of its market destination, but they can also affect exports.

The rest of this Section is organized as follows. We shall first examine the welfare implications of subsidies in a world of perfect markets, a world in which subsidies can never be justified in terms of economic welfare. We shall then introduce a range of market imperfections or “failures” that correspond more to reality and see if this modifies the welfare analytics of subsidization. The market failures we consider are economies of scale and externalities. Finally, we shall examine a number of additional considerations that may influence subsidy

³⁰ Perfectly competitive markets exist with costless and free entry and exit by firms, homogeneous products, constant returns to scale, the absence of any possibility for individual producers or consumers to affect prices, and the possession of full information on the part of consumers and producers. In practice, of course, these conditions rarely, if ever, exist.

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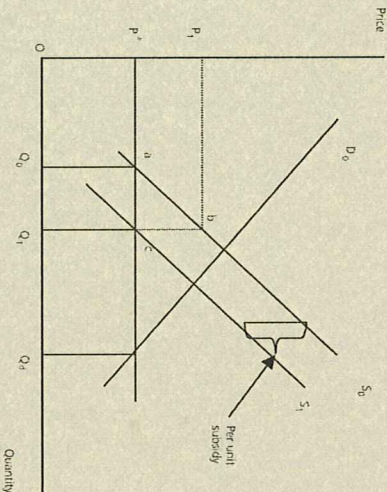
outcomes, in particular challenges facing policymakers in actually implementing sound subsidy policy, and the influence of political economy factors on subsidy decisions.

2. PERFECT MARKETS

If a market is assumed to be perfect and closed to international trade, production subsidies to firms have the effect of expanding output, reducing the price paid by consumers and creating an overall welfare loss, since resources will be allocated inefficiently, introducing international trade into this scenario complicates matters. For example, an important distinction is whether the subsidy is granted to an import competing or export competing industry. If it is the former and assuming world prices are unaffected,³¹ the end result will be an expansion in domestic output at the expense of imports (Box 2). A welfare loss arises from the application of the subsidy, since the subsidy creates a wedge between the optimal price (world price) and the actual price paid to domestic producers.

Box 2: Trade effects of production subsidies

In the diagram below domestic supply is given by S_0 , domestic demand by D_0 and world price of the product is given by P^* . Since the world price is below the price that would clear the domestic market, the total quantity demanded of the product OQ_0 would be satisfied by OQ_0 units of domestic production and OQ_0Q_d of imports.



if the government, for political or redistributive reasons, decides that the level of domestic production should be OQ_1 instead of OQ_0 , it has to then decide whether or not to use a tariff or a subsidy to expand production. If it uses a subsidy, and assuming it cannot affect world price, domestic supply will shift from S_0 to S_1 , causing domestic production to expand to the desired level and imports to fall by OQ_0Q_1 .

Prior to the subsidy, domestic output was at point OQ_0 . Since additional domestic output beyond that level would cost less to source from the world market, the government will have achieved the desired level of output, but the resource implications for the economy will be negative. The additional cost to the economy is represented by the area abc .

³¹ Since the country is assumed to be small, the domestic price is fixed by the world price and cannot change.

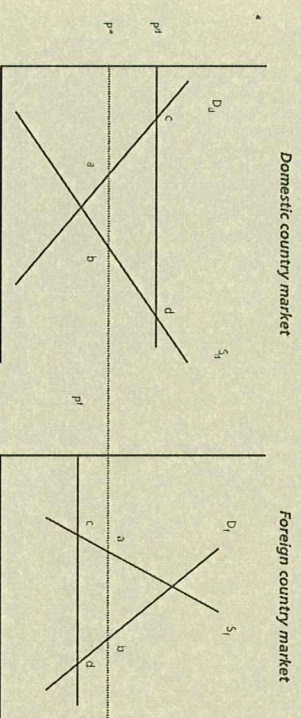
Now consider the case of an export subsidy to an industry. Both production and export subsidies may have the effect of expanding domestic output and exports. They differ, however, in their effects on domestic prices. Domestic prices are unaffected by producer subsidies but rise in the case of export subsidies if re-exports are prevented. Costs to the taxpayer in the export subsidy case will also be lower than in the production subsidy scenario since the volume of subsidised domestic consumption will be lower.³²

With the small country assumption, therefore, the key international trade insight is that quantities adjust in response to the subsidy intervention. In the domestic production subsidy case, imports contract or exports expand, whereas in the export subsidy case exports expand. Inefficiencies arise in both cases since a portion of domestic output is determined by the subsidy-inclusive price, as opposed to the world price.

