Tax Harmonization in the European Community
Policy Issues and Analysis

Edited by George Kopits

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The following symbols have been used throughout this paper:

- ... to indicate that data are not available;
- - to indicate that the figure is zero or less than half the final digit shown, or that the item does not exist;
- between years or months (e.g., 1991-92 or January-June) to indicate the years or months covered, including the beginning and ending years or months:
- / between years (e.g., 1991/92) to indicate a crop or fiscal (financial) year.

“Billion” means a thousand million.

Minor discrepancies between constituent figures and totals are due to rounding.

The term “country,” as used in this paper, does not in all cases refer to a territorial entity that is a state as understood by international law and practice; the term also covers some territorial entities that are not states, but for which statistical data are maintained and provided internationally on a separate and independent basis.
Preface

As an integral part of completing the single European market, tax harmonization commands attention not only within the European Community (EC) but also beyond its frontiers. Indeed, expansion of the single market to the European Economic Area (EEA)—agreed among member countries of the EC and of the European Free Trade Association (EFTA)—and eventually to a number of Central and East European countries in transition from central planning, suggests that the Community's approach to tax harmonization will apply in a far wider context than envisaged at the outset. Furthermore, transformation of the U.S.S.R. into the Commonwealth of Independent States has generated considerable interest in EC tax harmonization on the part of former Soviet republics as well. In general, many IMF member countries—in their capacity as EC trade partners or as suppliers of capital or services—are understandably interested in the repercussions of the single market and tax harmonization on their economies.

The essays in this Occasional Paper were prepared in the Fund’s Fiscal Affairs Department by members of the former Industrial Countries Unit, under the direction of George Kopits. An earlier version of the first three chapters was submitted to the IMF’s Executive Board for discussion. The authors are indebted for useful comments to Antonio Cabral, Michael Emerson, Morten Jung-Olsen, Marc Van Heukelen, and other members of the EC Commission staff; to Julian Alworth and Bernard Snoy; and to several Fund colleagues. Chris Wu provided computational assistance, and Ahwerah Vichailak and Luzmaria Monasi word-processed drafts of the manuscript. Within the External Relations Department, James McEuen edited the final manuscript and coordinated production, and Alicia Etchebarne-Bourdin provided typesetting assistance. The opinions expressed are those of the authors and do not necessarily reflect the views of the EC Commission or the Fund.

Chapter I discusses the case for harmonizing the taxation of commodities and capital income in the context of the single market, in particular upon removal of border controls and restrictions on factor movements, respectively. It outlines the relevant principles of international taxation, from the points of view of allocative efficiency and equity, and discusses certain key administrative issues. Against this background, the chapter presents an overview of tax harmonization proposals and related measures and of their likely microeconomic and macroeconomic effects, including effects on non-EC economies, as well as major systemic implications.

Chapters II and III contain extensive surveys of the theoretical literature, of alternative tax harmonization proposals, and of preliminary estimates of the effects of these proposals (mainly on resource allocation, income distribution, and the government budget). Whereas the focus of Chapter II is the harmonization of the value-added tax (VAT) and excises (on tobacco products, alcoholic beverages, and mineral oils), Chapter III concentrates on the harmonization of taxes on corporate income and interest income. Both chapters discuss administrative measures needed to maintain the level and intercountry allocation of revenue from these taxes.
Chapter IV provides estimates of effective rates of corporate income taxation for each EC member country (by source of financing and asset type) under various scenarios for harmonization of statutory tax rates, tax bases, or both. The corresponding tax wedges are used to calculate the effect of tax harmonization under each scenario on the long-run allocation of capital among EC member countries. These simulations are performed on the basis of a computable general-equilibrium model, both in a closed form and open to the rest of the world.

Chapter V is devoted to an analysis of the EC Structural Funds, which are to play an increasingly significant compensatory role in certain regions that experience adverse revenue consequences of tax harmonization in particular, and welfare losses associated with the completion of the single market in general. Partly on the basis of past empirical evidence, an attempt is made to assess the adequacy of the Funds as a social safety net and as a supplement to, rather than a substitute for, national assistance to depressed regions.
I Overview

George Kopits

The Single European Act of 1987 represents perhaps the most significant step toward European economic integration since the creation of the EC three decades earlier. In accordance with and building upon the initial Treaty of Rome, the Act envisages the removal of remaining barriers to the free movement of commodities and factor inputs, with a view to enhancing competition and efficiency within the Community. Under the authority of the Act, the EC Council of Ministers was expected to approve nearly 300 provisions that would dismantle, by the end of 1992, physical barriers (customs and passport control), technical barriers (regulatory restrictions that affect trade, and financial and real factor flows), and fiscal barriers (border controls involving indirect taxation) among member countries. Of these, all except about 50 measures have been adopted a year before the deadline. In addition, by the end of 1991, agreement was reached in Maastricht on the Economic and Monetary Union (EMU) Amendments to the Treaty, mapping out the final stages toward economic integration and eventual adoption of a single currency, largely through fiscal convergence and monetary coordination.

Notwithstanding an early concern with tax harmonization, the explicit Community-wide mandate in this area has been limited to phasing in a common external tariff, eliminating internal tariffs, and achieving some uniformity in the type and base of commodity taxes. Although additional steps toward harmonizing the tax systems of EC member countries do not follow automatically from either the Treaty of Rome or the Single European Act, such measures must be consistent with them. Indeed, the intended removal of border controls and restrictions is intimately connected to tax harmonization: arguably, lack of sufficient harmonization may even inhibit completion of the single internal market. Progress toward formal unification or convergence of monetary, fiscal (including taxation), or social policy instruments, however, has been generally slower than the removal of regulatory restrictions for two reasons. First, these policies are by nature often politically contentious because they may reflect profound differences in social and economic philosophy and can be perceived to limit national sovereignty and discretionary policymaking. Second, unlike most Community-wide regulatory changes, which can be adopted by a qualified majority of member governments, enactment of provisions in monetary, fiscal, and certain social policy areas requires unanimous consent.

The first section of this chapter addresses the fundamental question of the extent of concerted tax harmonization that is necessary or desirable to support the completion of the single market. Harmonization of the bases of product and income taxes contributes to greater transparency for economic decision-making. In addition, tax rate harmonization is likely to enhance Community-wide efficiency and welfare. Concerted harmonization can be limited, however, to setting common minimum tax rates to protect the tax revenue of member governments, since, upon removal of border controls and restrictions on factor movements, competitive pressures would induce a spontaneous downward alignment of effective tax rates within certain margins.

3For a discussion of the major barriers, their economic effects, and survey results about attitudes toward such barriers, see EC Commission (1988a) and Emerson and others (1988).
4In 1960 the Commission appointed the Fiscal and Financial Committee, under the chairmanship of Fritz Neumark, to study tax harmonization. The Committee’s findings are contained in EEC Commission (1963).

5Concerted tax harmonization here denotes a formal agreement for convergence (not necessarily equalization) of tax structures; by contrast, “spontaneous” tax harmonization indicates convergence of tax structures in response to competitive pressures, without a formal agreement. Unless otherwise qualified, tax harmonization is used to denote concerted tax harmonization throughout this paper.

6Specifically, the EMU envisages eventual establishment of a supranational monetary authority, building on the European Monetary System (EMS), which already entails some loss of independent monetary control by participating member countries. Similarly, fiscal policy convergence implies some transfer of decision-making to a supranational level.
assigned priority as regards income from financial assets because these assets are the most mobile internationally. Similar action can follow in the areas of commodity taxation and, eventually, corporate income taxation. Harmonization seems least urgent in the taxation of less mobile labor and real assets.

An examination of various principles of international taxation in the second section suggests that, under a plausible set of assumptions in the EC context, retention of the destination principle for commodity taxation (through domestic taxation of imports and exemption of exports) and consistent application of the residence principle in capital income taxation (involving full offset for international tax rate differentials on foreign-source income) should ensure a more efficient allocation of resources than alternative principles. However, difficulties in enforcing the destination and residence principles without border controls and capital controls—given uneven administrative practices, including anonymity of financial holdings in certain countries—as well as relaxation of some of the assumptions underlying the efficiency implications of these principles, indicate that tax rate harmonization would lead to greater allocative efficiency, regardless of the principle adopted. Tax harmonization—much like other aspects of creating the single market—may have to be qualified by equity considerations. In particular, fairness in the distribution of tax revenue among countries engaged in tax harmonization and removal of nontax barriers argues for lump-sum transfers from high-income to low-income countries.

The third section outlines the main proposals considered or adopted in the EC for approximation of taxes on commodities and income from capital, supporting administrative steps, and other relevant measures. For commodities, agreement has been reached on a standard VAT rate, at not less than 15 percent on most products other than necessities; one or two reduced VAT rates not lower than 5 percent mainly on necessities, with a transitional arrangement for countries that have a lower reduced rate; and a set of minimum excise rates on tobacco products, alcoholic beverages, and mineral oils. The effective date of these rates coincides with the elimination of frontier controls, in January 1993. Among various administrative proposals, it was agreed that the destination principle would be maintained for four years and be replaced by a definitive system based on the origin principle in 1997. Meanwhile, border tax adjustments would be administered through a postponed accounting system (whereby transactions are reported to tax authorities in both importing and exporting countries, without border declarations) for the VAT and linked bonded warehouses for excises. As regards financial investment, an initially proposed 15 percent minimum withholding tax on interest income of EC residents has been virtually abandoned in favor of mutual assistance to combat tax evasion. For corporate income taxation, past proposals for harmonizing statutory rates and bases were either withdrawn or not formally submitted for consideration; formulation of future proposals awaits the input from a committee of experts. Nevertheless, several measures were adopted to eliminate the double taxation and other tax disadvantages on intra-EC investment income.

Although not formally part of tax harmonization, there are a number of measures that are anticipated to take effect either in tandem with tax harmonization or after its implementation. The removal of controls on commodity and factor movements within the Community will be largely completed by the beginning of 1993. The EMU Amendments envisage convergence of budget deficits and of government indebtedness to below certain limits, as a precondition for monetary unification. Moreover, to compensate for the probable exacerbation of regional disparities resulting from tax harmonization and further economic integration, an increase of disbursements from the EC Structural Funds to less developed regions within the Community is under way.

The fourth section of the chapter examines the likely economic effects of tax harmonization and of the associated financial liberalization and removal of border controls. On the basis of various quantitative simulations, it appears that the static effects will be modest for the largest member countries and for the Community as a whole. For certain countries and sectors, however, the effects, without compensatory fiscal action, can be substantial. Countries that rely on high standard VAT and excise rates are likely to experience a shift in consumption, especially toward goods with relatively high price elasticity of demand; a cut in consumption may take place in countries with low standard VAT or excise rates, obliged to converge to higher rates. The shift in consumption patterns would, over time, be accompanied by efficiency gains in production. From a distributinal perspective, rate harmonization involves a moderate reduction in the progressivity of indirect taxation in countries that exhibit a relatively wide dispersion of VAT and excise rates.

A minimum withholding tax on interest income would result in shifts from newly taxed assets to exempt assets and to tax havens outside the EC. Pressures on capital outflows would be felt particularly in countries where certain exchange restrictions are yet to be dismantled or where interest income is in principle subject to ordinary income.
tax but is not reported. Harmonization of effective company income tax rates would probably lead to a significant reallocation of capital to presently high-tax countries from low-tax countries over the long run. An increase in tax rates on income from capital, due to harmonization, could adversely affect labor and other immobile factors to the extent that in an open economy the tax burden tends to be shifted to them.

The static budgetary impact of harmonization is likely to be concentrated in the VAT and excises in a few high-tax and low-tax countries. Model-based simulations suggest that the overall macroeconomic effects tend to be negligible for most countries, especially for the largest ones. The simulations, however, underestimate significantly the consequences of these structural measures because of the exclusion of dynamic repercussions. Tax harmonization, together with financial liberalization and removal of border controls, is likely to have an adverse net static effect on non-EC economies.

Trade diversion, in combination with strengthened external competitiveness, would probably more than offset any increase in import demand vis-à-vis non-EC member countries. However, on balance, the dynamic effects of the enlarged market along with the resulting trade flows may outweigh the net negative static effects. In any event, the efficiency gains from completion of the internal market in general, and from tax harmonization in particular, should provide increased room for EC member countries to pursue trade liberalization and less restrictive macroeconomic policies, thus benefiting non-EC economies.

In the final section it is argued that harmonization of taxes on commodities and capital income and possible competitive pressures to align tax rates on labor income, within the single market, will reduce the scope for EC member governments to maintain an independent fiscal stance. Moreover, the combination of tax harmonization, financial integration, and the EMU should be conducive to convergence of both fiscal structure and performance in the EC. Within narrow limits, however, member governments might still rely on certain built-in stabilizers and tax incentives for domestic policy objectives. Overall, concerted as well as spontaneous tax harmonization—insofar as it involves convergence to relatively low minimum rates—coupled with the other steps toward economic integration, should contribute to greater efficiency in the public sector in most member countries, and, at the same time, may require a further substantial expansion and overhaul of the Structural Funds to support low-income regions in the Community.

A harmonized EC tax system may pave the way to greater tax coordination between EC and non-EC member countries. In particular, ongoing financial liberalization and efforts to harmonize taxation of interest income argue for agreement on a minimum withholding tax rate or increased administrative cooperation in a broad international forum. Such an approach would be comparable to existing international agreements on minimum interest rates on export credits and a minimum capital adequacy ratio on international bank lending.

The Case for Tax Harmonization

Tax harmonization is generally understood as a process of adjusting tax systems of different jurisdictions in the pursuit of a common policy objective. In the context of the Single European Act (EC Commission (1986a)), tax harmonization involves the removal of tax distortions affecting commodity and factor movements in order to bring about a more efficient allocation of resources within an integrated market. Narrowly defined, tax harmonization guided by this policy goal implies—under simplifying assumptions about other policy instruments and economic structure—convergence toward a more uniform effective tax burden on commodities or on factors of production across EC member countries. Convergence may be attained through the alignment of one or several elements that enter the determination of effective tax rates: the statutory tax rate and tax base, and enforcement practices.

Perhaps the most widely accepted argument for harmonization involves convergence in the definition of product value or income for tax purposes. Such tax base harmonization would contribute to transparency for economic decision-making and, thus, to improved efficiency in resource allocation. In particular, a common income tax base for multinational companies operating in different jurisdictions would be instrumental not only in enhancing efficiency, but also in preventing overlaps or gaps in tax claims by different countries.

Under various assumptions examined in the next section, some of the efficiency effects of rate harmonization can be accomplished with tax coordination—that is, through offsetting commodity or income tax rate differentials among

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6Tax harmonization may serve alternative goals, such as equity or stabilization. It also can be subsumed, along with public expenditure harmonization, under the broader concept of fiscal harmonization. See Dosser (1967) and Andel (1967).

7Conceivably, equalization of only one of these elements may exacerbate the variance of effective tax rates. The combination of a broad base and a low legal rate in a given country, however, may yield an effective rate equivalent to that of another country that is based on a narrow base and a high legal rate.

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member countries. As defined here, tax coordination—distinguished from tax rate harmonization proper—consists of specific tax adjustments on trade or income flows between jurisdictions that aim to neutralize the effect of tax rate differentials on the location of production or investment. In this regard, the consequences of such tax coordination on commodity or factor movements could be close to those of effective tax rate equalization. Nevertheless, the two approaches may have different effects on the pattern of consumption and production, on the choice between consumption and leisure, or on the choice between consumption and saving.

The basic rationale for tax harmonization or for tax coordination lies in the general proposition that either approach should lead to a more efficient allocation of resources. That is, the decision to consume imports or domestic products would depend on relative before-tax prices: likewise, the decision to invest at home or abroad would depend on before-tax rates of return—assuming uniform public service benefits at home and abroad. The relevance of this rationale diminishes, however, in the presence of direct or indirect regulatory barriers to international trade, investment flows, or labor migration. In the extreme case of autarky, intercountry tax rate differentials play no role in resource allocation. By contrast, phaseout of physical and regulatory barriers, as envisaged by the Single European Act, exposes the distortionary impact of taxation on trade and factor flows and enhances the elasticity of economic decisions to tax rate differentials. To the extent that economic agents do respond to such differentials, the latter will be reflected in relative commodity prices, interest rates, and wages at home and abroad.

Furthermore, the abolition of nontax barriers may result in increased allocative distortions under prevailing tax rate differentials because possible second-best efficiency arguments—predicated on the combination of tax and nontax distortions—for such differentials would no longer apply. Given the difficulty of enforcing satisfactory tax coordination to offset tax rate differentials in the absence of border controls and capital controls, it may become increasingly necessary to harmonize tax structures to correct the new distortions. Apart from these considerations, whereas tax coordination is expected to contribute to improved efficiency in production, tax rate harmonization should also enhance efficiency in exchange. Thus, tax harmonization would be conducive to higher overall welfare in the EC, albeit without necessarily raising welfare in every member country. An examination of these implications of tax harmonization, as opposed to those of only tax coordination, is deferred until the next section.

The view that concerted tax harmonization is a necessary ingredient in unifying the European market has been challenged by those who advocate the preservation of the fiscal sovereignty of member countries on philosophical or technical grounds—including the need for a wider range of policy instruments to pursue domestic stabilization, growth, equity, or regional development. Some argue that tax coordination, through a consistent multilateral network of tax adjustments, would be sufficient to attain the objectives of the Single European Act. Others simply favor spontaneous tax harmonization or tax competition. As member governments compete to attract production or investment, they will adapt the tax structure to market conditions—compensating with preferential tax treatment for differences in risk factors or insufficient infrastructure. Under tax competition, effective tax rates (net of benefits) are expected to converge to the lowest common denominator and, thus, to help contain government spending and promote efficiency in the provision of public services.

From this perspective, it is argued that concerted (rather than spontaneous) tax harmonization is tantamount to tax "cartelization," whereby governments act as oligopolists to protect market tax shares and, by implication, perpetuate a large and wasteful public sector. There is ample historical evidence to support the view that increased economic openness, in combination with an international demonstration effect, leads to some degree of spontaneous harmonization of tax structures both inside and outside the community.

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8In the early literature in this area, the term tax harmonization was used broadly to include border tax adjustments and bilateral treaties to avoid double taxation of foreign-source income; see Dossen (1967) and Shibata (1967). In any event, even under a narrow definition, tax harmonization may be accompanied by tax coordination.

9Agreement about source taxation by a group of countries (requiring no offsets) could be viewed as an alternative form of tax coordination. In contrast to the specialized definition used throughout most of the present analysis, fiscal or tax coordination is ordinarily used to indicate discretionary policy action undertaken to achieve an objective shared by a group of countries; see, for example, Tanzi (1989). Such a broad definition of policy coordination is adopted in the final section of this chapter.