In the two cases considered above, the subsidizing country was assumed to be a price-taker in the world economy. This means that economic changes within the country will not have any impact on world prices. If this assumption is relaxed, output will still increase as in the small economy case described above. This time, however, the disequilibrium caused by the subsidies will also cause price effects in international markets. If more output is exported as a result of an export subsidy, then world prices will fall. Domestic prices, however, will rise, since some of the output will still have to be sold domestically and there is less quantity available in the market. This point is illustrated in Box 3.

Box 3: Export subsidy in a large country case

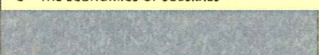
An export subsidy creates an incentive for producers to supply for export as opposed to domestic consumption. The withdrawal of supply from the domestic market causes domestic prices to rise. At the same time, since supply to the world market has increased, world prices fall. If the re-importation of goods into the domestic market from the world market is prevented, a wedge between the domestic price and the world price is created.



At the initial world price P^* the level of exports from the domestic country in the above diagram is the distance ab . The world market clears because the foreign country (assumed to be the rest of the world) imports the same amount. If an export subsidy is provided to domestic producers, some of their output is diverted to the export market, increasing the price of the good at home (to P^I in the above diagram). The increase in supply on the world market, however, lowers the world price in the foreign market (to P^I in the above diagram). The new level of exports from the domestic government is the distance cd , which corresponds to the level of imports into the foreign country.

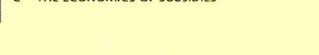
³² This occurs because domestic prices rise with the export subsidy, causing quantity demanded to fall.

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The overall impact of the export subsidy on the home country is decidedly negative. Domestic consumers pay a higher price for a product that they are blocked from sourcing at a lower price from the world market. This leads to welfare losses for consumers. Domestic producers are direct beneficiaries from the policy, since their production has expanded as a result of the subsidy.

Consumers in the foreign country benefit from lower world prices. Foreign producers, however, are net losers, since they now have to compete with the lower prices. Uncompetitive producers will be forced to exit the industry. Overall, however, the country is better off, since the increased benefit to consumers offset the loss to the producers.

A common element to both the production subsidy and export subsidy scenario when a subsidising country is large is a reduction in the world price. This will have negative and positive consequences for a subsidising country's trading partners. Producers of competing products will have to compete against the subsidised exporters at the lower price, whereas consumers of the cheaper imports will benefit. Countries that are net importers of the subsidised product, therefore, could gain overall from subsidies.

The analysis above deals with subsidies that are provided in relation to some economic activity or variable like production or export levels. Governments also frequently provide subsidies to finance wholly or partially the acquisition of fixed assets such as technology, plant, and equipment. Such subsidies may be paid only once or a limited number of times and are often referred to as non-recurring subsidies. Non-recurring subsidies can have effects on competition that go beyond the period in which the subsidy is actually provided. They tend to have the effect of increasing investment by some firms in the relevant market. As a consequence, more firms will be active in the industry or existing firms will produce at greater scale. This may have an impact on the conditions of competition in world markets. The duration of such effects on international competition depends, among other things, on the depreciation rate of the fixed asset and the evolution of demand in the years following the investment, as discussed in Grossman and Mavroidis (2003). Non-recurring subsidies play a role in the discussion below on government intervention in industries characterized by economies of scale.

3. MARKET FAILURES

In this Section the impact of subsidies is examined in market failure situations – that is, when a difference exists between the actual price and the socially optimal price. This difference can arise from a number of sources. Imperfect competition, where at least one firm can exercise control over price and output is one example. Another common example is an externality, where decisions of producers or consumers have impacts on others that are not fully reflected in market prices. In this case, if the externality is a positive one, the actual quantity produced would be less than the optimal amount. Conversely, if the externality is negative, production should be reduced, since it would be greater than the optimal level.

Two common examples of “market failures” that support the case for subsidy intervention are considered here. These are increasing returns to scale and externalities.³³ Information asymmetries in job markets, product markets and financial markets are additional examples of market failure, but are not analysed in this section.³⁴ Limiting the discussion to just two examples will not affect the general proposition that subsidies may be justifiable in some circumstances.

³³ Industries characterized by increasing returns to scale will typically also be characterized by imperfect competition, as discussed below.

³⁴ See Grossman (1990) for an overview of these arguments for intervention.

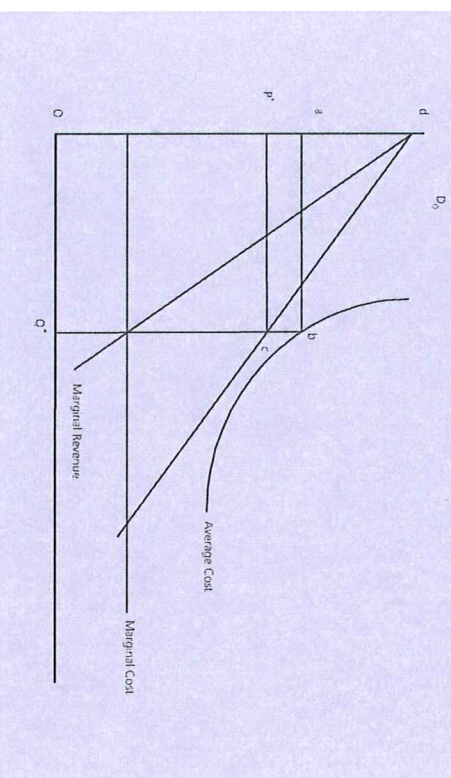
(a) Economies of scale

A salient characteristic of many modern industries is the large fixed cost of entry. Such costs may be due to significant investments in R&D or to the need for expensive and highly specialized capital equipment. Typical examples of such industries are the aircraft industry and the pharmaceutical industry. In such a set-up, average production costs decline the more units each company produces and the relevant industries are therefore referred to as decreasing cost industries or industries characterised by increasing returns to scale.

A simple example of economies of scale is where firms must incur a fixed cost in order to enter an industry, but then produce with a constant marginal cost (Box 4). The decision on whether to produce and how much to produce depends on demand. It may happen, as in Box 4, that demand is such that consumers are not willing to pay a price that is high enough for a producer to recover his initial investment. As a result, no investment and no production would take place in the absence of government intervention. Yet it may be that it would be desirable from the point of view of the society if production did take place. While producers only care about their own profits, what is good for the society depends on both producer profits and consumer welfare. Only a part of consumer well-being is reflected in what consumers actually pay for goods in the market. If a government has reasons to believe that consumer welfare which is not reflected in market prices exceeds the losses producers would suffer without a subsidy, the government may want to consider subsidizing the initial investment, thus encouraging producers to supply the relevant good. So far this is a static story that takes place in a closed economy. It becomes more interesting from the point of view of trade when these assumptions are changed. This will shall do below in relation to learning-by-doing and strategic trade policy.

Box 4: Returns to scale and subsidies

The figure below depicts a monopoly firm and is based on Grossman (1990). Without a subsidy, the firm is unable to produce profitably, since the price it would charge (P^*) is below its average cost (point b). Total welfare would, by definition, be zero since no output is produced or consumed. Now suppose the government provides a subsidy to the firm of the amount P^*ab . This induces the firm to produce a total amount of OQ^* . Consumer welfare is the area cdP^* , which in this diagram is greater than the cost of the subsidy.