10These and other references to the allocative efficiency gains to be derived from tax rate harmonization are predicated on the assumed absence of other policy-induced distortions that would nevertheless continue to prevail—notably, as regards personal income taxation.

11See, in particular, the arguments against harmonization of VAT rates in United Kingdom (1988) and Salin (1989).
the Community. Nevertheless, the ability of a country to engage successfully in tax competition depends above all on its revenue needs, which are determined by its social welfare function, resource endowment, and public sector debt. A country with a relatively small public sector (reflecting, for example, modest defense outlays or social programs) or a large tax base (especially in terms of natural resources) is in a relatively advantageous position to lower effective rates of taxation—net of benefits—and to be lukewarm to proposals for concerted tax harmonization. In addition, a country that seeks to operate as an international financial center or to develop a free trade zone would want to minimize the tax burden on nonresidents through low statutory rates or lax enforcement practices. Tax harmonization or tax coordination is necessary to counteract the incentive for economic activity to move from high-tax countries to low-tax countries; yet tax coordination, in the absence of border controls and capital restrictions, may not be sufficient to prevent a shift of the declared tax base to low-tax jurisdictions. Along these lines, the case for concerted rate harmonization in an integrated market has been argued on equity grounds—that is, to alleviate an otherwise excessive tax burden, particularly on the owners of the least mobile factors.

In sum, the argument for tax rate harmonization rests on Community-wide allocative efficiency and welfare enhancement, with the least loss in tax revenue for individual member countries. Given that, under tax competition, realized tax rates tend to fall in an integrated multicity market, any concerted harmony scheme should set minimum tax rates over the broadest possible base to avert revenue leakage. In the event that agreement on minimum tax rates is not viable, it would be necessary as a fallback to resort to coordination for offsetting tax rate differentials, supported by mutual administrative assistance to combat tax evasion.

Failure to reach a sufficiently comprehensive agreement on either tax harmonization or tax coordination supported by administrative cooperation could jeopardize financial deregulation and removal of border controls, as envisaged in the Single European Act, since high-tax countries would be reluctant to phase out such barriers and thus risk a loss of revenue.

The urgency to agree on some form of tax harmonization, or tax coordination supported by administrative cooperation, differs greatly according to the market being deregulated. Because arbitrage is speediest and most efficient in financial markets—and given the concomitant risk of capital outflow and revenue loss in relatively high-tax countries—taxes on income from financial assets should be harmonized or cooperation should be secured with the least delay, before or shortly after the removal of capital controls. Compared with international portfolio investment flows, the responsiveness of direct investment to differences in after-tax rates of return is slower. The scope for arbitrage is also relatively limited as regards merchandise trade. Upon removal of border controls, however, tax-induced trade could become significant mainly in high-value durable goods and in all goods between contiguous jurisdictions separated by significant tax rate differentials. Tax harmonization or tax coordination, coupled with administrative cooperation, seems least urgent as regards relatively immobile (especially unskilled) labor services and certain real assets.

**Principles of International Taxation**

For a better understanding of the rationale for tax harmonization, it may be useful to review certain basic principles of international taxation and their application to commodity taxes (destination versus origin principle) and to capital income taxes (residence versus source principle), the main areas for harmonization in the E.C. Any effort at tax coordination or tax harmonization to achieve an efficient allocation of resources must be based on principles that ensure neutrality of economic decisions with respect to relative effective tax burdens at home and abroad, tempered by equity considerations. This section focuses first on efficiency criteria, and then on interpersonal and intercountry equity criteria. To conclude, certain critical administrative issues are examined.

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12 The introduction of the VAT, broadening of the income tax base, and reduction of marginal income tax rates are examples of innovations that have spread from country to country without concerted harmonization. For a discussion of more or less parallel trends in tax reforms in industrial countries, see Tanzi (1988) and Hagemann, Jones, and Montador (1988).

13 As observed in Sinn (1990), under tax competition, mobile goods and factors would ultimately tend to be subject only to benefit taxation, whereas the tax burden would be borne chiefly by the owners of immobile factors—unskilled workers and landlords. Concerted tax rate harmonization, however, would ensure that the tax is borne by the owners of capital, either if such harmonization is accomplished worldwide or if the harmonized region is cut off from the rest of the world. See the discussion of equity considerations in the next section.

14 To follow up with the analogy of a cartel, the success of tax harmonization in an integrated market hinges on the size of the membership of the cartel and on the coverage of the tax base.

15 The announcement effect of the withholding tax on interest income in Germany—more than one year before its introduction in January 1989—on capital outflows and before-tax interest rates illustrates the potential speed and magnitude of the response to international tax rate differentials.
Efficiency Considerations

In general, global allocative efficiency hinges on international tax neutrality. Tax neutrality can be defined from several vantage points, among them consumption, production, factor use, or factor ownership. A neutral tax system leaves the international pattern of economic decisions unaffected, as if there were no intercountry tax rate differentials. It follows that tax neutrality is a condition for efficiency—in line with comparative advantage and consumer preferences—assuming no other policy-induced distortions, market imperfections, or externalities. For a more precise assessment of neutrality, it is necessary to consider first-round or short-run tax shifting and to identify who engages in arbitrage across country boundaries. Other key assumptions involve the flexibility of exchange rates and prices and the degree of commodity and factor mobility.

Neutrality in the taxation of internationally traded commodities is ordinarily appraised from the standpoint of an individual who consumes an identical product supplied at constant costs at home and abroad. For neutrality to obtain under these circumstances, commodities should be taxed according to the destination principle, whereby the same tax rate is levied on imports and domestically produced substitutes. Assuming that consumers respond to gross-of-tax price differentials on substitute commodities, the destination principle ensures that production takes place in the least-cost location. In this view, international tax rate differentials are normally offset through border tax adjustments by imposing domestic indirect taxes on imports and by rebating them on exports. In the absence of such offsets, the burden of adjustment lies with the exchange rate, which in practice cannot compensate exactly for international tax rate differentials as long as some commodities and services are taxed at different rates or remain tax-exempt (Krauss (1967)). Yet even with border tax adjustments, the destination principle cannot generate complete neutrality—with attendant pressures on the exchange rate—to the extent that consumers cross borders to purchase goods.

In the event that the tax is borne by the producer, neutrality is achieved through application of the origin principle. Under this principle, a uniform domestic tax rate is levied on commodities produced in a given country, whether they are sold domestically or exported, and no border tax adjustment is necessary to leave the producer indifferent between local and foreign markets. Given capital mobility and fixed exchange rates, however, the origin principle and the underlying arbitrage assumption have limited applicability in international trade. Furthermore, the destination principle is preferable to the origin principle in the event that cross-border purchases are insignificant relative to the mobility of production facilities.

Signatories of the General Agreement on Tariffs and Trade (GATT) subscribe to the destination principle of indirect taxation and grant border tax adjustments, adopting implicitly the view that such taxes are shifted forward. Tax coordination according to the destination principle should help to correct allocative distortions—albeit imperfectly for cascade-type taxes on seminished products—caused by rate differentials in VAT and in sales taxes or excises levied at the retail stage. But application of this principle without border controls becomes rather ineffective for achieving full tax neutrality, given the incentive for direct cross-border sales from low-tax to high-tax jurisdictions. Besides correcting for such leakage, tax rate harmonization is superior to tax coordination in that it not only contributes to a more efficient allocation of resources on the production side but also should do so on the consumption side. Whereas coordination of differential tax rates under the destination principle restores the relative before-tax prices for a given commodity across countries (efficiency in production), tax rate harmonization across commodities and countries sets, in addition, before-tax marginal rates of substitution equal across countries (efficiency in exchange or consumption).

Neutral taxation of income from capital—net of benefits received by the taxpayer—can be defined from the standpoint of either the investor (or saver) or the location of the investment. If the tax is not shifted and the investor arbitrages after-tax rates of return on capital at home and abroad, neutrality obtains under the residence (or worldwide) principle of taxation. According to this principle, the investor should face the effective income tax rate set by the home country no matter where the income is earned (capital-export neutrality). If, instead, the tax is shifted forward to the source of income, then, neutrality is achieved through the

17The background or the approach adopted by the GATT is discussed in Floyd (1973). In contrast, turnover taxes levied as presumptive income- or factor-based taxes are in general treated according to the origin principle, consistent with the assumption of no tax shifting.

18See Keen (1987) for a theoretical demonstration of the welfare-enhancing effect, in a Pareto-optimal sense, of a convergence in member countries' commodity tax rates to a weighted average of initial tax rates. Tax harmonization would also equalize the marginal rate of substitution between consumption and leisure across countries.
source (or territorial) principle, under which income from capital is to be taxed only at the effective rate of the host country, regardless of the owner’s residence (capital-import neutrality). It can be further argued that as investors arbitrage between borrowing (or raising equity funds) locally and abroad, they will resort to the least-cost source of financing if foreign and domestic lenders are subject to a uniform effective tax rate. From an international welfare standpoint, the source principle is deemed superior to the residence principle only if capital is not sufficiently mobile and saving is highly interest-elastic (Giovannini (1989)). The first condition is unlikely in an integrated market, however, and the second is not unambiguously corroborated by empirical evidence.

Application of the residence and source principles of capital income taxation is analogous to that of the destination and origin principles of commodity taxation. Under the source principle, investment income of residents and nonresidents is taxed alike in the host country at a nondiscriminatory effective rate and is exempt from further taxation in the home country. Like the origin principle of indirect taxation, the source principle does not require offsetting tax rate differentials. In contrast, the residence principle requires that international tax rate differentials be offset through current (as against deferred) taxation of before-tax foreign investment income at the home tax rate, while granting a refundable tax credit for taxes paid abroad (that is, including a refund to the investor for any excess host tax over the home tax liability).

Application of the residence principle to portfolio investment income (savings in the form of equity and fixed-income securities without controlling ownership) is relatively straightforward. Interest and dividends received from abroad should be grossed up for any host withholding taxes, and such taxes should be credited against the investor’s income tax liability in the home country. Furthermore, any relief from double taxation (commonly through the imputation method) made available on the shareholder’s dividend receipts for the underlying domestic corporate income tax should be provided equally for the foreign corporate income tax. Parallel treatment should be accorded to income from savings intermediated by taxable and tax-exempt financial institutions.

As regards direct investment, it is not always unambiguous where the arbitrage takes place. For closely held corporations, the residence principle should be defined at the individual shareholder’s level. For large, widely held multinational corporations, which account for the bulk of multinational investment, the investment decision rests usually with the parent company rather than the individual shareholder. Tax coordination through current domestic taxation coupled with the foreign tax credit—without distinction between foreign branches and subsidiaries—should therefore apply at the corporate level, with no further adjustment at the shareholder level. However, the form of implementation of the residence principle, applied traditionally in reference to a well-defined home country, is an open question with respect to multinational corporations, including joint ventures, that are controlled equally by multiple parents established in a number of home countries.

The analysis of international tax neutrality and of its efficiency and revenue implications is further complicated by the explicit distinction between the allocation of financial savings and the allocation of real investment. In globally integrated financial markets, savings and capital formation may take place in different countries, as determined by risk-adjusted after-tax yields and the after-tax marginal product of capital, respectively. The saving and investment locations are linked either directly by financial flows between such locations or by intermediation through low-tax offshore financial centers (tax havens). Moreover, lax enforcement of the residence principle in a given country may encourage round-tripping of financial flows between savers and investors of that country through tax-haven jurisdictions abroad. Although much of this intermediation is in the form of portfolio investment flows between unrelated lenders and borrowers, a significant portion represents direct investment flows within multinational corporations. In either case the social costs of tax-induced third-country financial intermediation entail above all a revenue loss, a misallocation of risk, and, to a relatively minor extent, a misallocation of real resources (consisting of the displacement of value added in financial services to the tax haven).

Unlike the case of commodity taxation, where the destination principle is widely accepted by

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20For a discussion of various incidence assumptions as regards taxation of international investment income, see Musgrave (1969); see also the necessary modifications to other factor income as well.

21The source principle has been often advocated, albeit less persuasively, by spokesmen for multinational companies on grounds that it would place foreign and local investors in the host country on a competitive footing.
international convention, no consensus exists as regards the principle that should govern capital income taxation. A major attempt at codifying a multilateral agreement on capital income taxation—under the Organization for Economic Cooperation and Development draft convention on double taxation (OECD (1977))—has been less than successful. Most industrial countries follow a mixed approach with regard to direct investment: the source principle for incoming investment (corporate income tax, as well as withholding tax on interest and dividend remittances, levied at reduced rates under bilateral treaties); the residence principle for outgoing investment through branches (with limitations on excess foreign tax credit); and a partial residence principle for most outgoing subsidiary investment (partial exemption or deferral due to separate entity status, with limitations on excess foreign tax credit). The residence principle is usually applied, although not always enforced, for portfolio investment.

Lack of agreement in this area probably reflects not so much the unsettled controversy over the incidence of capital income taxation and the locus of arbitrage but—perhaps more important—the absence of full reciprocity of interests between net importers and exporters of capital as they attempt to balance tax revenue needs and incentive effects. (By contrast, in commodity taxation the implementation of either basic principle is seen as having roughly equivalent revenue consequences for countries in their double capacity as exporters and importers.) The host country exercises the right to tax investment income in the first place, and the home country is left with the decision to compound, mitigate, or leave unchanged the initial tax liability under the chosen neutrality criterion or national welfare objective. In addition, the two countries have the option of negotiating a bilateral tax treaty to coordinate the basic tax treatment within certain limits.

In these circumstances, as regards direct investment, there are good reasons for moving toward tax coordination, following the residence principle, on the basis of a uniformly defined and administered company income tax base (especially through standardized capital cost recovery allowances). For portfolio investment in particular, tax coordination depends on enforcement—as indicated below—especially upon removal of capital restrictions. In the absence of adequate enforcement, concerted harmonization—preferably in a worldwide context—of source tax rates on income from all substitute financial assets is required for protecting revenue. An added practical argument for harmonization is that it imposes a common effective tax burden on footloose companies, including those established under a multicountry statute.

More generally, compared with tax coordination, tax harmonization should enhance welfare because convergence of income tax rates tends to equalize marginal rates of substitution between consumption and saving across countries and to lead to neutrality under various degrees of tax shifting or plausible rate-of-return elasticities of supply of and demand for capital. Furthermore, agreement on minimum effective tax rates is consistent with efficiency under different principles of international taxation of capital income and commodities, while at the same time protecting government revenue.

**Equity Considerations**

International tax policy in general, and tax harmonization in particular, cannot be predicated on criteria of allocative efficiency alone. Equity, both at the interpersonal level (fairness in the distribution of the tax burden among taxpayers) and at the intercountry level (fairness in the distribution of tax revenue among countries), must also be taken into account. There are alternative definitions of interpersonal equity: equity among residents of a given country or equity among residents of different countries. In the former sense, equity can be handled through international tax coordination, but in the latter sense, it would require concerted harmonization of the structure of personal income taxes and benefits—an approach that lies beyond the scope of the proposals under consideration by the EC. Interpersonal equity according to factor ownership should also be considered. In a closed economy a tax imposed on capital assets uniformly across all sectors is borne in the long run by the owners of capital. By contrast, in an open economy the tax is shifted in part to nontaxed assets, but mainly to labor and other immobile factors (Harberger (1982)). Thus, to ensure that the tax is borne by the owners of capital, it is necessary to enforce the residence principle or to extend concerted harmonization to practically all countries endowed with a comparable investment environment.

Although not an explicitly declared objective of any of the EC proposals for tax harmonization, criteria of intercountry equity can be important in shaping government attitudes to various harmonization schemes. According to the benefit criterion, tax revenue from international commodity and fac-

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22 For a discussion of inconsistencies in the tax treatment of international investment income, see Mutén (1983).

23 This point can be inferred from Horst (1980).
tor flows should accrue to the country where public services (infrastructure, legal services, public safety, national defense, and the like) are rendered, free of charge, in connection with the economic activity that underlies the tax base. To implement the benefit approach, it is necessary to identify and measure the benefit provided. If the benefit is measured broadly by the value added generated under each jurisdiction, then commodity tax revenue should be apportioned accordingly, whether tax rates are identical or not. Under the destination principle, tax revenue from imports should be transferred from the importing country to the exporting country in an amount equivalent to the rebated tax on exports; under the origin principle, no such transfer would be necessary (Cnossen and Shoup (1987)). Largely because of administrative convention, actual practice departs from this approach and allocates the revenue to the importing country—with the implicit understanding that, since all countries are both exporters and importers, the adoption of either principle has equivalent long-run revenue implications.

Application of the benefit approach to the taxation of foreign investment income would also entail allocation of tax revenue in proportion to the value added under each jurisdiction. Thus, the bulk of the revenue would go to the capital-importing country, while the capital-exporting country would claim the share attributable to the capital cost component of value added. Under the residence principle, most of the tax collected in the capital-exporting country would have to be refunded to the capital-importing country. More precisely, the tax would have to be apportioned, whether the rates are fully harmonized or not, on the basis of a formula linked to value added or some other base that reflects benefits provided free of charge. Therefore, in practice, the benefit criterion could be approximated by income taxation at source and by commodity taxation at origin.

Apart from the benefit approach, various criteria of vertical intercountry equity are conceivable to promote a desired distribution of fiscal resources among member countries, consistent with an international social welfare objective. To this end, tax harmonization may be accompanied by lump-sum budgetary transfers from high-income countries to low-income countries—regardless of each country’s tax structure. The case for such transfers is strengthened by the accentuation of regional imbalances that is likely to emerge from market integration and tax harmonization.

Administrative Aspects

Most of the above principles and qualifications must be buttressed by appropriate administrative instruments. Full application of the destination principle and the residence principle offsets international effective tax rate differentials on commodities and on capital income, from the perspective of the resident consumer and investor, respectively, requiring no more administrative tools—including minimum reporting standards—than the enforcement of any other tax. By contrast, the source and origin principles, as well as a qualified residence principle (allowing for domestic tax deferral on foreign subsidiary income), are likely to give rise to manipulation of transfer prices and of cost allocation by multinational corporations aimed at minimizing income and commodity tax liabilities in home and host countries. Under the origin principle, even unrelated entities may collude to underinvoice exports and overinvoice imports for purposes of evading commodity taxation. The revenue losses from such manipulations can be significant with regard to highly differentiated products and intangibles, and to prevent them, tax authorities normally resort to arm’s-length pricing rules. For corporate income taxation, alternatively, crude unitary apportionment formulas can be used to determine the tax base in each country where affiliated entities operate. However, this method—practiced, for example, in several state jurisdictions in the United States—tends to give rise to frequent disputes between tax authorities and taxpayers.

Removal of border controls among countries that follow the destination principle would exacerbate allocative distortions and revenue leakages associated with direct cross-border purchases by residents of high-tax countries from producers in low-tax countries. Likewise, under either the residence or the source principle, removal of capital controls would entail a revenue loss for countries where the anonymity of the taxpayer is protected through bank secrecy and bearer instruments, as a result of portfolio investment flows to tax havens. Such capital flight would need to be discouraged through uniform disclosure rules and exchange of information among tax authorities of member countries. In any event, and particularly without agreement on minimum tax rates, successful market integration requires mutual administrative assistance among tax authorities, preferably in a multilateral

24 An even more restrictive underlying assumption than that applied to commodity transactions is a uniform profit margin on all cost components. See Musgrave (1969). “An even more restrictive underlying assumption than that applied to commodity transactions is a uniform profit margin on all cost components. See Musgrave (1969).”
context—as provided in the Council of Europe-OECD draft convention on mutual assistance in tax administration.26

Proposals for Tax Harmonization27

Commodity Taxation

After elimination of all internal duties on imports and exports and establishment of a common external tariff in 1968, the EC launched the process of harmonizing domestic commodity taxes by requiring all member states to substitute a VAT for turnover taxes. The sixth VAT directive, adopted in 1979, was a major step toward a uniform basis of assessment. However, frontier controls were retained for implementing border tax adjustments for VAT rate differentials among member countries. It was recognized that the removal of border controls, a major element of the completion of the single market, would have potentially important administrative and policy implications.

In 1987, the EC Commission proposed a VAT clearinghouse system (CHS) to facilitate removal of border controls. Under the proposed system, sales among member countries would be treated in the same way as those within each country. Exporters would no longer qualify for tax rebate, and importers would be allowed to credit the VAT paid in the exporting country. The exporting country would be required to transfer tax credited on exports to importing countries, through a central clearinghouse to ensure continued accrual of VAT revenue to the country of destination. Although several important technical details of the CHS remained to be worked out, the Commission suggested that each country should calculate its own net position vis-à-vis the rest of the EC instead of requiring member states to reconcile net revenue flows bilaterally.

The Commission later reconsidered the CHS proposal and explored alternative options to maintain the present division of tax revenue among member countries, such as the suspension of VAT liability on intra-EC transactions among associated companies and taxation of mail order sales only in the country of destination, while the calculation of net VAT liabilities on other transactions among unrelated taxable persons would take place through a clearing account on the basis of each country’s trade statistics. With regard to transactions among unrelated entities, EC member govern-

26Council of Europe and OECD (1989): for a discussion, see Daniels (1988).

27For detailed description and documentation of proposals, see the relevant sections in Chapters II and III.
part because the remaining differences in VAT rates, imposed on the duty-inclusive price, would compound differences in excises.

In 1989, however, the Commission acknowledged that the earlier proposal would have limited the flexibility of member countries in setting excise rates in the pursuit of the above domestic objectives. Thus, it suggested to amend the original proposal by setting only minimum rates for alcoholic beverages, tobacco products, and perhaps petrol. For mineral oils (with the possible exception of petrol), excise rates might still have to be equalized so as to prevent competitive distortions insofar as they are inputs in the production process. Minor rates were supplemented with a set of target rates to be approximated in the medium term. In 1991, the Council agreed on a set of minimum excise rates on the principal alcoholic, tobacco, and petroleum products, effective January 1993 and subject to review at two-year intervals.

The Commission has proposed linking the bonded warehouse systems operating in member countries to enforce excises on traded dutiable goods after abolition of frontier controls. Dutiable goods would cross intra-EC borders under seal while the excise payment would be suspended. The commodities would be taxed in the country of destination as they leave warehouses for delivery to domestic retailers. As an alternative, the Commission has also suggested the use of tax stamps to prevent fraud due to intercountry differences in excise rates.

Capital Income Taxation

With the process of financial liberalization well under way, the risk of increased tax evasion faced by some member countries had put interest income taxation at the forefront of the Commission's agenda for tax harmonization. Because interest income is usually not taxed at source or an exemption is granted to nonresidents (unilaterally or under treaty), foreign bank deposits and interest-bearing securities would provide, in the absence of EC-wide reporting requirements, a conduit for tax evasion after removal of remaining capital controls. Therefore, the Commission considered three possible approaches to the problem: increased cooperation and exchange of information among national tax authorities; stepped-up reporting requirements; and a common minimum withholding tax on interest from deposits and securities imposed at source on all EC residents. Largely because the first and second solutions were seen as running counter to a long-standing tradition of taxpayer anonymity in some member countries, the Commission initially opted for the third approach.

A 1989 proposal called for a minimum withholding tax on interest income of EC residents, set at 15 percent. The proposal would only apply to debt instruments issued by EC residents and defer to national authorities the tax treatment of interest income on Eurobonds and small-size savings deposits, interest paid to or received by non-EC residents, intra-enterprise interest income, and interest received or capital gain distributed by investment unit trusts. The proposal would not preclude multiple rates, higher rates on own residents than on nonresidents, or exemption when full taxpayer identification exists. The tax could be treated as final or as an advance payment creditable against ordinary income tax. In the latter case, the country of source would bear the budgetary cost of credits or refunding the tax, unless agreed differently under bilateral treaty. Faced with mounting opposition from some member countries, however, the Commission shifted the emphasis from the minimum withholding tax toward possible agreement on the implementation of minimum reporting requirements and exchange of information on EC resident interest income to assist member countries that seek to enforce the residence principle.

Harmonization of corporate income taxation was the object of a proposed directive in 1975. Its main features were application of a single statutory rate of corporate income tax between 45 percent and 55 percent; adoption of a partial imputation system along the lines of the French avoir fiscal, with a single rate of tax credit on the distributed dividends; adoption of the source principle with respect to the imputation system applied to dividends crossing frontiers, with the budgetary cost of the tax credit borne by the host country; and imposition of a 25 percent withholding tax on dividends distributed to noncorporate shareholders, except where their identity is known to the tax authority. The proposed directive was never adopted because the European Parliament announced the prior need to harmonize the computation of the corporate income tax base. Although the Commission still supports the basic goals of the 1975 proposals, it probably would modify the recommended rate band in line with the lower rates now in effect in most member countries and would favor full imputation.

In response to the concern expressed by the European Parliament, in 1988 the Commission began to draft a proposal to harmonize the determination of taxable corporate profits. The initial draft contains guidelines about depreciation allowances, capital gains, inventory valuation, reserve provisions, valuation adjustments, and overhead costs. The basic purpose was to establish a more uniform and transparent tax treatment of corporate income, which would pave the way to a harmonization
effect along the lines of the 1975 proposed directive. The draft proposal would limit the scope for indirect subsidization through the tax base, and tax incentives would have to be provided in the form of cash grants, investment tax credits, or preferential statutory tax rates, rather than through accelerated depreciation or other adjustments of the tax base. Sectoral or regional subsidies would be permitted if intended to remedy genuine structural problems, upon approval by the Commission. In 1991 the earlier proposal was withdrawn, and a committee of experts was appointed to advise the Commission in the formulation of future proposals.28

In contrast to the slow progress in corporate income tax harmonization, two directives and a multilateral convention were adopted in 1991 to eliminate double taxation and other tax disadvantages affecting intra-EC investment income. The first allows member countries to choose between home country exemption and credit of host country taxes on foreign-source branch income or remitted subsidiary income. It also abolishes host country withholding taxes on dividend remittances to the parent in a member home country, except for countries that provide preferential tax rates on distributed corporate income under a split rate system (as practiced in Germany and Greece). The second directive eliminates the tax disadvantages of international mergers by deferring taxation of capital gains on assets of the contributing or acquired company until realization, as permitted for domestic mergers. This approach would at the same time safeguard, until realization, the tax interest of the country in which the contributing or acquired company is established. The convention sets out common transfer pricing rules among related corporate entities and binding arbitration procedures that reduce the risk of double taxation.

Related Measures

Formally, the phasing out of controls on intra-EC capital movements and trade—scheduled for completion by July 1990 and January 1993, respectively29—is not a part of tax harmonization. Elimination of such controls depends, however, on the degree of tax convergence and administrative cooperation. In addition, removal of border controls would be accompanied by either the replacement of quantitative restrictions currently imposed by EC member countries on imports from non-EC countries with Community-wide restrictions or their complete repeal, and by the removal of restrictions on cross-border provision of financial services. By implication, implementation of these measures also would be partially contingent on tax harmonization.

In 1989, the Commission unveiled a proposal for the EC company statute, available to any company whether effectively owned by residents of member or nonmember countries. Companies incorporated under the statute would be permitted, for tax purposes, to consolidate losses incurred in one member country and profits generated in another country.30 Widespread adoption of the statute throughout the Community could speed up the competitive downward convergence of effective corporate income tax rates.

The EMU Amendments envisage a set of measures that, albeit not narrowly connected to tax harmonization, are of relevance. As part of the process toward unified monetary control, the EMU allows for harmonization of minimum reserve requirements on credit institutions in member countries. Equalization of reserve requirement ratios (along with elimination of formal or informal obligation of financial institutions to hold government securities), which still differ throughout the EC, would constitute an added form of harmonization of taxes on financial intermediation. Also relevant for its possible interaction with tax harmonization is the eventual convergence of summary fiscal indicators. Specifically, under the EMU, each member country will be required to maintain (or reduce) the general government budget deficit at (to) not more than 3 percent of GDP and gross debt at (to) not more than 60 percent of GDP. Financing of the budget deficit by the central bank will be forbidden.

Pursuant to the Treaty of Rome and the Single European Act, the Community is committed to strengthen economic and social cohesion by expanding substantially disbursements from the EC Structural Funds. The Funds have been established to assist less developed regions, declining industrial and rural areas, and areas with high structural unemployment in member countries—increasingly through private sector involvement. Between 1988

28The committee’s proposals, issued in 1992, included elimination of double taxation of all intra-EC investment income (extending the scope of the recent directive on this matter), introduction of a 30 percent minimum statutory corporate tax rate, and harmonization of the definition of the corporate tax base.

29The schedule for capital decontrol is postponed, in different degrees, until January 1993, with the possibility of further extensions, for Greece, Ireland, Portugal, and Spain. A safeguard clause to capital liberalization would permit a member country that suffers disturbances in monetary and exchange rate policies stemming from short-term capital movements to reimpose controls for a six-month period.

30Unlike all other tax-related proposals, the company statute may be enacted by a majority rather than unanimous vote by member countries.
and 1993, the Structural Funds were expected to double outlays to a level equivalent to about one-fourth of the EC budget.\(^{31}\) The expansion of social expenditures thus incorporates a criterion of vertical intercountry equity in the tax harmonization process.

**Economic Effects**

The economic consequences of various proposals for EC tax harmonization must be studied not in isolation but within the broader context of the completion of the internal market. As suggested above, it is difficult to envisage removal of controls over commodity and capital movements without a minimum concerted approximation of effective tax rates. Alternatively, removal of physical border controls and capital restrictions should lead to some degree of spontaneous tax harmonization among member countries. Thus, the effects under scrutiny can originate from three interrelated sources: the effects of concerted tax harmonization and cooperation, absent other steps toward market unification; the effects from removal of border controls and capital restrictions; and the effects of the ensuing spontaneous harmonization. Whereas the first and second set of effects can be traced to well-defined proposals, the third set of effects must be based on conjectures about each country’s reaction function following the removal of fiscal and regulatory barriers. This section focuses on the direction of microeconomic and macroeconomic effects from these three sources providing, wherever possible, broad orders of magnitude.

**Allocative Effects**

Indirect tax harmonization, including administrative measures, by itself (that is, while retaining border controls) would probably have negligible allocative consequences\(^{32}\) in most member countries, for two reasons. First, the substantial tax rate changes required to meet the prescribed minimum standard VAT rate and excise rates on alcohol, tobacco, and mineral oils, as well as abolition of the higher VAT rate and various excises on other commodities, is concentrated in relatively few member countries. Second, notwithstanding the proposed mechanics of tax revenue distribution among member countries, the destination principle will be broadly adhered to in the medium term.

Relative price changes, owing to tax rate approximation within each country, shift consumption patterns away from commodities that are subject to tax rate increments to reach the minimum standard VAT rate and minimum tobacco, alcohol, and petrol excise rates, toward commodities that will no longer be subject to the higher VAT rates or to excises. The extent of the shifts in consumption depends on the own-price and cross-price elasticities of demand.\(^{33}\) Meanwhile, changes in the volume of production are determined by price elasticities of supply and, in the case of tradable goods, also by tax changes adopted by other member countries. Before equilibrium is restored, mobile factors would move from the sectors facing a decline in demand, because of increased commodity tax rates, to sectors where demand is on the rise.

Combination of tax harmonization and abolition of border controls would augment the above effects, through an expanded volume of intra-EC trade. The bulk of the enlarged trade is attributable to trade creation—that is, a shift in demand from domestic suppliers to lower-cost suppliers in EC partner countries whose products are no longer subject to border controls. Another component is the increase in direct cross-border purchases from low-tax countries by households and some institutions in relatively high-tax countries.

The potential for cross-border transactions places pressure on high-tax member countries—particularly those that are contiguous to low-tax member countries—to reduce the standard VAT rate on tradable products toward the recommended minimum rate, in addition to abolishing the higher rate. At the same time, substantial cross-border transactions could result in exchange rate pressures. On the basis of the experience of tax jurisdictions operating in a single market (notably, state jurisdictions in the United States), it is plausible to assume that member countries would be able to sustain a differential in tax rates for most product categories, roughly equivalent to the standard VAT rate band proposed initially by the Commission, and even larger differentials for certain services and perishable consumer goods. Spontaneous harmonization narrows the scope for tax-induced retail price differentials and cross-border

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\(^{31}\) Transfers from the Structural Funds are usually matched at least in part by counterpart expenditures from the recipient country’s budget. In any event, it cannot be assumed that the tax revenue loss incurred by a member country because of tax harmonization would be compensated with transfers from the Funds.

\(^{32}\) A systematic and comprehensive quantitative analysis of these effects would have to be undertaken in the context of a multicountry general-equilibrium model that can accommodate a number of commodities and factors of production—similar, for example, to the model used in Jones and Whalley (1988) to simulate the effects of various tax changes in Canadian provinces.

\(^{33}\) Simulation of the effects of the tax harmonization proposals on consumption patterns in Belgium, Germany, France, Italy, and the United Kingdom are reviewed in Chapter II.
intra-EC trade. As a result of both concerted and spontaneous commodity tax harmonization, consumption will shift at the margin from commodities with price-elastic demand that currently are taxed below the prescribed minimum VAT and excise rates toward price-elastic commodities that are subject to standard VAT rates around 20 percent or more and to the higher VAT and excise rates (other than tobacco, alcoholic beverages, and mineral oils) to be abolished or reduced.\textsuperscript{34} In a few instances, consumption would also shift toward commodities that at present are taxed at the standard VAT rate but that would qualify for a reduced rate.

Although most allocative effects are transmitted through changes in consumption, these in turn would engender factor movements away from sectors where the marginal revenue product of the factor would decline and toward those where it would rise. Comparative advantage would increasingly determine the location of production, since segmentation of EC commodity markets would disappear. The largest allocative efficiency gains will be realized in countries with the largest excess of commodity tax rates over the recommended minimum rates. An increase in consumption can be expected in countries that at present either impose relatively high VAT standard rates (Denmark, Ireland) or rely on the higher VAT rate schedule or excises for a relatively large number of commodities (Denmark, France, Italy, Ireland). By contrast, countries with comparatively low standard VAT or excise rates should experience a decline in consumption of price-elastic commodities (Greece, Luxembourg, Portugal, Spain).

The allocative effects of the proposed minimum withholding tax on interest income would be reflected in changes in asset yields, which in turn would trigger considerable portfolio shifts from newly taxable assets, whose yields were previously not subject to a withholding tax, toward tax-exempt assets (small deposits, Eurobonds, shares in investment unit trusts) and toward tax-haven jurisdictions outside the EC. The extent of induced portfolio shifts would be contingent on relevant elasticities of substitution, which tend to be rather high even in the short run.\textsuperscript{35}

Abolition of capital controls would extend these effects to member countries (Greece, Ireland, Portugal, Spain) where certain restrictions are yet to be dismantled. Furthermore, if the minimum withholding tax were accompanied by enforcement of disclosure and provisions for the exchange of information in all member countries, asset substitution could increase, particularly out of taxable assets in member countries that, lacking administrative tools, de facto follow the source principle. Pressures on gross capital outflows and revenues would mount in the mentioned countries where financial investment is still subject to exchange controls and from countries (Germany, Luxembourg) where in principle interest income is subject to ordinary income tax but without withholding at source or reporting requirements. Countries that have lifted all capital controls and impose a withholding tax should see their position improve (Belgium, United Kingdom). The remaining countries (Denmark, Netherlands) that also have some form of reporting requirements should not be affected by the introduction of a minimum withholding tax.

The allocative effects of corporate income tax harmonization are complicated by the fact that statutory rates contain incomplete information for ascertaining tax-induced distortions. Effective tax rates, normalized to a common base, depend among others, on arbitrage conditions, financial structure, economic rates of asset depreciation, interest rates, and the expected rate of inflation. The dispersion of effective tax rates across countries confirms that there is room for harmonization, or for closer approximation of the residence principle with consistent application of arm’s-length pricing rules. Illustrative simulations of various possible proposals for harmonizing statutory rates, or capital cost recovery allowances, or both, indicate that these tax modifications could entail substantial changes in the equilibrium capital stock for certain countries. High-tax countries (in particular Germany) could experience a significant buildup in capital stock, whereas low-tax countries (Ireland, Luxembourg) could suffer some capital depletion relative to the long-run steady-state stock that would prevail under current tax treatment.\textsuperscript{36}

The likely magnitude and path of these allocative effects depend on several determinants—including the relevant price-of-capital elasticities, adjustment parameters, and various institutional constraints prevalent in member countries—some of which cannot be taken readily into account even in a complex modeling framework. Besides influ-

\textsuperscript{34}The elimination of these excises involves a larger than proportionate reduction in commodity prices subject to VAT because the VAT base is gross of excise duty.

\textsuperscript{35}There is a paucity of quantitative estimates of the impact of the proposed tax changes on interest yields and financial flows among asset categories and countries. However, the experience of Germany with the imposition of a 10 percent withholding tax (without compulsory reporting) in 1989 and of Belgium with the reduction in the withholding tax rate from 25 percent to 10 percent in 1996 suggests large and rapid portfolio shifts, including in asset holdings abroad. These cases are consistent with the effect in Canada of the removal of the 15-25 percent withholding tax on nonresidents in 1975, documented in Brean (1984).

\textsuperscript{36}For a discussion of the methodology underlying the calculation of effective tax rates and the simulation results, see Chapter IV.
encouraging the sectoral and regional allocation of fixed capital, harmonization of the corporate income tax structure and enforcement practices would tend to alter the derived demand for and prices of other inputs, as well as the financial structure and internal commodity and factor prices of multinational corporations. These effects might be speeded up by the proposed establishment of EC companies, which would have a greater potential to engage in tax-minimizing transactions across intra-EC borders. In all, the pressures for spontaneous harmonization of taxation at source would mount, assuming retention of the residence principle on income derived from outside the EC.