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(i) Learning-by-doing

Scale economies, as explained above, imply that average costs fall with increased output. Learning-by-doing internal to a firm implies that per unit production costs fall as output accumulates over time, i.e. the company learns each time it produces and average costs therefore fall over time. This particular type of economies to scale is also called "dynamic economies of scale". Evidence for the existence of such learning effects, for instance, exists for the construction of nuclear power plants and for the aircraft and semiconductor industry. Like the fixed costs associated with research and development and the capital expenditures mentioned before, learning by doing costs are irreversible.³⁵ The welfare analysis of production in an industry characterized by a steep learning curve is depicted in Box 3, which shows that there may be situations where a government wants to subsidize production during the early loss-making stages in order for consumers to enjoy the benefits later on.³⁶ Again, it depends on the relative size of consumer gains and company losses whether such an intervention would be desirable or not.

The losses made in the initial stages must be significant and the learning curve steep in order for there to be an argument in favour of government intervention. If the losses during the learning period are not too high, companies would normally be able to recover the initial investment over time. The need to learn-by-doing, however, implies that the company needs financing during the initial stages of production. It needs financing to acquire something, i.e. knowledge and experience, that will be entirely lost in case the company never manages to make profits. These types of investments are considered to be risky. While financial sectors in developed economies may be willing to provide loans for such risky investments, banks in developing countries that do not dispose of sophisticated risk management tools may be hesitant. This is why learning by doing internal to a firm has been related to the infant industry argument, i.e. the argument that nascent industries need government support in developing countries, as will be discussed in more detail in Section D. Another type of learning-by-doing also discussed in Section D is external to the firm, and this is taken up briefly below in the discussion on externalities.

(ii) Imperfect competition and strategic trade policy

In the above analysis of a domestic supplier in an industry characterized by increasing returns to scale, the possible existence of a foreign supplier was simply ignored. The question whether it could be beneficial to subsidize an industry characterized by economies of scale in the presence of foreign competitors was not examined. Not surprisingly, the answer to this question depends on the degree of competitiveness of the foreign supplier. It is theoretically possible to develop scenarios in which it would be better for an economy to subsidize a loss-making domestic producer rather than import the product, if the domestic producer is able to lower his marginal costs below those of foreign producers.³⁷

Where two or more producers with large fixed costs are supplying the world market, other strategic considerations enter the picture. In such a set-up, competition will never be perfect and each producer has some market power. It may then be worthwhile for a government to subsidize such a producer even if it is not making losses. These arguments have been developed in the so-called strategic trade policy literature. Economic models developed in this literature were characterized by imperfect competition in the form of oligopoly or monopolistic competition. These models offered new insights into a possible role for trade policy. In specific terms, the intuitive inconsistency between proposing no intervention that was generated from perfectly competitive models and the existence of high fixed-cost monopolistic industries such as large civil aircraft, chemicals and autos was difficult for the policy community to accept. The new trade theory models were able to identify specific circumstances where intervention in the form of subsidies would be desirable. Intervention which alters the strategic relationship between firms can give one firm an advantage over another in imperfectly competitive markets, where each firm's commercial decisions (output and pricing) are dependent on those of its rival.

³⁵ The economic literature refers to these costs as sunk costs.

³⁶ Grossman (1990).

³⁷ See, for instance, Voudsen (1990).

This seductively simple idea was expressed in a model where two firms, from different countries compete in a third country market. The firms, therefore, produce only exports. As explained by Brander (1995), the government of the country where the firms are located cannot implement any policy to directly affect foreign rivals to the firms in their own country. As a result, the only natural option is to subsidize exports as long as it pays the government to do so, which as shown by Brander and Spencer (1985) turns out to be possible.

Subsidies in this model act as a profit-shifting instrument: profits earned by the competing foreign firm are transferred to the domestic firm, since the subsidy allows the domestic firm to commit to a higher level of output. The foreign firm cannot respond to the higher level of subsidized output, since an increase in its output will lower the price of the good (and its marginal revenue). The intuition behind the proposal for intervention is grounded in the positive profits earned by both firms and the ability of the government to use subsidies to shift some of the foreign firm's profits to the domestic firm. Since the profits earned by the domestic firm are higher than the subsidy, it pays for the government to implement the subsidy policy. Marrying subsidy intervention with profit-sharing, however, is not a foregone conclusion. Policy advice, as it turns out, depends upon the nature of competition and the structure of the market (Eaton and Grossman, 1986; Brander, 1995).³⁶ The predictions of these models tend to be sensitive to small changes in assumptions and the models typically do not take account of the possibility of counteractive behaviour on the part of the government that did not apply a subsidy.