The above static effects underscore the efficiency gains in production and consumption from tax harmonization and from the associated abolition of controls over trade and capital movements among EC member countries. Removal of controls, convergence of effective tax rates, and emergence of EC-incorporated companies would widen the scope for exploitation of economies of scale in decreasing-cost industries and promote dynamic efficiency gains—through intensified competition, productivity spillovers, technological innovation—and external economies. The alignment of VAT and excise rates is likely to contribute significantly to such gains. Moreover, specific steps toward standardized computation of taxable profits, elimination of remaining international double taxation (in the form of conflicting arm’s-length pricing rules applied by different national authorities and possible double taxation of intracompany dividends) and unification of the tax treatment of domestic and international mergers would encourage the realization of economies of scale and dynamic effects by multinational firms in the internal market.

**Distributional Effects**

National tax authorities are concerned about the possible implications of tax harmonization on domestic income distribution. Short of a comprehensive study of tax incidence for each member country, these implications lend themselves only to a partial assessment. In most member countries, indirect tax rate approximation will involve a reduction in the progressivity of taxing products with highly income-elastic demand, through the abolition of the higher VAT rates and selective excises on luxury goods. At the same time, convergence of excise rates on alcoholic beverages and tobacco products, for which demand is usually both income- and price-inelastic, tends to have a favorable (adverse) effect on income distribution, as rates are reduced (increased) to the proposed minimum rates.

The distributional consequences of capital income tax harmonization are less clear than the effects of commodity tax harmonization. In view of both the partial coverage of taxes on capital income and the openness of member countries’ economies, the incidence of such taxes cannot be interpreted unambiguously. In general, an increase in tax rates on income from capital, as a result of harmonization of such taxes across EC member countries, might be borne largely by labor and other immobile factors, given the openness of the Community toward countries where capital income is tax exempt or taxed at a low rate. A critical element involves the administrative steps to prevent tax evasion that would accompany the harmonization effort.

The distribution of government revenue from trade and investment among member countries would be altered, in part because of tax harmonization and in part because of stepped-up transfers from the EC Structural Funds. To the extent that tax revenue from commodity flows continues to accrue to the country of destination—channeled through various administrative methods under consideration—each country’s share would remain broadly unchanged. The shares would be altered only as a result of realignment in VAT and excise rates, depending on the difference between the present rates and the harmonized rates. As regards capital income taxes (notwithstanding the application of either principle of taxation), effective rate harmonization would be tantamount to a switch to taxation at source. At the limit, uniform effective income tax rates would obviate any offsetting home tax liability on foreign investment income under the residence principle. Although harmonization of capital income taxes should confer revenue gains to member countries that are primarily the source of EC investment income, these gains would not be fully captured by source countries if alternative tax-exempt investment opportunities are available. Member countries that currently impose tax rates on interest income derived by their

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37For a survey of the empirical literature on the responsiveness of multinational firms’ decisions to tax changes, see Alworth (1988).

38For a fuller evaluation of distributional consequences it would be necessary to know the nature of measures (on the revenue or expenditure side of the budget) undertaken in any given member country to compensate for the net revenue gain or loss associated with a specific harmonization proposal.

39Under the originally proposed directive, the elimination of zero rating of necessities would have compounded the regressive character of the VAT rate harmonization. For a survey of estimates of the equity effects of the proposals for product tax harmonization for a few member countries, see Chapter II.
own residents or EC residents below the recommended minimum withholding rate could also benefit, assuming that adoption of this rate would be supported by adequate enforcement. Member countries that at present levy relatively low effective corporate income tax rates could likewise gain revenue from harmonization. However, the hypothesized revenue gains are likely to be eroded in part by adverse incentive effects.

The envisaged expansion of the Structural Funds is expected to contribute to a more equitable distribution of fiscal resources between high- and low-income regions within the Community. The bulk of the transfers are directed to member countries with large economically depressed regions where living standards are significantly below the EC average (Greece, Ireland, Portugal, and parts of Italy and Spain). Accordingly, such transfers could in part compensate for the likely welfare loss incurred in these regions, particularly in the short run, as a result of the completion of the internal market and tax harmonization. However, investigation into past practices casts suspicion on whether the expenditure financed from the Funds is in fact additional to—rather than a substitute for—national assistance to depressed regions. Moreover, there is evidence to confirm the view that, in their present form and scale, the Funds are inadequate as a social safety net for compensating adversely affected regions.

**Macroeconomic Effects**

The macroeconomic effects of tax harmonization and of the accompanying financial liberalization and removal of border controls are reflected largely in changes in aggregate supply and demand. On the supply side, the allocative effects are translated into fuller capacity utilization (represented by a movement to the production boundary), or capacity expansion (involving an outward shift in the boundary), or both. On the demand side, the impact of effective tax rate changes on the government budget, as well as on household and enterprise incomes, is further transmitted through several rounds of repercussions on domestic absorption. For analytical convenience, it can be assumed that during this process EC member country authorities do not adopt compensatory fiscal action, and nominal exchange rates remain fixed.

Convergence of VAT rates and excise rates should initially involve corresponding changes in the tax-inclusive retail price level of member countries; the removal of border formalities tends to lower the price level throughout the Community. The initial net price changes would be followed by cost-push price pressures whose strength depends on labor market conditions and capacity utilization in each country. Changes in effective corporate income tax rates and interest income tax rates would alter before- and after-tax rates of return. The initial changes in asset yields are likely to be diffused, however, because of substitution between taxed and exempt assets within and across countries. Liberalization of financial services, including removal of capital controls, should contribute to an overall decline in the price of capital in all member countries. Ultimately, interest rates in each country would be influenced by changes in the public sector financing requirement and by the need to maintain exchange rate parity.

The supply-side response to commodity and factor price changes engenders, through the reallocation of resources, a likely increase in capital formation, employment (with labor productivity as well as real wages rising near full employment), and output growth. These effects would tend to be relatively strong in member countries with tax rates that exhibit great internal dispersion and are distant from the proposed band or minimum rates and in countries that are about to remove remaining obstacles to factor movements. All member countries would, in addition, benefit from secondary dynamic repercussions stemming from the enlarged commodity market and the wider pooling of factor resources, technology, and risk across member countries.

Whereas supply-side effects can be expected to materialize over a medium-term horizon, demand-side effects should take place mostly in the short run. The effects on absorption can be predicted broadly on the basis of the magnitude and direction of the government revenue impact, net of ensuing changes in interest payments on government obligations. The initial decrease in revenue from a tax rate cut, reflected in a tax-induced fall in retail prices, enhances the purchasing power of households; the rise in net capital bolsters the cash-flow position of enterprises. As a result, private consumption expands and, reinforcing the improved profitability of enterprises, spurs fixed investment and employment. Depending on the degree of unused capacity, the increase in absorption may lead
to added output growth, inflation, a wider external imbalance, or a combination of these. An initial boost in revenue stemming from a tax rate increment would, of course, result in an opposite causal chain. In either case, this process is followed by secondary effects on tax revenue through induced changes in the tax base. The consequence of tax harmonization on national saving rates is a composite of the budgetary effect and tax-induced changes in private consumption in each country. On the whole, saving rates would not necessarily converge within the Community.

The net effect on each country’s external sector cannot be ascertained a priori. For a given EC member country, the expansion (contraction) in domestic demand involves a rise (fall) in import volume, which may be offset by a rise (fall) in export volume to a partner member country. On the supply side, the EC would collectively experience an improvement in external competitiveness, with a positive contribution to the current account balance. On the capital account, gross long-term investment flows are likely to take place in response to changes in after-tax yield differentials. Significant net direct investment inflows should be experienced by all EC member countries because of dynamic effects over the medium term. The emergence of net imbalances in the current and long-term capital accounts among member countries would be met primarily with net short-term financing—absent changes in monetary stance or nominal exchange rates.

The static budgetary impact (that is, excluding secondary repercussions) of tax harmonization can be expected to be concentrated in countries with relatively high VAT and excise rates. For most countries, commodity tax harmonization could result in an immediate revenue change equivalent to less than 1 percent of GDP; revenue losses of 3 percent of GDP or more have been estimated for Denmark and Ireland. Greece, Portugal, and Spain are likely to benefit from a revenue gain of around 2 percent of GDP, chiefly because of increments in excise rates. The budgetary impact of capital income tax harmonization—broadly in the direction of intercountry distributional effects, as discussed above—is likely to be much smaller. The harmonization of interest income taxation in particular would have a limited impact on most countries, given the remaining scope for avoidance within and outside the Community.

A quantitative assessment of macroeconomic effects requires a medium-term, multicountry computational framework with sufficiently disaggregated commodity and factor markets. Consistent with the budgetary estimates, the simulated effects of VAT harmonization are negligible for most member countries, especially the largest ones. Notable exceptions are Denmark and France. In the former, after five years VAT rate cuts are expected to result in a 4 percent increase in real GDP, a cut in the unemployment rate of more than 1 percentage point, and a fall of some 7 percent in the GDP deflator, relative to baseline levels. In France, liberalized VAT deductibility would induce a 1 percent rise in real GDP and a 1/2 percentage point decline in the unemployment rate. In a simulation of the EC-wide effects of completing the internal market, abolition of border controls and liberalization of financial services were estimated to yield a 2 percent increase in real GDP and a 2 1/2 percent fall in the price level and to create 0.7 million jobs over the medium term (EC Commission (1988c)). In the short run, however, unemployment may worsen, especially in the Community’s less developed areas, tempting some member governments to protect or subsidize the affected industries and regions (Bean and others (1990))—hence the rationale for a sizable increase in Structural Fund transfers to such regions.

These simulation results underestimate the potential contribution—to economic growth, employment, and price stability—of the convergence of commodity and capital income taxation, as well as the removal of border controls and liberalization of capital movements and services, in the EC. One source of underestimation is partial coverage, with few (if any) estimates available for the macroeconomic effects of the harmonization of excises and capital income taxes, which on balance can be expected to create additional economic activity and to further dampen price increases. Second, the simulations are limited in capturing the static allocative efficiency gains from commodity and asset substitution and increased competition, given the lack of sufficient sectoral detail. The third and perhaps most important source of underestimation involves the dynamic supply-side effects (such as improvements in factor productivity from economies of scale, technological progress, and expectations), which are particularly difficult to model.46 Besides

43 Over time, this gain would be partially eroded by the negative demand response to the tax rate increase. In the case of Luxembourg, a much larger revenue gain is likely to evaporate rather quickly because of a large volume of cross-border shopping.

44 Selected simulations of commodity tax harmonization have been performed with the Community’s HERMES model, the OECD’s INTERLINK model, and several national macroeconomic models that approximate more or less such a framework. For a survey of these results, including estimates of budgetary effects, see Chapter II.

45 In interpreting the simulation of the single market, the Commission (1988c, p. 159) acknowledged that “even though its
insufficient model disaggregation, these shortcomings arise from the assumed stability of the underlying parameters, which are bound to be altered significantly over the medium term under such wide-ranging structural changes affecting all EC member countries.

Effects on Non-EC Countries

The implications of tax harmonization and of the associated liberalization of internal commodity and factor movements for non-EC economies can be inferred largely from the above microeconomic and macroeconomic effects. As regards static allocative effects, the abolition of border controls and capital controls—much like the elimination of discriminatory government procurement practices, removal of barriers to entry, and unification of regulatory standards—are tantamount to the dismantling of intra-EC trade barriers. Along with trade creation among EC member countries, in general these measures divert trade from relatively low-cost non-EC producers in favor of high-cost EC producers. In addition, each EC member country stands to benefit from improved terms of trade because of the fall in import prices. All told, the removal of border controls has been simulated to improve the EC external current account balance by 0.2 percent of GDP over the medium term. The liberalization of financial services would, primarily through the reduction in the price of capital services, both induce some increase in import demand and strengthen external competitiveness. The latter effect apparently would dominate, with a net positive contribution to the EC current account balance equivalent to 0.3 percent of GDP (EC Commission (1988e)).

Broadly speaking, tax harmonization is likely to lead, on the supply side, to an improvement in external competitiveness and possible terms of trade gains for the EC. On the demand side, the net external effects of tax harmonization tend to be insignificant, as illustrated by the simulated VAT harmonization. However, specific instances of increased imports, through trade creation, could be expected regarding commodities currently subject to higher VAT or excise rates, which may provide hidden protection to high-cost EC producers against more competitive non-EC producers. In an analogous manner, even partially effective interest income taxation in EC member countries that currently exempt such income could drive out portfolio investment to non-EC tax havens.

On the whole, the adverse static effects on the current account position of non-EC countries, reflecting mainly trade diversion and improved competitiveness of the EC, are likely to dominate, as suggested by model-based simulation results. However, these effects would be offset, at least in part, by medium-term dynamic repercussions that transcend the simulations. Direct investment would be attracted from major capital exporting non-EC countries by trade diversion and, especially, by the enlarged market. Multinational companies based both within and outside the Community would be lured to expand operations in EC member countries by several factors: lower transactions costs and capital costs on account of abolition of border controls and financial restrictions, economies of scale, increased labor productivity, EC-wide incorporation, and increased transparency upon harmonization of the corporate income tax base.

Expanded multinational enterprise activities in the EC confer benefits to non-EC home countries through added capital income and, depending on the nature of the activity, might generate favorable net trade flows and stimulate employment and growth in these countries. Meanwhile, increased investment in the EC may displace investment that would have taken place in non-EC home countries (mainly in Japan and the United States) or non-EC host countries (possibly in Northern Europe, Eastern Europe, and North Africa), with the attendant loss in local employment and growth. To a small extent, neighboring regions with excess labor supply may recoup a portion of these losses through migration to the EC in response to new employment opportunities.

The abolition of national import quotas, in connection with the removal of border controls, should have no effect on imports assuming that the remaining EC-wide quantitative restrictions would be equivalent to the sum of fully utilized national restrictions; see Balassa (1989). This is the case of restrictions on textile and clothing imports which are negotiated on an EC-wide basis. However, an EC-wide restriction set at less than the sum of national restrictions would divert trade. Alternatively, if the present national restrictions were less than fully utilized, then an EC-wide restriction equivalent to the sum of these restrictions could lead to some trade creation.

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47The explanation concerning VAT harmonization lies mainly in the neutral tax treatment of consumption under the destination principle.
The EC Commission has stressed that, although creation of the single market can be shown by itself to impart static adverse effects on non-EC countries, the attendant allocative efficiency gains, reduction in the nonaccelerating-inflation rate of unemployment (NAIRU), and capacity expansion should permit EC member countries to adopt a less restrictive macroeconomic policy stance, which would contribute to non-EC economic expansion (EC Commission (1988e)). Similarly, the improvement in efficiency should provide an opportunity for the Community to further liberalize trade vis-à-vis non-EC countries. This argument can be extended to the improved resource allocation attributable specifically to tax harmonization.

Systemic Implications

Apart from microeconomic and macroeconomic effects within and outside the EC, tax harmonization may have implications for the conduct and effectiveness of fiscal policy in member countries. These implications cannot be ignored in view of the importance that certain member governments assign to national fiscal autonomy. Simply put, a major issue in the debate on tax harmonization involves each government’s ability to make independent use of fiscal policy in the pursuit of domestic stabilization, distributional or structural objectives, especially in the context of the EMU.

In broad terms, more than one third of EC general government tax revenue (roughly one fourth from commodity taxes and one tenth from capital income taxes) is likely to be tied down by convergence toward minimum tax rates (Chart 1). Although subject to certain exceptions to mandated harmonization (such as retention of existing zero VAT rates for interpersonal equity reasons and allowance of investment tax credits if warranted by structural or regional development considerations), the scope for modifying unilaterally the base and rate structure of VAT, excises, corporation income tax, and interest income tax will narrow substantially. The remaining major sources of revenue, not to be covered by concerted harmonization, consist of personal income taxation (other than on interest income) and social security contributions, which together account for well over one half of tax revenue. Since the 1970s, however, industrial countries have attempted to contain, and then to reverse, the earlier rise in social security contribution rates. Furthermore, with a predictable increase in labor mobility, some spontaneous reduction of tax rates on labor income in the future seems inevitable.

Besides the limitations imposed by tax harmonization, EC member countries’ conduct of fiscal policy will be subject to two mutually reinforcing constraints under the stage-by-stage implementation of the EMU. The first is that member countries that have traditionally relied on the inflation tax as an added revenue source will no longer be able to monetize their budget deficits through central bank financing; downward harmonization of reserve requirement ratios would anyway reduce the scope for financing deficits through reserve money creation. And, as exchange rates are increasingly fixed—preparing for the introduction of a single currency—in principle, the only major avenue for independent macroeconomic policy action would be in the form of discretionary non-interest government expenditure. Thus, discipline on each member’s fiscal stance would be left mainly to market forces, reflected in risk-adjusted interest yields on government securities. However, a second potentially powerful constraint consists of the fiscal rules limiting the budget deficit and public debt in terms of GDP. If binding, these rules would enhance the Community’s collective responsibility for macroeconomic stability in member countries and possibly obviate its role as lender of last resort.

An upshot of the foregoing discussion is that, against a background of significant differences in budgetary stance (Chart 2) in the past—despite the convergence of monetary policies among countries participating in the EMS (Tanzi and Ter-Minassian (1987))—the fiscal performance of EC member countries is bound to converge in the period ahead, on the strength of both tax harmonization and financial integration, assisted by the enforcement of fiscal rules. At the same time, the case for national

48It is conceivable, however, that, within a more integrated Community, wages in the low-income regions may rise faster than warranted by productivity gains—to catch up with wage levels in high-income regions—and structural unemployment may worsen. In the event, a less open and expansionary policy stance might be anticipated.
fiscal independence for domestic stabilization purposes would be weakened by the ensuing convergence of inflation rates across member countries. However, the loss in fiscal autonomy by member countries need not be complete. In particular, member governments would retain the automatic stabilizer feature of progressive personal income taxation—unless subject to bracket indexation for inflation, as in Denmark—and of unemployment compensation benefits. In addition, within the limits imposed by common minimum tax rates, financial markets, or fiscal rules, a discretionary countercyclical stance might still be adopted through noninterest government outlays or certain tax changes.

Overall, tax harmonization will also narrow the scope for member governments to pursue independent structural or social policy goals. Again, within limits, they could alter the composition of noninterest budget expenditures or grant tax incentives for investment or employment. Increased factor mobility and some competitive downward pressure on tax rates (toward the prescribed minima) are likely to have a twofold effect on public finances in the Community. On the one hand, member governments will rely increasingly on benefit taxation, and, except for a few low-tax countries (that is, where tax rates would need to be raised to the prescribed minima), there will be a tendency for the public sector to become more efficient. On the other, such conditions strengthen the earlier argument for a substantial expansion and overhaul of Structural Fund transfers to low-income regions in the Community.