(b) Externalities

A classic market failure is the existence of positive and negative externalities. As already noted, a positive externality exists if the benefits associated with producing and consuming an output are not fully taken into account by the producer or the consumer. In this case, the quantity consumed would be less than the socially optimal amount. On the other hand, if production or consumption is characterized by a negative externality, the equilibrium output level would be greater than that which would be socially optimal. Without government intervention a wedge would exist between the actual price in a market and the socially optimal price. Taking account of this wedge, however, is not a straightforward task and the role for subsidies, while potentially positive, is still limited. In general, a subsidy should be used to increase production or consumption of an under-produced good (Box 5).

A number of arguments exist in favour of subsidy intervention in the presence of externalities. Among these are the cases involving environmental externalities and research and development (R&D) activities. For R&D the line of reasoning is that this kind of investment creates knowledge, which has public good properties – i.e. consumption of knowledge is non-rival in nature and non-excludable. But if the benefits of R&D investments spill over to others, while the costs are borne privately by those carrying out R&D, markets will not generate the socially optimal level of R&D. A government subsidy to encourage R&D that generates spillovers to other firms in the industry could help stimulate productivity and growth in a socially optimal way.

³⁶ In terms of the conduct of competition, if duopoly firms competing in the export market were to compete on the basis of prices, instead of quantities, the policy prescription turns out to be a negative subsidy, or a tax. The positive subsidy intervention argument also diminishes if the firms are assumed to compete in both the home and the foreign market. In this case, the effectiveness of any intervention will depend upon the ability to shift production between the various markets. If the markets are segmented and scope for differential pricing between the markets arises, then intervention may be possible. If, however, the markets are integrated and differential pricing is not possible, intervention will not be possible (Horsmann and Mathiesen, 1986).

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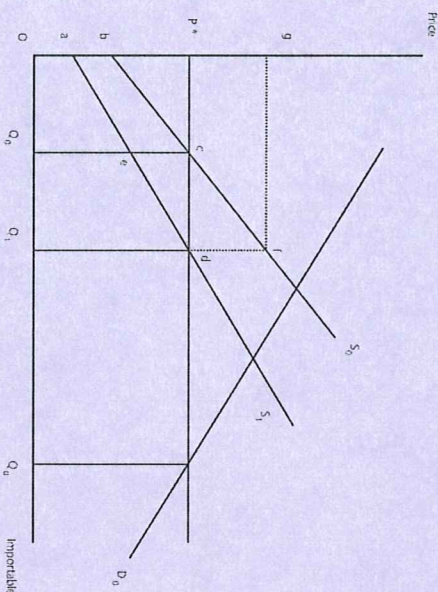
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Box 5: Externalities and subsidies

In the diagram below, suppose the private domestic supply and demand curves are given, respectively, by S_0 and D_0 . Consequently, with a world price of P^* , equilibrium quantities produced and consumed are Q_0 and Q_1 .

Now suppose that the production process is characterised by a positive externality that is not taken into account. As a result, the initial supply curve is not representative of the benefits of production. The social costs of producing each unit would be lower than what is portrayed by the supply curve S_0 , which shows only the private cost. If the externalities are taken into account, the new supply curve would be S_1 , which indicates a lower unit cost of production.



If the world price and the demand curve are assumed to reflect the true social costs, then the domestic production of the good at Q_0 would be less than the socially optimal level of production Q_1 . The cost to society of this underproduction would be the area cde . To see this, assume a total subsidy of the amount $dipg^*$ is provided, which expands output to Q_1 . The total cost of the imports being replaced as a result of the subsidy is $Q_1 Q_1 dc$, but the total cost to society from producing the incremental output would be $Q_1 Q_1 de$. The difference is the area cde .

Therefore, if a positive externality in production exists, a production subsidy could be used to increase welfare. Again, a tariff would be inferior to a subsidy as an instrument of intervention, since it would distort consumption and increase the cost to society of producing the expanded output.

In principle, knowledge spillovers may arise not only when knowledge is created through R&D activities, but also when it derives from learning-by-doing. Learning-by-doing has been described above as a process that is internal to the firm. But it may happen that some of the experience a company gains, spills over to other companies, for instance, because employees of the first company change jobs and pass on their knowledge to their new employer. Empirical evidence of external benefits from learning-by-doing is scant, but has been found for the chemical processing industry and for the construction of nuclear power plants.³⁷ Aitken et al. (1997) have also found evidence for the existence of "learning-from-exporting" spillovers. The alleged existence of learning-by-doing spillovers lies behind one of the best-known variants of the so-called infant industry argument and will be discussed in more detail in Section D.

³⁷ Grossman (1990).

4. IMPLICATIONS FOR THE MULTILATERAL TRADING SYSTEM

A general proposition against the use of subsidies was presented in the context of a model that has little bearing on reality. This proposition was then overturned in a range of specific models and specific circumstances that better approximate reality – markets characterized by returns to scale, externalities and imperfect competition.

This ambiguity raises questions as to the desirability of a blanket ban on subsidies, since it prohibits the possibility of welfare-enhancing intervention. This view is shared by many, but not universally. The lack of universal acceptance of tolerating subsidies is grounded in three contexts – implementation issues, the political process, which grants the subsidies and the international consequences of domestic subsidies.

(a) Implementation of subsidy programs

Identifying the precise cases where intervention is socially desirable is not easy. The information requirements for appropriate interventions are extremely high, thereby making the possibility of mis-timed and mis-targeted intervention high. These implementation issues are called “government failures”. So while market failures may warrant government intervention, government failures may exacerbate rather than alleviate the problem. Some of the more common examples of when subsidy intervention becomes problematic include rent-seeking on the part of beneficiaries and the political economy of the decision-making process involved in granting subsidies. In democratic societies, electoral pressures may influence the taxing and spending patterns of governments. Politicians, although professing to act in the public’s interest, sometimes make decisions that are in their own self interest, for instance in order to increase the chances of re-election (Grossman and Helpman 2002, Hillman, 1989). This issue is taken up in more detail in the next Section.

Even if subsidy programmes correctly identify beneficiary industries and firms, achieving the predicted economic effect is not necessarily assured. All of the cases examined above assume that a subsidy will generate a supply response. Sometimes, however, firms may receive the subsidy, but may not necessarily use the subsidy commercially. Empirical studies confirm this hypothesis. At one extreme is the possibility that instead of using funds to finance output expansion, a firm could use the funds for a number of investment purposes that yield medium- to long-term benefits. At the other extreme lies full “pass-through” where the entire subsidy is used to develop a competitive advantage. The extent to which prices change in the subsidizing industry will depend upon a number of market factors, such as the ability of a firm to affect prices.

(b) The political economy of subsidies

The political economy of subsidies deals with the central question of how the political process interacts with the heterogeneity of interests in society to allocate subsidies and determine the pace of their removal. More specifically, do the decisions of elective officials always lead to the socially optimal use of subsidies in the manner described earlier? The conclusions of a number of studies is that subsidization is correlated with the political influence of the beneficiaries (e.g. retirees and the elderly in the case of social security or middle and upper class groups in the case of educational subsidies).⁴⁰

Much of the political economy discussion takes place against the background of a specific political environment, that of democracies, in which officials need to be elected by a majority of their constituency. The simplest political model is that of the median voter.⁴¹ Voters are distinguished along one dimension, for example, by the economic impact of a subsidy programme. A voter can benefit from the programme if she becomes eligible to receive a subsidy. But a voter will also incur a cost because taxes need to be raised to pay for the subsidy. Clearly, those voters who are not eligible for the subsidy will only incur a cost and will not support the programme while beneficiaries of the programme will support it.