Since the 1980s a number of EC member governments and non-EC governments have launched medium-term fiscal consolidation programs so as to meet an increasingly tighter intertemporal budget constraint imposed by a rapidly mounting public debt stock and interest payments. Thus, the latitude for an independent fiscal stance has already been reduced, quite apart from the recent impetus.
toward tax harmonization and financial integration. Meanwhile, the major industrial countries have made various attempts at coordinating macroeconomic policies to attain common objectives such as sustained economic growth, reduction in external imbalances, and exchange rate stability (Horne and Masson (1988)). These attempts have proven difficult in the fiscal area (Tanzi (1989)). It is an open question to what extent macroeconomic policy coordination between the EC as a whole and non-EC industrial countries would be assisted by EC tax harmonization.

An additional systemic issue involves the coordination or harmonization of the tax structures of EC members and non-EC countries. In this regard, a harmonized EC tax system can facilitate closer income tax coordination and administrative cooperation—as envisaged in part under the Council of Europe-OECD draft convention (Council of Europe and OECD (1989))—between EC members and non-EC countries. More immediately, policymakers in these countries have to address this issue as it relates to financial liberalization and taxation of capital income. In particular, to prevent loss of revenue from interest income taxation—through financial reallocation to low-tax jurisdictions or to exempt instruments—EC and non-EC governments may consider agreeing on a common minimum withholding tax rate on such income at source, along with uniform reporting requirements and other forms of administrative cooperation to support residence taxation. There are precedents for such an approach in at least two other areas. One is the arrangement among OECD member countries, effective since 1978, on the application of minimum interest rates on officially supported medium- and long-term export credits. The other is the 1988 Basle Accord among industrial countries on a minimum capital adequacy ratio with regard to international commercial bank lending; nearly all major banks are expected to comply with this requirement by 1993.
II  Taxes on Commodities
A Survey

A. Lans Bovenberg and Jocelyn P. Horne

This chapter investigates the main economic issues relating to harmonization and coordination of commodity taxation. A review of theoretical considerations is followed by a discussion of past trends and current proposals for harmonizing the VAT and excises in the EC. Next, sales taxation at the local level is discussed in the context of the federal governments of the United States and Canada. The chapter concludes with a survey of estimates of the likely effects of the EC Commission's proposals on resource allocation, income distribution, government revenue, macroeconomic aggregates, and the rest of the world.

Theoretical Background

The criterion that production should be located according to comparative advantage has guided, for the most part, the process of harmonizing indirect taxation. From this perspective, an efficient allocation of resources requires that commodity taxes should leave the relative costs of home- and foreign-made goods unaffected.

Origin Principle Versus Destination Principle

The destination principle ensures that indirect taxes do not discriminate between foreign and domestic producers. According to this principle, commodities are taxed in the country of destination (that is, where they are consumed), regardless of where they are produced. Border adjustments are required so that imported commodities attract the same tax rate as comparable domestic goods in the importing country. Exports are typically exempt from domestic tax, and imports are subject to the tax collected on domestically produced goods. The destination principle is consistent with the provisions of the GATT.

An alternative to the destination principle is the origin principle, which holds that commodities should be taxed on the basis of their place of production, regardless of where they are consumed. Accordingly, imports are not taxed, and no rebate is given with respect to exports. Under the destination principle, the tax rate in the country where the consumption takes place determines the final tax burden on the consumer. Under the origin principle, in contrast, the final tax burden at consumption is a weighted average of the effective tax rates in the countries where production occurs.

Economic theory provides efficiency arguments in favor of the origin principle, albeit under restrictive assumptions. Shibata (1967) demonstrated that replacing the destination principle by the restricted origin principle would not affect production efficiency. Tax rates could differ across countries without violating locational neutrality because changes in exchange rates and market prices would leave relative prices unaffected. However, the assumptions underlying this theorem, such as the absence of international factor mobility and the flexibility of either factor prices or nominal exchange rates, are too restrictive to be met in practice. The theorem also requires a truly comprehensive tax and a completely uniform tax rate within each country, yet most countries apply differentiated commodity tax rates and exempt certain goods and services. Whereas differential tax rates across goods and services tend to distort mainly consumption patterns under the destination principle, they would distort primarily production patterns under the origin principle—the actual distortion being determined by price elasticities of substitution in consumption and production, respectively.

1 Under the restricted origin principle, the origin principle applies only to trade among the members of a customs union. For trade with nonmember countries, the destination principle would apply.
2 Cnossen and Shoup (1987) have examined these assumptions in more detail. Berglas (1981) demonstrated that replacing the destination principle with the restricted origin principle would transfer income among member countries if trade with the rest of the world is not balanced.
3 Hence, under the origin principle, a differentiated commodity tax could become a tool of selective industrial policy—much like industry-specific investment tax incentives in a number of countries. Laux-Meiselbach (1988) has argued that this may cause new distortions in international trade because domestic producers may demand lower tax rates for protection purposes.
The restricted origin principle is difficult to administer under a credit-type VAT, although the origin principle has been regarded as superior to the destination principle because it can be applied without border controls. Under the origin principle, under invoiced exports save tax paid to the country of origin, whereas over invoiced imports save tax paid to the country of destination by raising the notional tax credit available upon further processing. This encourages firms to manipulate prices if tax rates differ between countries (Cnossen 1986) and Laux-Meiselbach (1988). Moreover, valuation would be a highly contentious matter under the origin principle because it would affect the intercountry distribution of tax revenue. An administrative advantage of the destination principle is that the valuation of exports and imports does not affect the tax liability. Because exports are zero rated, they do not bear tax, regardless of valuation; under invoiced imports, although reducing the tax paid at the border, also reduce the tax credit that the importing firm can claim.

Benefit considerations may also affect the choice between the origin and destination principles. According to the benefit criterion, the incidence of the benefits from public expenditures should determine whether consumption or production should constitute the basis for taxation. In particular, under the destination principle, consumers should bear the tax burden if consumers rather than producers are the main beneficiaries of government services financed by the tax.

Application of the Destination Principle

The border tax adjustments required by the destination principle are difficult to implement under a turnover tax, which typically applies to all stages of production and distribution, with no rebate for tax paid at earlier stages. Consequently, exact border tax adjustments depend on the number of production stages and the value added at each stage. Because these factors cannot be reliably ascertained, tax authorities can only approximate national border tax adjustments. Moreover, countries may be tempted to use border tax adjustments for the purposes of protecting domestic producers of import substitutes and of providing incentives to exporters.

In contrast to the turnover tax, the VAT provides a precise method for eliminating the tax on exports and for levying an equivalent compensatory tax on imports because the tax is levied on the incremental value added at each stage in the production of goods. If the tax is levied according to the credit method—as is the case in EC member countries—invoices explicitly state the total tax paid at previous stages. As a result, tax authorities can exactly measure the tax incorporated in exports, and rebate it by applying a zero rate, while imposing an equivalent compensatory tax on imports. Even if import values are under- or overstated, the credit mechanism corrects inappropriate valuation at the first inland stage.

Although more neutral, and thus efficient, than the turnover tax it replaced, the VAT levied by EC member countries still leads to distortions in production, consumption—besides the distortion of the labor-leisure choice, associated with any consumption tax—and international trade. Several types of distortions arise in connection with the VAT, as discussed below: distortions induced by exemptions, differences in tax rates within and across countries, and border adjustments.

Several sectors are usually exempt from the VAT, including small businesses, financial institutions, and public and nonprofit institutions. In addition, production in the household and informal sectors is exempt either because of statutory provisions or because of enforcement difficulties. Exempting activities differs from zero rating in that exempt traders are not entitled to claim credit for the VAT imposed on their inputs. Exempt items, therefore, incorporate the VAT imposed on goods and services bought by the tax-exempt producers. The larger is the value of taxed inputs relative to the value of output, the higher is the tax burden on an exempt enterprise. Depending on elasticities and market structure, part of this tax burden may ultimately be passed on to consumers through prices of final goods and services. Through this

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Footnotes:


5Under the origin principle, under invoiced exports save tax paid to the country of origin, whereas over invoiced imports save tax paid to the country of destination by raising the notional tax credit available upon further processing.

6Efficiency considerations support the benefit principle because locational distortions from differential tax burdens on mobile factors depend on net tax burdens (that is, tax burdens net of benefits from public expenditures).

7Terra (1988, Chapter 10) used these benefit arguments when arguing in favor of the destination principle for the VAT. Cnossen and Shoup (1987), in contrast, maintained that the VAT does not closely match the benefits from public expenditures.

8Nonpayment of VAT because of tax evasion is formally equivalent to nonpayment of VAT on account of an exemption. In some EC countries a substantial part of the VAT is evaded; see, for example, Pedone (1981).
channel, exemptions may distort consumption decisions.

Exemptions distort the pattern of production for two reasons. First, the tax paid by exempt traders is not refunded if domestic taxable producers buy exempt inputs. Hence, just as under a turnover tax, some cascading may arise under a VAT. Second, input decisions of exempt institutions are typically distorted. In particular, these institutions are encouraged to have services performed by their own employees instead of buying them on the market. Exemptions may also induce trade distortions—especially if tax rates differ across countries. When exempt businesses or businesses buying exempt inputs in high-tax countries sell abroad, they are likely to be undercompensated at the border because they do not obtain refunds for taxes on inputs.

Differences in intracountry tax rates typically distort consumption patterns and the input decisions of exempt entities. Nonuniform intracountry rates can also be used for protective purposes by imposing higher rates on importables and lower rates on exportables and nontradables. This may affect the intercountry pattern of production and consumption, as well as the international distribution of welfare, by changing the terms of trade.13

International differences in commodity tax rates reduce the efficiency in exchange because they drive a wedge between the marginal rates of substitution faced by consumers residing in different countries. Accordingly, welfare could be enhanced if households were to engage in international trade by increasing their demand for goods that are relatively heavily taxed in their own country relative to other countries and by reducing the demand for those goods that are relatively lightly taxed by international standards. Cross-border shopping, although mitigating these consumption (or exchange) distortions, causes international differences in consumption tax rates to distort trade and production.14

Border controls help to enforce VAT on cross-border shopping and play an important role in administering the border tax adjustments under the destination principle. However, the compliance burden associated with border procedures and associated paperwork imposes transaction costs and, therefore, at the margin, border controls discourage trade.

Trade is also discouraged by the way the current system of border tax adjustments imposes a compensatory VAT on imports. On domestic transactions between taxable persons, the supplier pays and the purchaser deducts the VAT at about the same time. On international transactions, in contrast, as the payment of the import VAT usually precedes the right to deduct, the importer provides an interest-free loan to the government by forgoing the interest on the prepaid tax.16

13In the case of taxes that represent user charges for services provided by the government, taxes correspond to the price paid for production costs that would otherwise have been incurred. Neither tax exempt nor taxable producers should be allowed to credit these taxes.

14To illustrate, Davis and Kay (1985) observed that new construction in the United Kingdom gives resident financial institutions, which are tax exempt, a competitive advantage over continental competitors because the latter cannot claim refunds for the VAT they pay on new construction. Exemptions also violate the principle that tax revenue should accrue to the country of destination. Similar distortions occur if countries differ in the type of expenditure that qualifies as business expense and, therefore, can be credited as input VAT.

15Differential rates are sometimes justified on the externalities and differences in demand elasticities. Kay and Keen (1987), however, used efficiency arguments when they argued in favor of uniform taxation. Nonuniform taxes may also encourage unproductive activities (“rent seeking”) by interested parties who seek preferential treatment. Uniform taxes, in contrast, may signal that the government will not yield to such pressures for preferential treatment.

16Feldstein and Krugman (1990) have argued that exemptions from VAT usually fall on nontradable rather than tradable goods and services. Hence, VAT exemptions discourage trade and raise the consumption and production of nontradables.

17Cecchini (1988) estimated that the removal of border controls would reduce costs to the private sector by ECU 7.9 billion to ECU 8.3 billion (at 1988 prices), which amounts to about 1.7 percent of the value of intra-EC trade. In addition, the public sector would save between ECU 0.3 billion and ECU 1.0 billion in administrative costs. According to United Kingdom (1988), fiscal controls account for less than half of the costs of border controls.

18In several EC countries, the tax on imports is not due until four to six weeks after importation. Hence, the difference between the tax treatment of inter- and intracountry transactions may be quite small in some cases.
According to the destination principle, excises are collected only once in the production and distribution process—in most cases at the manufacturer’s or importer’s level—in the country of sale. The only major exception is the duty on fuel oil used by industry. In this case, producers use an excised good as an input, and cascading may occur because the duty is nonrefundable. This effect is similar to that experienced by the VAT-exempt producers that buy inputs on which VAT has been levied. Consequently, international differences in excise rates on fuel typically distort the international pattern of production and competitiveness.17 Just as in the case of VAT, excise rate differentials within and across countries may give rise to distortions in consumption and exchange and to cross-border shopping.

Harmonization of the Value-Added Tax

After eliminating tariffs on international trade as of July 1968, the EC proceeded first with harmonizing the types of domestic commodity taxes and then with harmonizing the definition of tax bases. In 1967 the EC Council of Ministers decided that all member countries should substitute the VAT for turnover taxes, in part to prevent member countries from using indirect taxation to favor domestic producers over foreign producers through the manipulation of border tax adjustments (EC Commission (1967)). By 1973 nine member countries had introduced the VAT. After becoming members, Portugal and Spain followed in 1986, and Greece in 1987 (Table 1).

The sixth VAT directive, adopted in 1977 and implemented by all member countries in 1979, represented a major step toward a uniform basis of assessment.18 This directive defined taxable transactions, persons, and amounts. It permitted special schemes for small businesses and farmers and specified a list of the activities that could be exempted, including insurance, banking, and other financial transactions, as well as services in the public interest such as postal services, medical care, educational and cultural activities, and noncommercial radio and television broadcasting. In addition, it included special arrangements that allowed countries to deviate from the common tax base in several areas, with the understanding that these deviations should eventually be eliminated.

Despite the broad harmonization of the base, VAT rates still vary widely among member countries (Table 1). As of 1990, the standard rate ranged from 12 percent in Spain and Luxembourg to 23 percent in Ireland. Denmark is the only country that imposes a single tax rate on almost all taxable goods and services.19 All other member countries apply one or two reduced rates on almost all taxable goods and services. Belgium, France, Greece, Italy, Portugal, and Spain collect increased tax rates on various luxury goods, such as cars, jewelry, cosmetics, and electrical equipment. Whereas the coverage of the increased rates is small, a sizable portion of the tax base is subject to reduced rates. A zero rate applies to a large basket of goods in Ireland, Portugal, and the United Kingdom. In Ireland and the United Kingdom, about 30 percent of private consumption of goods and services is zero rated.

Proposals for Administration

The envisaged removal of border controls used for implementing border tax adjustments has important administrative implications. The EC has examined alternative ways to abolish border controls. One is the simple elimination of border tax adjustments, as provided for under Article 4 of the first VAT directive (EC Commission (1967)). This alternative would prevent the VAT claim from being interrupted at intra-EC borders while allowing goods to reach the final consumer bearing the VAT rate of the country of consumption. To protect the revenue claim of the latter country, the EC Commission proposed the establishment of a CHS (clearinghouse system), which is still under review and is discussed below.

Under another alternative, the Community could eliminate border controls while maintaining the zero rating of exports by computing border tax adjustments on the basis of books of accounts and verifying them through written records. The PAS (postponed accounting system; also known as the deferred payment scheme) was proposed as part of this approach.20 The sixth directive suggested that

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17 If tax differentials reflect intercountry differences in the quality of public services or in the costs of supplying these services, however, they do not distort resource allocation.

18 See EC Commission (1977a). The decision of the Council to compute part of each member’s contribution to the EC budget as a proportion of a common VAT base gave some impetus to base harmonization. EC budget resources comprise mainly agricultural levies, import and customs duties, and a 1/4 percent levy on a uniform VAT base.

19 Unlike most other EC member countries, however, Denmark levies a large number of environmental excise duties in addition to excises on some luxury products, such as major household appliances and cosmetics.

20 Van der Zanden and Terra (1987) and Terra (1988) have argued in favor of a third alternative closely related to a PAS.
II TAXES ON COMMODITIES

Table 1. Value-Added Tax (VAT) Rates, 1990
(In percent)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year of Introduction</th>
<th>Standard Rate</th>
<th>Increased Rate</th>
<th>Reduced Rate</th>
<th>Coverage of Zero Rate</th>
<th>VAT as Percent of Tax Revenue1</th>
<th>VAT as Percent of GDP2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>1971</td>
<td>19</td>
<td>25, 33</td>
<td>1, 6, 17</td>
<td>Newspapers</td>
<td>16.4</td>
<td>7.1</td>
</tr>
<tr>
<td>Denmark</td>
<td>1967</td>
<td>22</td>
<td>—</td>
<td>—</td>
<td>Newspapers, large ships, and aircraft</td>
<td>19.5</td>
<td>9.7</td>
</tr>
<tr>
<td>France2</td>
<td>1968</td>
<td>18.6</td>
<td>25</td>
<td>5.5</td>
<td>—</td>
<td>20.1</td>
<td>8.3</td>
</tr>
<tr>
<td>Germany</td>
<td>1968</td>
<td>14</td>
<td>—</td>
<td>7</td>
<td>—</td>
<td>14.8</td>
<td>5.9</td>
</tr>
<tr>
<td>Greece3</td>
<td>1987</td>
<td>16</td>
<td>36</td>
<td>3.6</td>
<td>—</td>
<td>24.4</td>
<td>8.1</td>
</tr>
<tr>
<td>Ireland</td>
<td>1972</td>
<td>23</td>
<td>—</td>
<td>0, 5, 10</td>
<td>Wide range of items</td>
<td>2.16</td>
<td>8.0</td>
</tr>
<tr>
<td>Italy</td>
<td>1973</td>
<td>19</td>
<td>38</td>
<td>4.9</td>
<td>Newspapers and some minor items</td>
<td>14.1</td>
<td>5.4</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>1970</td>
<td>12</td>
<td>—</td>
<td>3.6</td>
<td>—</td>
<td>13.9</td>
<td>6.7</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1969</td>
<td>18.5</td>
<td>—</td>
<td>6</td>
<td>—</td>
<td>16.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Portugal4</td>
<td>1986</td>
<td>17</td>
<td>30</td>
<td>8</td>
<td>Basic foods, newspapers, medicines, and agricultural inputs</td>
<td>20.0</td>
<td>7.0</td>
</tr>
<tr>
<td>Spain</td>
<td>1986</td>
<td>12</td>
<td>33</td>
<td>6</td>
<td>—</td>
<td>16.4</td>
<td>5.6</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1973</td>
<td>15</td>
<td>—</td>
<td>0</td>
<td>Wide range of items</td>
<td>17.2</td>
<td>6.2</td>
</tr>
</tbody>
</table>


1Data are for 1989.
2France applies VAT rates of 2.1 percent on daily newspapers and some medicines and 13 percent on sales and transfers of building land. Different VAT rates apply in Corsica.
3Different rates apply in Dodecanese.
4Different rates apply in the Azores and Madeira.

a PAS should be developed as a means to eliminate border controls (EC Commission (1977a)). In 1982, the draft fourteenth directive proposed a version of the PAS.21 The Benelux countries (Belgium, the Netherlands, and Luxembourg) have been operating a PAS for most cross-border transactions since 1969. Ireland and the United Kingdom applied similar arrangements until November 1, 1984. The PAS shifts or defers the collection of import VAT to the first taxable entity in the importing country.22 Hence, making exports of registered businesses liable to tax at the rate prevailing in the country of the purchaser. Although this alternative may be attractive for direct mail-order sales, it does not seem to be appropriate for other sales because it is difficult to police and rather complicated. See Cnossen and Shoup (1987, p. 80).

21See EC Commission (1982). In the 1985 White Paper (EC Commission (1985c)), the Commission suggested that this approach should be introduced, awaiting the introduction of a common CHS. The proposal was withdrawn in 1987 when the Commission proposed implementing the clearancehouse mechanism by 1992 (EC Commission (1987d)). In October 1989 (EC Commission (1989h)), however, ministers of finance of the EC countries suggested that this approach could still be adopted as a transition measure after border controls are abolished at the end of 1992.

22This procedure implies that the VAT on imports is paid when the importing taxable entity sells the imported goods, customs no longer needs to check imports physically at the border and collect the compensating import tax.23 As regards exports, instead of physical clearance at the border, documentary evidence establishes entitlement to export rebates. Whereas the PAS envisages a substantial reduction of border formalities, it would be rather susceptible to fraud, especially if applied to all intra-EC trade between taxable persons. Zero rating of exports threatens the self-policing character of VAT because it implies that the tax chain between consumer and producer is broken. Registered traders may obtain zero-rated imports and conceal their business from revenue authorities; likewise, exempt traders may also be able to acquire zero-rated imports. To avoid such tax fraud, EC tax authorities would most likely want to maintain some forms of border control for certain transactions (EC Commission (1985c)). Alternatively, tight control might avoid serious fraud, while imposing cum-

23Removing these barriers to trade involves a one-time loss in budgetary revenues at the time the system is introduced because of the loss of the float arising from the interest-free credit extended to governments by importers.

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bersome procedures on firms and discouraging intra-EC trade.  

The disadvantages of the PAS led the Commission to propose, in 1987, adoption of the CHS combined with the elimination of export rebates (EC Commission (1987d)). This system would treat sales across intra-EC borders in the same way as those within EC countries. Exports would no longer receive a rebate, but would instead bear the exporting country’s VAT rate. The importer would be allowed to credit this tax, even though it was paid to the exporting country. Hence, importation would no longer be a taxable event, and the importer would need to report taxes paid abroad.

The pattern of VAT receipts among member countries would not necessarily correspond to the pattern of consumption if the exporting country were to collect taxes on exports. Compared with the existing system, net importers from other member countries with relatively low rates would tend to lose revenue, whereas net exporters and high-tax countries would gain (Table 2). The CHS would prevent such a redistribution of revenue by requiring exporting countries to reimburse input refunds on their exports to importing countries.

Under earlier proposals of the CHS, importers were to submit a breakdown of the value of goods obtained from each member country and the amount of tax paid thereon, enabling tax administrations to reconcile their revenue flows bilaterally. A drawback of this proposal was the likelihood of costly bilateral disputes. Moreover, the system would impose significant compliance requirements on traders and a heavy administrative burden on tax authorities. Under a revised proposal (EC Commission (1987d)), registered traders would only have to report the export and import VAT on intra-EC trade as a whole, and the CHS would no longer operate on the basis of bilateral flows, but each member country would calculate its net position vis-à-vis the Community as a whole and rely on its own administrative procedures. According to the Commission, the proposed central clearinghouse (in charge of netting excess tax positions of member countries) would be expected to run a small surplus (to be returned to member countries) because some exports would be sold to tax-exempt traders and private individuals who cannot claim refunds.

In view of the large revenue at stake, control measures must ensure that the tax yield is safeguarded not only for each member country but also for the Community budget. In this connection, the elimination of the zero rating of exports, which is susceptible to fraud, would strengthen the self-policing character of the VAT. Moreover, changes in the surplus accumulated by the clearinghouse could be used as an indicator of fraud. The Commission also proposed standardized audit trails and information requirements, improved control and cooperation between tax administrations, and central supervision at the Community level (EC Commission (1987d)).

The CHS requires trust among member governments in each other’s VAT administration. Pearson and Smith (1988) expressed concern that the CHS would incorrectly allocate the incentives and responsibilities for enforcing VAT on intra-EC trade. In particular, effective enforcement requires that

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Table 2. Estimated Revenue from Operation of the Clearinghouse System (CHS), 1986

<table>
<thead>
<tr>
<th>Country</th>
<th>Net Payment into CHS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In European Units (ECU)</td>
</tr>
<tr>
<td>Belgium/Luxembourg</td>
<td>747</td>
</tr>
<tr>
<td>Denmark</td>
<td>-680</td>
</tr>
<tr>
<td>France</td>
<td>-2,421</td>
</tr>
<tr>
<td>Germany</td>
<td>3,334</td>
</tr>
<tr>
<td>Greece</td>
<td>-437</td>
</tr>
<tr>
<td>Ireland</td>
<td>-52</td>
</tr>
<tr>
<td>Italy</td>
<td>-147</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1,509</td>
</tr>
<tr>
<td>Portugal</td>
<td>-77</td>
</tr>
<tr>
<td>Spain</td>
<td>-132</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-1,845</td>
</tr>
</tbody>
</table>

*Source: EC Commission (1987d).*

*Note: VAT rates of 16.5 percent (standard rate) and 6.5 percent (reduced rate) are assumed.*

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24 Tielemans (1987) argued that, instead of using border checks, the tax authorities can alleviate the potential for tax fraud by providing mutual assistance and taking advantage of possibilities for automation. However, this so-called zero-rate notification system requires extensive administrative controls to combat fraud; see EC European Parliament (1987).

25 This requirement may involve only a small additional cost for intra-EC trade compared with domestic sales. Traders would have to retain records of each transaction, including the exchange rates used, because the Commission’s proposals require that each member state should be able to itemize each VAT return.

26 Mail-order sales would comprise the bulk of the exports to private individuals that would give rise to the surplus because over-the-counter retail sales would be excluded from the clearing operations. Hence, VAT on retail sales to final consumers would accrue to the source country.
The tax authorities carefully check the claims for refunds on imports. The CHS, however, dilutes the incentives for tax authorities to identify dubious claims for input refunds on imported goods because they can recover the cost of such claims from the central clearinghouse. Moreover, other countries do not face incentives to detect fraud because the gains from doing so are distributed over all EC countries. Van der Zanden and Terra (1987) have suggested that mistrust among member countries and attempts to combat fraud may lead to additional onerous obligations on business, such as the separate declaration of creditable input taxes paid to different member countries. This would also raise the public costs of administering the system.

The clearing account would operate exclusively in terms of European Currency Units (ECU). Van der Zanden and Terra (1987) have argued that the need to convert mutual flows in various currencies adds yet another burden on traders and tax administrations. Moreover, fluctuations in exchange rates may cause the CHS to distort trade and to change the allocation of revenues across countries (van Thiel (1988)). By contrast, Timmermans (1988) has maintained that the exchange rate problem is not a serious one.

The obligation of exporters to collect VAT raises the exporters' exchange rate risk. Payment risk is also increased because exporters would be liable to VAT even if the importer defaults on payment. The clearinghouse may also redistribute the discounted value of revenues across countries by changing the timing of tax receipts. Without special arrangements, net importing countries would provide an interest-free loan to net exporting countries.

In May 1989, the Commission suggested amendments to the CHS proposal to further simplify the procedures for both tax authorities and taxpayers (EC Commission (1989c)). Instead of VAT returns, trade statistics would constitute the basis for the clearing operation to calculate member countries' debits and credits. This approach, which does not require a central clearing fund, would involve only an accounting exercise and is not expected to yield a net surplus (Table 2). Moreover, tax authorities might have a stronger incentive to discover fraudulent VAT input claims on imported goods because they would no longer be able to pass claims for input tax refunds on to other member countries.

Depending on the coverage of other special arrangements, the application of either this modified CHS or the PAS could be reduced to less than half of intra-EC trade. The bulk of intra-EC trade may be governed by special regimes. According to the most important special arrangement, the VAT liability on intra-EC trade between firms within an approved group of related enterprises would be suspended until the commodities are sold to an unrelated buyer. Under another special arrangement, mail-order sales by large specialized firms would be taxed at the VAT rate of the country of destination. On the sales of motor vehicles, VAT would be charged in the buyer's country of residence, determined by the place of registration. Purchases by certain exempt or nontaxable public and private institutions would be taxed at the VAT rate in the country of establishment (EC Commission (1989c)).

Following the guidelines set by the EC Council of Economic and Finance Ministers (ECOFIN) at the end of 1989, the EC Commission proposed in May 1990 to maintain the present destination principle for the administration of the VAT over a transitional period of four years following the elimination of fiscal frontiers on January 1, 1993. Adoption of the definitive system based on the origin principle (whether in the form of a CHS or an alternative approach) would be postponed until 1997, but the details of the new system would have to be settled by member countries by December 31, 1995. Under this revised proposal, tax-related border for-

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27The proposed elimination of zero-rating of exports may well enhance the security aspect of the VAT. The proposed system collects tax in advance from the exporter rather than afterward from the first inland trader. In contrast to the PAS, imports bear at least the tax of the exporting country even if imports are not reported.

28The Union des Confédérations de l'Industrie et des Employeurs d'Europe (UNICE (1988)) has asked for guarantees that the clearinghouse would not eventually result in an added administrative burden on business. Others have expressed concern that the central clearinghouse may shift excessive authority from sovereign EC countries and their tax administrations into the hands of the EC bureaucracy (see, for example, Culp (1989)).

29Cnossen and Shoup (1987) have suggested that in some cases a zero-rate notification procedure, which would be very similar to the procedures under the PAS, could be used to avoid this problem. Payment risk on international trade may well exceed that on domestic transactions; traders may have less legal recourse in case of nonpayment while they may have less information regarding the creditworthiness of their trading partners. The Centre for European Policy Studies has argued in favor of providing relief for bad debts in order to prevent the tax system from discouraging intra-EC trade (CEPS (1989)).

30A major problem with this proposal is that trade statistics are rather imprecise. Removing the border controls may make these statistics even less reliable. Moreover, countries would face incentives to understate their exports and to overstate their imports.

31The CEPS (1989) has proposed that tax-free trade be extended to include trade between "authorized" traders who would need to satisfy tax authorities regarding the quality and honesty of their accounts.
Harmonization of the VAT

Proposals for Rate Approximation

In principle, VAT rate differentials do not distort production location decisions as long as the destination principle is upheld. The Commission has argued, however, that the elimination of border controls requires convergence of tax rates because of the difficulty of enforcing the destination principle without border controls (EC Commission (1987a)).

International tax rate differentials may distort trade through various channels. Certain tax-exempt entities (such as financial institutions and small traders) face an incentive to import commodities from countries with the lowest tax rates because they are unable to reclaim VAT. This may encourage corporations to move their distribution centers to countries with low tax rates in order to benefit from demand by tax-exempt entities. Another source of distortion is cross-border shopping by individuals, which would become unrestricted after border controls are abolished. These transactions would be taxed on the basis of the origin principle and therefore would be affected by VAT differentials. Countries with the higher rates would suffer from cross-border shopping because of the loss of revenue and retail business. The Commission has stressed that tax-induced cross-border shopping is a serious issue in heavily populated border areas within the EC. In its view, the importance of this issue is illustrated by the current modest travelers’ allowances and the difficulties in obtaining the agreement of member countries to raise these allowances (EC Commission (1985c)).

The existence of tax-exempt traders and public and private institutions provides another argument for the harmonization of tax rates, even if the EC would succeed in enforcing methods requiring some exempt traders to pay the domestic VAT rate on inputs purchased abroad. The reason is that the output of exempt sectors is not relieved from VAT. Consequently, intercountry tax rate differentials distort competition between tradable goods sectors that use the goods of tax-exempt producers as inputs, as well as between exempt sectors that produce tradable goods. Financial institutions and some small businesses and farms are the most important examples of exempt enterprises that export directly.

Another reason for the harmonization of tax rates is that, in the absence of border controls, a wide divergence of rates may cause fraud and evasion (EC, European Parliament (1987)). In particular, traders in a country levying a high rate are encouraged to import goods from a low-rate country and to hide the transaction from the tax authorities, so as to earn not only the tax on domestic value added but also the differential between the domestic and foreign input tax rates. These practices would both discourage production and reduce tax revenue in high-rate countries. Harmonization of tax rates is also likely to enhance the efficiency in exchange by reducing intercountry differences in rates of substitution between goods.

33 Casey, King, and Watson (1988) describe how VAT differentials distort input decisions of exempt businesses.

35 Selected sectors in countries with lower tax rates that do not benefit from cross-border shopping may also suffer because general equilibrium adjustments in the exchange rate and domestic costs may crowd out these sectors.

36 Keen (1987) has shown that harmonizing tax rates toward an appropriately weighted average of EC rates indeed enhances welfare.
Whereas the Commission has argued that the process of market integration requires some approximation of tax rates, some observers maintain that member countries may still be able to impose rates that diverge substantially from those in other member countries. Crossen (1986) and Bos and Nelson (1988) have argued that taxing cross-border shoppers on the basis of the origin principle would merely legalize the existing situation because border controls are currently not effective in policing these transactions. Furthermore, the view that intercountry differences in VAT rates explain only a small fraction of intercountry price differentials (United Kingdom (1988)) suggests that nontax barriers are more important in distorting trade and factor movements. Tax differentials may, however, become more important in determining price differentials upon removal of most nontax barriers to intra-EC trade.

There is scope for further reducing tax-motivated cross-border shopping for some large and expensive durable goods. In particular, registration requirements could be used to impede compensating user charges if the importing country levies a relatively high tax rate, along the lines of the recent EC proposal that the country of registration should charge commodity taxes on cars (EC Council of Ministers, EcoFIN (1991a)). As regards other commodities, some intercountry differentials could also be allowed, depending on the likely scale of tax-induced cross-border shopping, as determined by geographical factors and the nature of the goods. Accordingly, the Commission suggested that member countries be permitted to regulate differences in tax rates bilaterally on the basis of mutual agreement among directly concerned countries, without requiring agreement among all member countries. The proposed special arrangements for mail-order companies and tax-exempt businesses, such as small traders, public authorities, and financial institutions, may further reduce the sensitivity of cross-border sales to tax rate differentials by requiring nontaxable entities to declare their imports and pay tax at the domestic tax rate, and mail-order firms to collect the tax at the rate of the destination country.

Several observers, as well as the Commission, have adopted the view that it is necessary only to specify minimum tax rates in order to limit the extent to which low-tax countries can impose negative externalities, consisting of revenue losses and reduced retail business, on neighboring high-tax countries. A maximum tax rate would not be necessary because high-tax countries would themselves bear the costs associated with diverging rates. The U.K. government has argued that minimum tax rates would not be desirable either (United Kingdom (1988)). Competitive pressure would naturally lead to spontaneous tax harmonization and would offset pressures to raise inefficient public spending. Moreover, a tax structure requiring unanimous agreement to change tax rates would not be sufficiently flexible to respond to changes in the economic environment. It can be argued, however, that without imposed minimum and maximum rates, countries levying high rates will be tempted to take measures interfering with free intra-EC trade in order to protect their revenue base. Moreover, some sectors in low-tax countries that do not benefit from cross-border shopping may suffer from high tax rates in other countries on account of exchange rate and cost adjustments.

In May 1989, however, the Commission suggested a more flexible approach, whereby the standard rate would be subject only to a minimum of not less than 14 percent (EC Commission (1989c)). At the same time, it continued to support the reduced rate band. Without a maximum standard rate, individual countries would have to assess the costs of maintaining high rates, by taking into account competitive pressures stemming from lower rates in neighboring member countries.

The Commission specified in the 1987 proposals that the reduced rate should apply to approx-

35 Most of the items that the EC proposal subjects to reduced rates are unlikely to be traded across national borders on a large scale. See also EC Council of Ministers, Economic and Social Committee (1987a). Pearson and Smith (1988a), and CEPs (1989). Crossen (1983) indicated that tax authorities might levy concessional tax rates in populous border areas.

36 However, in the case of small traders, enforcement of the destination principle would be difficult. Bringing tax-exempt institutions in the tax net also helps to alleviate the trade distortions induced by intercountry rate differentials.

imately one third of the aggregate tax base, comprising the following commodities: foodstuffs, with the exception of alcoholic beverages; energy products for heating and lighting; water supply; pharmaceutical products; books, newspapers, and periodicals; and passenger transport. This list was designed to conform closely to existing tax practices in the various EC member countries.

The proposals represented a compromise between the objective of realizing an internal market without trade distortions, on the one hand, and avoiding disruptive budgetary consequences for outlying member countries, on the other. It was argued that, compared with a single rate system, a dual rate system would allow more fiscal discretion and could be designed to impose fewer budgetary adjustments for most countries. Relative to a triple rate system, a dual rate system would be simpler and less costly to administer. Moreover, the classification of products would cause fewer difficulties of interpretation.

In the 1987 proposals, the Commission opposed zero rating for certain income-inelastic products, as currently practiced by Ireland, Portugal, and the United Kingdom, since previous directives had allowed for zero rating as a temporary measure to be eliminated upon completion of the internal market. Moreover, it noted that zero rating was a less efficient way to protect low-income groups than granting targeted subsidies. The EC Commission (1989b) relaxed its position in May 1989 and suggested that, as part of an overall compromise, it could accept zero rates on a limited number of goods in countries currently practicing zero rating.

In June 1991 (EC Council of Ministers, ECOFIN (1991b)), the Council agreed on a minimum standard VAT rate equal to 15 percent and one or two reduced VAT rates equal to or greater than 5 percent, effective January 1, 1993. The scope for application of the reduced rate is broadly consistent with the Commission’s 1987 proposals (as qualified in 1989) with the exception of the classification of energy products for heat and lighting, which awaits further decision with respect to excise duties. Because competitive pressures would intensify after elimination of fiscal frontiers, member countries would feel induced to align their tax rates during the four-year transitional phase. By the same token, rate approximation during the transition would alleviate potential disruptions after the abolition of border controls in January 1993.