⁴⁰ These examples include export subsidies given to US wheat (Gardner, 1996), European subsidies to coal (Andersson, 1995), subsidies to education (Fernandez and Rogerson, 1994; Kennell, 1999), and social security spending (Waligan and Sala-i-Martin, 2003).

⁴¹ Also see Section D.3 on redistributive policies and the median voter.

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Candidates for office win only if they get a majority of the vote. Alternatively, incumbents are able to maintain political support if they pursue policies that the majority of voters care about. Thus, whether the subsidy programme is implemented or not depends on the preferences of the median voter. If the median voter is a beneficiary of the subsidy programme, then this implies that the majority of voters are beneficiaries. In this case, politicians are able to marshal support by implementing the programme. On the other hand, if the median voter incurs a cost from the programme, this means that the majority of voters would lose out if the programme is implemented. The subsidy programme would therefore not be implemented.

Perhaps the only clear prediction that can be drawn from the median voter model is that highly targeted or specific subsidy programmes are unlikely to be implemented because only a few benefit. The median voter would be unlikely to favour such sector-specific subsidization, although she would not be averse to more general subsidy schemes, the benefits of which are more widely diffused. One can go beyond the standard median voter framework to consider more complex political environments, where voters can form coalitions (e.g. special interest groups). Special interest groups may arise because government policies can produce an uneven concentration of benefits and costs. For example, giving subsidies to an industry leads to large individual gains to the firms operating in that industry, while the costs of the subsidy programme, which are larger in aggregate (see discussion in subsection 2 above), tend to be spread over a very large number of taxpayers. These producer groups then have strong incentives to organize and use campaign contributions to try to influence the type of decisions taken by political incumbents. But because the costs of the subsidy programme to taxpayers are so diffused, there is no similar urgency on their part to organize to oppose the programme.

Grossman and Helpman (1994) develop a model in the international context where a politician’s continuance in office is dependent not only on obtaining the support of the general electorate but in currying favour with special interest groups. Incumbents need financial contributions for a variety of reasons. They may need a large war chest to deter potential political rivals, or to pay for political advertising to sway uninformed voters or to retire campaign debt. Thus politicians are willing to offer trade and subsidy policies for sale. While they care about maximizing social welfare (since they need to appeal to the informed voter), they also care about the amount of financial contributions they can generate. Given the mixed incentives of politicians (a weighted average of social welfare and campaign contributions), the policies that are chosen in equilibrium will deviate from the socially optimal. Compared to free trade (the socially optimum), the prices of goods produced by lobby groups will be higher through the use of tariffs or export subsidies. In this context, the subsidies that are provided to a specific industry are not intended to correct a market failure, but to improve the economic standing of the special interest group, who in turn will reward the incumbent. While this result explains why subsidies are offered when it is not economically justifiable, it also helps explain the resistance to their removal in the domestic and international context.

(c) International consequences of domestic subsidies

Section F will take up the issue of the design and structure of multilateral rules on trade-related subsidies. However, an important point should be made here in relation to these rules. The welfare propositions spelled out in this Section have focused primarily on the impact of subsidies on the subsidizing economy. In some instances, such as export subsidies, the welfare effects on the non-subsidizing economy were also taken into account. Where the exports of a country are displaced by a foreign subsidy, producers will be negatively affected, but consumers may benefit depending upon the price effects. The only circumstance in which displacement does not occur is when the subsidizing economy is too small to affect world price. In sum, the world price effects of subsidies are crucial in the design of multilateral trade rules.

Another aspect of subsidies that has international consequences is the response by one country to the subsidy of another via various forms of remedial or offsetting action. Such action can be in the form of subsidies, countervailing duties, or a legal dispute. For example, a country that uses import substitution subsidies to offset import competition could face counteraction by an exporting country in the form of export subsidies, which would lower the price of the exporting country. Countervailing duties imposed by an importing country will tend to offset the initial subsidy in the exporting country. A legal challenge would question the legitimacy of a subsidy policy rather than resorting to an offsetting intervention. Section F considers these issues in the context of the Agreement on Subsidies and Countervailing Measures.