Harmonization of Excise Duties

The EC has attempted to harmonize excises in order to prevent them from segmenting the internal market. However, the progress has been slow. The Commission first put forward a framework for harmonizing excises in 1972 (EC Commission (1972)). It identified the excises on manufactured tobacco, alcoholic beverages, and hydrocarbon oils as the excises to be retained and harmonized. All other excises affecting tradable commodities were to be eliminated. The EC has established a limited degree of harmonization for excises on tobacco by agreeing on common definitions of manufactured tobacco products (EC Commission (1987f,g)) and establishing a range of relationships between the specific and ad valorem components. As regards alcoholic beverages and hydrocarbon oils, however, little progress has been made (EC Commission (1987h,i)).

The Court of Justice of the European Communities (Cnossen (1987, p. 32)) has eliminated the most obvious forms of discrimination against foreign products by enforcing Article 95 of the Treaty of Rome, which prohibits imposing taxes that discriminate between foreign and domestic products. The Court has ruled, for example, that France and Italy, which imposed substantially higher excises on mostly imported cereal distillates than on mostly domestically produced spirits distilled from grapes, should remove this form of implicit discrimination against foreign goods. Similarly, the Court prohibited such practices by Denmark (42 percent lower tax rate on akvavit than on other spirits) and the United Kingdom (excise rate on wine five times higher than that on beer).

Moreover, several EC member countries levy excises on commodities other than alcoholic beverages, tobacco, and mineral oils, including non-alcoholic beverages, sugar products, coffee, tea, electricity, and cars (Table 3). Denmark collects environmental duties as well as excises on a large number of luxury commodities. Indeed, harmonization of excise rates has proved to be a difficult and slow process. This can be explained in part by protectionist pressures, but also by differences in consumer tastes and cultural attitudes toward drinking and smoking, as well as by divergent social policies (regarding, for example, the distribution of

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40Van Thiel (1988) has suggested that most member states will be forced to make substantial changes in order to comply with the proposals because their existing reduced and zero rates have a much wider application than that proposed by the Commission. The United Kingdom, for example, applies zero rates to some items, such as children’s clothing and the construction of buildings, that are not included in the reduced rate band proposed by the Commission.
II TAXES ON COMMODITIES

Table 3. Excise Duty Revenue Other Than from Alcoholic Beverages, Tobacco, and Mineral Oils, 1989
(As percent of excises, unless otherwise noted)

<table>
<thead>
<tr>
<th>Country</th>
<th>Motor</th>
<th>Heating and/or</th>
<th>Coffee</th>
<th>Cotton</th>
<th>Other</th>
<th>Percent of</th>
<th>Percent of</th>
<th>Percent of</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vehicles</td>
<td>Electricity</td>
<td></td>
<td></td>
<td></td>
<td>excises</td>
<td>tax revenue</td>
<td>GDP</td>
</tr>
<tr>
<td>Belgium</td>
<td></td>
<td></td>
<td>0.6</td>
<td></td>
<td>3.7</td>
<td>4.3</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Denmark</td>
<td>18.4</td>
<td>10.4</td>
<td>0.6</td>
<td></td>
<td></td>
<td>12.7</td>
<td>4.4</td>
<td>2.2</td>
</tr>
<tr>
<td>France</td>
<td></td>
<td>4.8</td>
<td></td>
<td></td>
<td>6.1</td>
<td>10.9</td>
<td>0.7</td>
<td>0.3</td>
</tr>
<tr>
<td>Germany</td>
<td></td>
<td></td>
<td>3.2</td>
<td></td>
<td>0.7</td>
<td>3.9</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>Greece</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>33.6</td>
<td>33.6</td>
<td>4.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Ireland</td>
<td>15.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.1</td>
<td>17.2</td>
<td>1.4</td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td>7.1</td>
<td>0.3</td>
<td></td>
<td></td>
<td>8.5</td>
<td>15.9</td>
<td>0.5</td>
</tr>
<tr>
<td>Netherlands</td>
<td>20.7</td>
<td></td>
<td></td>
<td></td>
<td>6.8</td>
<td>27.5</td>
<td>1.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Portugal</td>
<td>15.3</td>
<td></td>
<td>0.8</td>
<td></td>
<td>1.6</td>
<td>17.7</td>
<td>2.5</td>
<td>0.9</td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.7</td>
<td>9.5</td>
<td>1.0</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>7.8</td>
<td></td>
<td></td>
<td></td>
<td>1.7</td>
<td>9.5</td>
<td>1.0</td>
<td>0.4</td>
</tr>
</tbody>
</table>


income), and policies relating to the environment, energy conservation, and health.41

Proposals for Administration

The planned removal of border controls affects the administration of excise duties because EC member countries use border controls to police the movements of some dutiable goods under the bonded warehouse system. This system involves suspension of the duty; goods are liable to excise duty only when they leave the warehouse to be sold on the domestic market. Duty on exported goods is canceled after proof of export, which typically involves a check at the border. As regards imports, border controls establish the tax liability at the point of entry.

The Commission has proposed a linked bonded warehouse system in the various member countries to control the movement of dutiable goods after border controls have been abolished.42 Under such a common system, dutiable goods would cross intra-EC borders under seal while the payment of duty would be suspended. The tax authorities in the country of destination would tax the goods only when the commodities would leave warehouses for delivery to traders. No clearinghouse mechanism would be required because the country of destination would collect the revenue.

Lee, Pearson, and Smith (1988) have argued that the EC proposal does not ensure that tax revenue accrues to the country where the goods are consumed because an integrated European market will encourage international producers to centralize their warehouse and distribution facilities. Hence the location of distribution facilities, rather than the pattern of consumption, would determine the interjurisdictional distribution of excise revenues. A legal prohibition on the movement of goods once duty had been paid would be difficult to enforce unless some type of frontier control would remain, which would be inconsistent with the mandate to remove such controls.43 The European Parliament (EC, European Parliament (1987)) observed that a linked warehouse system would not be consistent with a genuine internal market because the movement of dutiable commodities would still be rather restricted.

41 Shoup (1983) has argued that excises can be unified only after increased intra-EC mobility of persons and goods has resulted in more uniform social attitudes toward dutiable commodities.

42 See EC Commission (1987a). The Commission has not yet put forward detailed rules and regulations regarding the linked warehouses. Several observers, including the EC Council of Ministers’ Economic and Social Committee (1988b,c), regret this and have stated that they cannot express a definite view on the excise proposals until the Commission provides more details of the proposed warehouse systems.

43 Lee, Pearson, and Smith (1988) have suggested that frontier controls might still be required to combat drug trafficking. Accordingly, tax authorities could use these border controls to police large imports of alcohol and tobacco.
The bonded warehouse system could be supplemented with physical marking to enforce a prohibition on the intercountry movement of duty-paid goods. This would prevent goods with duty paid to a particular member country from being sold in another country. Moreover, physical marking may be a less costly alternative to the warehouse system in markets with many small-scale producers.

Another advantage of marking duty-paid goods is that it may allow member countries to retain differences in duty rates for some products; retailers could only sell goods shown to have been taxed at the appropriate rate. Indeed, in its 1989 amendments to the 1987 proposals, the Commission suggested that tax stamps could be used to prevent fraud stemming from differences in duties between member countries (EC Commission (1989c)).

On the negative side, however, separate physical marks for each country may be rather inflexible and raise compliance costs. Hence, physical marking may inhibit the formation of a truly integrated market for dutiable commodities. Furthermore, in the absence of border controls, it cannot deter cross-border shopping by households, which is likely to grow substantially if sizable excise differentials persist.

### Proposals for Rate Approximation

In putting forward its 1987 proposals, the EC Commission (1987e-i) argued that, in contrast to VAT, excise rates on alcoholic beverages, tobacco products, and mineral oils would need to be completely harmonized across the EC because intercountry differences in VAT, imposed on top of the duty-inclusive price, would compound differences in excises and would result in tax-induced price differentials well in excess of 6 percentage points. Hence, small excise differentials would magnify retail price differentials, thereby exacerbating the incentive for cross-border shopping and fraud, especially for dutiable goods that are easily transported. In fact, excise rates on these products still differ significantly across EC member countries (Tables 4-6).

Other arguments also make excise rate unification even more urgent than harmonizing VAT rates. First, in contrast to VAT, excises involve the one-time payment of nonrefundable taxes. This gives traders a powerful incentive to buy their supplies in a low-tax country after duty has been paid and to sell the commodities in a high-tax country without paying the higher domestic duty. Thus, retailers as well as final consumers may be induced to exploit tax differentials if border controls are eliminated, especially if separate physical markings for each country are not applied. Second, if excisable goods enter the production process as inputs, unification would reduce the intercountry distortions from tax-induced differences in cost structures.

Third, harmonization would prevent countries from using excises as protectionist devices. Fourth, it may substantially reduce the cost of administering and complying with excises because it may make close supervision of the movements of goods no longer necessary. Fifth, excises represent a large part of the prices of dutiable goods. Accordingly, as regards excises, tax base flight through cross-border shopping and fraud generates more serious revenue losses for high-tax countries than in the case of VAT.

In sum, the Commission initially proposed a set of uniform excise rates, near the arithmetic mean...
of existing rates, for member countries. However, in May 1989 the Commission proposed some amendments to the 1987 proposals by suggesting that, in the case of duties on alcoholic beverages and tobacco, the EC would have to impose only minimum rates (EC Commission (1989c)). The Commission did not consider it necessary to harmonize excise on the registration of vehicles because the country of registration could enforce its own tax rate through registration requirements. In October 1989 (EC Commission (1989a)), the Commission presented a new proposal for the harmonization of excises, replacing the earlier uniform rates by a system of minimum rates and target rates—that is, rates toward which convergence would be expected over the medium term (Tables 4–6). Subsequently, in June 1991 (EC Council of Ministers, ECOFIN (1991b)), the Council agreed on a further set of minimum rates for excises (Table 7) effective January 1, 1993, and subject to review every two years.

**Alcoholic Beverages**

The negative externalities arising from the consumption of alcoholic beverages and the addictive properties of alcohol are typically used as arguments for excises on alcoholic drinks. In several EC countries, however, the structure of alcohol taxation reflects the interests of domestic producers: instead of taxing beverages on the basis of alcoholic strength, these countries levy higher excises on alcohol products that are mostly imported than those on alcohol products that are produced domestically. To illustrate, several countries producing wine, such as Italy, Germany, Greece, Portugal, and Spain, do not levy any excise on still wine (Table 4). Countries protect national viticulture also by using rate structures that distinguish between still and sparkling wine and between ordinary and fortified wines. Table 4 shows that the excise duty per unit of alcohol is generally highest for spirits. Denmark, Ireland, and the United Kingdom impose the heaviest tax burden on alcoholic drinks; the Mediterranean countries levy the lowest excises.

The relative tax rates on spirits, wine, and beer are a contentious issue in view of the interests of
the producers in different countries. In formulating its 1987 proposals, the Commission concluded that taxing these three types of beverages by reference to a common criterion, such as alcoholic strength, volume, or value, would not be feasible (EC Commission (1987)). Such a consistent system would excessively disrupt the distribution of revenue and change the tax burdens on various beverages. As an alternative, the Commission proposed that spirits should be taxed on the basis of alcohol content, wine on the basis of volume, and beer according to original gravity. Originally, the common tax rate on spirits was to be determined as the arithmetic mean of member countries' existing duty rates (that is, ECU 1,271 per hectoliter of pure alcohol). In the case of wine and beer, however, both the arithmetic average and the average weighted by consumption produced results that would yield excessively large changes in consumer prices and revenues in several member countries. Therefore, the Commission proposed that beer of average strength and wine should bear equal taxes per volume of product while, assuming unchanged consumption patterns, jointly producing the same revenue as at present. Under these proposals Denmark, Ireland, and the United Kingdom would experience sharp reductions in duty rates. Five EC countries would have to introduce a duty on still wine.

Some member countries are likely to reject the EC proposal to harmonize completely excises on alcohol in view of the dramatic implications for the prices of alcoholic beverages in these countries. According to Cnossen (1983), member countries could be allowed to retain some differences in excise rates by harmonizing excises only at the manufacturing stage and allowing differential rates at the retail stage. Stringent licensing requirements for retail outlets may enable high-excise countries to prevent retailers from evading taxes by buying their supplies in low-tax countries.

### Table 5. Excise Duty Rates on Cigarettes, 1990

<table>
<thead>
<tr>
<th>Country</th>
<th>Specific Excise per 1,000 (in ECU)</th>
<th>Ad Valorem Excise (in percent)</th>
<th>Total Tax per 1,000 (in ECU)</th>
<th>Retail Price per 1,000 (in ECU)</th>
<th>Tax as percent of Price</th>
<th>Tax Exclusive Rate (in percent)</th>
<th>Revenue from Tobacco Excises (in percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>4.55</td>
<td>66.19</td>
<td>56.73</td>
<td>78.83</td>
<td>72.0</td>
<td>256.7</td>
<td>27.1 / 1.3 / 0.6</td>
</tr>
<tr>
<td>Denmark</td>
<td>77.00</td>
<td>39.25</td>
<td>141.75</td>
<td>164.96</td>
<td>85.9</td>
<td>610.7</td>
<td>16.0 / 1.7 / 0.8</td>
</tr>
<tr>
<td>France</td>
<td>2.67</td>
<td>68.17</td>
<td>53.37</td>
<td>74.38</td>
<td>71.8</td>
<td>254.0</td>
<td>12.9 / 0.8 / 0.3</td>
</tr>
<tr>
<td>Germany</td>
<td>30.51</td>
<td>43.78</td>
<td>76.01</td>
<td>103.93</td>
<td>73.1</td>
<td>272.2</td>
<td>27.3 / 1.8 / 0.7</td>
</tr>
<tr>
<td>Greece</td>
<td>1.03</td>
<td>67.45</td>
<td>25.13</td>
<td>35.73</td>
<td>70.3</td>
<td>237.1</td>
<td>26.1 / 3.1 / 1.0</td>
</tr>
<tr>
<td>Ireland</td>
<td>52.93</td>
<td>33.56</td>
<td>96.14</td>
<td>128.75</td>
<td>74.7</td>
<td>294.8</td>
<td>20.4 / 3.6 / 1.3</td>
</tr>
<tr>
<td>Italy</td>
<td>2.26</td>
<td>60.63</td>
<td>40.19</td>
<td>62.56</td>
<td>64.2</td>
<td>179.7</td>
<td>15.5 / 1.3 / 0.5</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>1.95</td>
<td>63.55</td>
<td>38.93</td>
<td>58.19</td>
<td>66.9</td>
<td>202.1</td>
<td>7.6 / 0.2 / 0.1</td>
</tr>
<tr>
<td>Netherlands</td>
<td>26.57</td>
<td>34.67</td>
<td>52.36</td>
<td>74.38</td>
<td>70.4</td>
<td>237.8</td>
<td>17.0 / 0.9 / 0.4</td>
</tr>
<tr>
<td>Portugal</td>
<td>2.52</td>
<td>55.03</td>
<td>14.04</td>
<td>20.94</td>
<td>67.0</td>
<td>203.5</td>
<td>17.7 / 2.5 / 0.9</td>
</tr>
<tr>
<td>Spain</td>
<td>1.14</td>
<td>52.71</td>
<td>12.80</td>
<td>22.12</td>
<td>57.9</td>
<td>137.3</td>
<td>15.5 / 1.3 / 0.5</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>42.94</td>
<td>34.04</td>
<td>78.40</td>
<td>104.17</td>
<td>75.3</td>
<td>304.2</td>
<td>25.6 / 2.8 / 1.0</td>
</tr>
</tbody>
</table>

**Sources:** EEC Excise Duty Tables and OECD (1991).

- As a proportion of retail price; includes VAT.
- Data are for 1989.
- Portugal operates a two-tier system. The ad valorem rate of 55.03 percent applies only to the "Kentucky" brand; a rate of 68.53 percent applies to all other brands.

53. The taxation of alcoholic beverages is related to the Common Agricultural Policy (CAP) because CAP subsidizes the production of grapes.

54. Accordingly, still wine and average beer would have been taxed at a rate of ECU 17 per hectoliter of product. The rate on sparkling wine was determined by increasing the rate for still wines by the average of the current proportional differentials in those member countries that currently tax both still and sparkling wines.
<table>
<thead>
<tr>
<th>Country</th>
<th>Lead petrol</th>
<th>Unleaded petrol</th>
<th>Road diesel</th>
<th>Heating gas oil</th>
<th>Heavy fuel oil</th>
<th>LPG*</th>
<th>Revenue from Mineral Oil Excises (^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>As percent of total excises</td>
<td>As percent of total tax revenue</td>
<td>As percent of GDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>55.3</td>
<td>2.6</td>
<td>1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>25.7(^*)</td>
<td>2.7(^*)</td>
<td>1.3(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>68.3(^*)</td>
<td>4.2(^*)</td>
<td>1.8(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>58.1</td>
<td>3.9</td>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>37.5(^*)</td>
<td>4.5(^*)</td>
<td>1.5(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>35.9(^*)</td>
<td>6.3(^*)</td>
<td>2.4(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>66.9</td>
<td>5.7</td>
<td>2.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luxembourg</td>
<td>3.7</td>
<td>0.3</td>
<td>0.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>41.7</td>
<td>2.3</td>
<td>1.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>61.0(^*)</td>
<td>8.6(^*)</td>
<td>3.0(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>10.4</td>
<td>0.6</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>42.5(^*)</td>
<td>4.6(^*)</td>
<td>1.7(^*)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unweighted average</td>
<td>42.3</td>
<td>3.9</td>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


\(^1\)In ECU per 1,000 kilograms (kg).
\(^2\)Liquefied petroleum gas.
\(^3\)Data are for 1989.

\(^\text{a}\)Petroleum or petroleum product.

\(^*\)Flammable liquids.

\(^\text{ac}\)Oils.

\(^\text{ad}\)Use as a motor fuel prohibited in Portugal.

\(^\text{ae}\)Hydrocarbon oil.

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Table 7. Minimum Excise Duty Rates on Alcoholic Beverages, Manufactured Tobacco, and Mineral Oils as of January 1, 1993

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Amount or Rate (in ECU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcoholic beverages</td>
<td></td>
</tr>
<tr>
<td>Beer (per hl of finished product)</td>
<td>0.748 per Plato degree</td>
</tr>
<tr>
<td>Still wine (per hl)</td>
<td>0</td>
</tr>
<tr>
<td>Sparkling wine (per hl)</td>
<td>0</td>
</tr>
<tr>
<td>Manufactured tobacco</td>
<td></td>
</tr>
<tr>
<td>Cigarettes (per 1,000)</td>
<td>67 percent of retail sale price</td>
</tr>
<tr>
<td>Mineral oils</td>
<td></td>
</tr>
<tr>
<td>Leaded petrol (per kl)</td>
<td>337</td>
</tr>
<tr>
<td>Unleaded petrol (per kl)</td>
<td>287</td>
</tr>
<tr>
<td>Truck diesel (per kl)</td>
<td>245</td>
</tr>
<tr>
<td>Diesel heating oil (per kl)</td>
<td>0</td>
</tr>
<tr>
<td>Heavy heating oil (per 1,000 kg)</td>
<td>13</td>
</tr>
<tr>
<td>Kerosene used for heating (per kl)</td>
<td>0</td>
</tr>
</tbody>
</table>


Note: These rates supersede the proposed rates in Tables 4–6. Excise rates on pure alcohol and intermediary alcohol products, on manufactured tobacco products other than cigarettes, and on LPG, methane, and kerosene used as fuel are to be defined later. In the case of alcohol for oral consumption produced by small distilleries, the minimum rate is reduced by 50 percent.

1For beer produced by small, independent breweries, these minimum rates are reduced by 50 percent (that is, ECU 0.374 per Plato degree or ECU 0.935 per degree of alcohol content).
2Or 1.87 per degree of alcohol content.
3Rate consists of specific plus ad valorem rates, excluding VAT. Retail sale price includes all taxes and refers to cigarettes of the most popular price class.

and Smith (1988) have proposed a transitional arrangement involving three duty jurisdictions for spirits, each with harmonized rates. Commercial movements of goods between those three areas would have to be restricted by some form of border control or physical marking or both.

In 1989 the EC Commission (1989c) acknowledged that its earlier proposals might not give the member countries sufficient flexibility in setting their excise rates. As an alternative, it suggested that the EC would impose only minimum rates, supplemented with target or reference rates for medium-term harmonization (Table 4). Assuming that some intra-EC differences may be permitted, Lee, Pearson, and Smith (1988) have argued that the EC should limit the country's discretion to vary the relative taxes on different alcoholic drinks in order to prevent countries from using the rate structure as an instrument to protect domestic producers. Kay and Keen (1987) have maintained that such a structure should be systematically designed on the basis of the alcohol content, in view of the medical arguments used to justify high taxes on alcoholic drinks.

Tobacco Products

Just as in the case of alcoholic drinks, health considerations justify the taxation of tobacco products (Shoup (1983, pp. 258–60)). Relative to the harmonization of excises on alcoholic drinks, the EC has made more progress in the process of harmonizing the various tobacco excises, in particular the excise on cigarettes. The excise on cigarettes (Table 5), which accounts for over 90 percent of the EC market for manufactured tobacco, is the main tobacco excise in the EC.

Cigarette tax harmonization has focused on the balance between the specific and ad valorem components of the excise tax. As a result of various directives, member countries have reduced the specific rate element in the cigarette excise to a range between 5 percent and 55 percent of the total tax. Whereas the overall level of cigarette taxation is...
II TAXES ON COMMODITIES

quite uniform, the importance of the specific component still varies widely within the EC. In particular, Belgium, France, Italy, and Luxembourg rely predominantly on ad valorem taxation. Denmark, Ireland, and the United Kingdom, in contrast, apply a specific component close to the maximum permitted by the Commission. The countries levying low specific and high ad valorem components tend to use their excise structure to protect domestic producers who grow primarily low-quality tobacco, which commands a price advantage over imported tobacco.56 Compared with specific taxation, ad valorem taxation benefits low-cost producers because it widens the absolute price differential in favor of these producers. Table 5 indicates that retail prices vary considerably among countries. These price differences are due mainly to differences in quality rather than to tax burdens.

The Commission proposed in 1987 that member countries harmonize cigarette taxes at the arithmetic mean of the rates of tax in each member country.57 These tax rates are consistent with the Commission’s health policy because they would increase the average tax burden by about 30 percent. The total tax burden would fall significantly only in Denmark, whereas nine countries would experience a higher tax burden on cigarettes. As in the case of excises on alcoholic drinks, in its 1989 amendments the Commission stated (EC Commission (1989c)) that countries could be left free to set their own rates above certain minimum rates, with, again, provision for harmonization in the medium term (Table 5). EC countries could maintain limited differences in duty rates by marking goods leaving bonded warehouses with a fiscal stamp or a meter impression.58

Ad valorem rates may be preferred over specific rates because inadequate inflation adjustment of harmonized specific rates could result in an unintended redistribution of the tax burdens across individuals and of tax revenues across countries. Several authors, however, favor specific rates in view of administrative and theoretical considerations.59

Mineral Oils

Taxes on motor fuel are levied mainly as user charges. The Commission has stated that fuel excises and motor vehicle taxes should bear some relation to the construction and maintenance costs of highways (EC Commission (1986b)). Fuel taxes are also used to conserve energy, protect the environment, and reduce imports. Furthermore, concern about international competitiveness dominates the structure of fuel taxation; countries tend to levy high tax rates on fuels used mainly by final consumers while collecting lower tax rates on fuels used largely as an input in industrial production. Some countries exempt fuels for selected industrial uses entirely.

Excise duties on motor fuel diverge significantly across EC countries (Table 6). Countries differ not only in their rate structures but also in their treatment of individual products and in the range of exemptions. Denmark, Greece, Portugal, and especially Italy, which has attempted to discourage petrol (gasoline) consumption for balance of payments reasons, collect the highest duties on petrol. Compared with other fuels, petrol (gasoline) is relatively heavily taxed because it is used mainly by private consumers.

The initial EC proposals on mineral oils were intended to minimize the disruptive effects on tax revenue and industrial cost patterns (EC Commission (1987h)). Petrol was to be taxed at the arithmetic mean of present rates (that is, ECU 340 per 1,000 liters). Unleaded petrol would have been taxed at a reduced rate because of environmental considerations. The Commission based its proposal for the duty on diesel fuel on the average weighted by consumption in each country rather than on the arithmetic mean because the arithmetic mean would result in a lower tax rate corresponding to a fall in EC-wide revenue. Such a low rate would not be desirable because it would encourage motorists to substitute diesel for higher-taxed petrol.60 Harm

56 The CAP subsidizes tobacco grown in various EC countries, thereby further increasing the price advantage of domestically produced tobacco.

57 EC Commission (1987f). This proposal yielded a specific excise of ECU 19.5 per 1,000 cigarettes. The ad valorem component, combined with the VAT, would be equivalent to 52 percent to 54 percent of the retail price inclusive of all taxes. As regards total taxes on manufactured tobacco other than cigarettes, the EC also uses the arithmetic average as the mid-point for harmonization. The specific component of the tax burden on these types of tobacco is to be eliminated (EC Commission (1987g)).

58 See, for example, Lee, Pearson, and Smith (1988). In their view, the EC should remove the national discretion over the ad valorem component because this component can be used to segment the internal market by protecting domestic producers.

59 If collected at the manufacturing stage, specific taxes are easier to administer because they do not require information about the ultimate selling price at the retail level (see Lee, Pearson, and Smith (1988)). Kay and Keen (1987) have argued that commodities should be taxed on the basis of the characteristics that justify excises rather than on their value—therefore, that tobacco excises should be levied according to tobacco content. Imposing ad valorem excises multiplies cost differences between products that are not related to health considerations and also promotes degradation of quality.

60 The EC Commission (1987h) selected the weighted average over the arithmetic average in formulating its harmonization proposals for heating gas oil and heavy fuel oil because the
allocate efficiency, and erode the tax base. Lee, Pearson, and Smith (1988) have observed that the competitiveness arguments for a lower rate on diesel fuel disappear if the EC succeeds in harmonizing the tax structure across member countries. Moreover, a lower tax rate on diesel fuel is consistent neither with the transport policy of the EC, which aims at using motor fuel taxes as user charges for roads, nor with its environmental policies.

The 1989 amendments suggest that, in contrast to duties on alcoholic beverages and tobacco, the Commission is more hesitant to allow countries to freely set their duty rates on mineral oils above certain minimum rates (Table 6); intercountry differences in duties on mineral oils may give rise to more serious competitive distortions because mineral oils are used as inputs in the production process.

Lessons from Federal Systems

In the United States, there has been considerable concern with coordinating state sales taxes and, in particular, with the tax treatment of interstate sales. Although, in principle, retail sales taxes are levied on a destination basis, in practice states cannot enforce taxes on over-the-counter retail purchases by its residents in other states. Several studies that have tried to estimate the effects of interstate tax rate differentials on cross-border shopping suggest that consumers are responsive to tax-induced differences in the prices of high-value items but that cross-border shopping is fairly localized (Fox (1986) and Walsh and Jones (1988)). Hence, whereas cross-border shopping can hurt retailers located in the border areas of high-tax states, the overall efficiency losses appear limited—unless the size of the taxing jurisdiction is small.

Interstate purchases through mail-order firms have become the most serious problem in the interstate coordination of sales taxes. The U.S. Supreme Court ruled in 1967 that a firm does not have to charge sales taxes on sales to consumers residing in a state in which the firm does not have a nexus. As a result of this ruling, mail-order firms have become a channel for avoiding sales taxes altogether. Recent estimates put the average revenue loss as high as 4 percent of total sales tax revenue. Mail-order firms have resisted attempts to close this loophole; they argue that the cost of complying with the various tax laws of all state and local authorities would be excessive.

In Canada, all provinces except Alberta levy retail sales taxes, and regional tax rates differences are wider and levels higher than in the United States (Table 9). Local sales taxes do not exist, however, and tax bases are somewhat more uniform than in the United States. Differential retail sales tax rates in Canada have not attracted much attention for two reasons. First, Canada is sparsely populated and has few urban border areas. Hence, over-the-counter cross-border shopping is not important. Second, provinces have reached agreements with out-of-province firms (including large mail-order firms) to collect taxes on sales to their residents (Thirsk (1980)).

The experiences of the United States and Canada suggest, for the EC context, that rate differentials do not necessarily lead to large distortions, especially if the EC succeeds in enforcing the destination principle for cross-border sales by mail-
Table 8. U.S. State Sales Taxes, 1988
(in percent)

<table>
<thead>
<tr>
<th>Region and State</th>
<th>Share of Sales Tax Revenue in State Revenue</th>
<th>Statutory Tax Rate¹</th>
<th>Region and State</th>
<th>Share of Sales Tax Revenue in State Revenue</th>
<th>Statutory Tax Rate¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States²</td>
<td>19.0</td>
<td></td>
<td>Southeast</td>
<td>22.4</td>
<td></td>
</tr>
<tr>
<td>New England</td>
<td>16.7</td>
<td>7.5</td>
<td>Alabama</td>
<td>14.7</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>Connecticut</td>
<td>25.5</td>
<td>Arkansas</td>
<td>22.0</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>Maine</td>
<td>18.8</td>
<td>Florida</td>
<td>37.7</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Massachusetts</td>
<td>14.3</td>
<td>Georgia</td>
<td>20.4</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>New Hampshire</td>
<td>14.9</td>
<td>Kentucky</td>
<td>15.4</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Rhode Island</td>
<td>9.4</td>
<td>Louisiana</td>
<td>16.1</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>Vermont</td>
<td></td>
<td>Mississippi</td>
<td>28.7</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>Mid-Atlantic</td>
<td>14.3</td>
<td>North Carolina</td>
<td>15.5</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>Delaware</td>
<td></td>
<td>South Carolina</td>
<td>22.6</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Maryland</td>
<td>15.3</td>
<td>Tennessee</td>
<td>31.7</td>
<td>5.5</td>
</tr>
<tr>
<td></td>
<td>New Jersey</td>
<td>18.0</td>
<td>Virginia</td>
<td>12.1</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>New York</td>
<td>11.6</td>
<td>West Virginia</td>
<td>25.6</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>Pennsylvania</td>
<td>18.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Lakes</td>
<td>19.8</td>
<td></td>
<td>Southwest</td>
<td>21.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Illinois</td>
<td>20.7</td>
<td>Arizona</td>
<td>31.7</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Indiana</td>
<td>28.4</td>
<td>New Mexico</td>
<td>18.5</td>
<td>4.75</td>
</tr>
<tr>
<td></td>
<td>Michigan</td>
<td>16.2</td>
<td>Oklahoma</td>
<td>13.0</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td>Ohio</td>
<td>20.0</td>
<td>Texas</td>
<td>21.7</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>Wisconsin</td>
<td>17.5</td>
<td>Rocky Mountain</td>
<td>14.7</td>
<td></td>
</tr>
<tr>
<td>Plains</td>
<td>18.6</td>
<td>5.0</td>
<td>Colorado</td>
<td>16.2</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>Iowa</td>
<td>17.7</td>
<td>Idaho</td>
<td>18.5</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Kansas</td>
<td>17.3</td>
<td>Montana</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minnesota</td>
<td>16.8</td>
<td>Utah</td>
<td>20.5</td>
<td>5.1</td>
</tr>
<tr>
<td></td>
<td>Missouri</td>
<td>24.3</td>
<td>Wyoming</td>
<td>10.6</td>
<td>3.0</td>
</tr>
<tr>
<td></td>
<td>Nebraska</td>
<td>16.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>North Dakota</td>
<td>12.8</td>
<td>For West³</td>
<td>21.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>South Dakota</td>
<td>19.2</td>
<td>California</td>
<td>20.7</td>
<td>4.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nevada</td>
<td>32.2</td>
<td>5.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Oregon</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Washington</td>
<td>38.9</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Alaska</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hawaii</td>
<td>30.7</td>
<td>4.0</td>
</tr>
</tbody>
</table>


¹Excluding local taxes.

²Excluding the District of Columbia.

³Excluding Alaska and Hawaii.
order firms. Such a solution may be easier to achieve in the EC than in the United States because the EC tax base is more uniform across member countries and the number of EC jurisdictions that levy a separate VAT is much smaller than the number of U.S. states and local authorities that levy their own sales taxes. The arrangements in Canada, which consist of about the same number of sales tax jurisdictions as in the EC, seem to offer an attractive option.

As regards cross-border shopping, taxes levied according to the destination principle can be enforced only on a few durable goods for which registration requirements exist. Therefore, the EC will have to treat most over-the-counter border sales according to the origin principle. Hence, tax rate differentials will create some locational distortions. The overall efficiency losses may be small, but the consequences for some retail businesses in border areas may be quite serious.

Effects of the Commission's Proposals

Allocative Effects

The Commission's proposals for commodity tax harmonization are likely to encourage intra-EC trade because the compliance costs associated with the new system of border tax adjustments are unlikely to exceed the costs of complying with the present system of border controls. Similarly, the proposed system is likely to reduce the cost of tax administration. Table 10 presents estimates of the costs of current border formalities borne by firms on bilateral trade flows, only part of which are attributable to such formalities. Trade would rise also because the harmonization proposals would curtail the ability of countries to tailor their tax structures to the interest of domestic producers.

The proposals, and in particular the approximation of excise rates, have potentially important implications for competitive conditions in several markets. Although the associated restructuring of production would adversely affect some producers in the short run, the restructuring should be conducive to long-term efficiency gains. Moreover, the producers of tradable goods might experience only small effects because the proposals are designed to minimize the effects on the overall level of taxation in the EC and, therefore, on producer prices.

Meanwhile, convergence of VAT rates, the reclassification of goods in different VAT bands, and (especially) the harmonization of excise duties would generate significant effects on the structure of consumption in various member countries. Tables 11–15 present estimates, from national studies, of the effects of the Commission's 1987 proposals. Table 11 contains estimates by Symons and Walker (1989) on the structure of household consumption in the United Kingdom. Lower excise rates on alcoholic beverages would boost alcohol consumption significantly, whereas higher excise rates on mineral oils would reduce household demand for fuel by about 12 percent. Food consumption would fall by about 3 percent, assuming the repeal of zero rating of food. Under the EC proposals, Ireland and Denmark would also have to lower excise rates on alcoholic beverages significantly, and, like the United Kingdom, are also likely to experience increased alcohol consumption.

Milana (1989) has provided some estimates of the expenditure response in Italy (Table 12). The main tax changes affecting consumption patterns are higher excise rates on alcoholic beverages and tobacco and lower rates on energy. Table 13 contains estimates for France by Darmon and L'Hardy.

### Table 9. Canadian Provincial Retail Sales Tax Rates, 1988 (In percent)

<table>
<thead>
<tr>
<th>Province</th>
<th>Statutory Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>6</td>
</tr>
<tr>
<td>Alberta</td>
<td></td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>7</td>
</tr>
<tr>
<td>Manitoba</td>
<td>7</td>
</tr>
<tr>
<td>Ontario</td>
<td>8</td>
</tr>
<tr>
<td>Quebec</td>
<td>9</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>11</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>10</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>10</td>
</tr>
<tr>
<td>Newfoundland</td>
<td>12</td>
</tr>
<tr>
<td>Yukon</td>
<td></td>
</tr>
<tr>
<td>Northwest Territories</td>
<td></td>
</tr>
</tbody>
</table>

Source: Chmara and James (1989).  
II TAXES ON COMMODITIES

Table 10. Share of the Cost of Border Formalities Borne by Firms in the Value of Bilateral Trade Flows, 1987
(In percent of costs)

<table>
<thead>
<tr>
<th>Exporter</th>
<th>Belgium</th>
<th>Denmark</th>
<th>France</th>
<th>Italy</th>
<th>Netherlands</th>
<th>United Kingdom</th>
<th>Other EC member countries</th>
<th>Total EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>-</td>
<td>0.84</td>
<td>1.21</td>
<td>1.42</td>
<td>0.94</td>
<td>0.84</td>
<td>1.01</td>
<td>1.02</td>
</tr>
<tr>
<td>Denmark</td>
<td>1.45</td>
<td>-</td>
<td>2.08</td>
<td>2.17</td>
<td>1.82</td>
<td>1.67</td>
<td>1.85</td>
<td>1.87</td>
</tr>
<tr>
<td>France</td>
<td>1.64</td>
<td>1.72</td>
<td>-</td>
<td>2.25</td>
<td>1.84</td>
<td>1.72</td>
<td>1.69</td>
<td>1.83</td>
</tr>
<tr>
<td>Italy</td>
<td>1.76</td>
<td>2.25</td>
<td>2.30</td>
<td>-</td>
<td>1.95</td>
<td>1.83</td>
<td>1.80</td>
<td>2.11</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1.05</td>
<td>1.22</td>
<td>1.40</td>
<td>1.59</td>
<td>-</td>
<td>1.27</td>
<td>1.35</td>
<td>1.26</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1.87</td>
<td>1.20</td>
<td>1.55</td>
<td>1.91</td>
<td>1.33</td>
<td>-</td>
<td>1.76</td>
<td>1.54</td>
</tr>
<tr>
<td>Other EC member countries</td>
<td>1.49</td>
<td>2.02</td>
<td>2.10</td>
<td>2.14</td>
<td>1.73</td>
<td>1.79</td>
<td>1.82</td>
<td>1.93</td>
</tr>
<tr>
<td>Total EC</td>
<td>1.46</td>
<td>1.53</td>
<td>1.84</td>
<td>2.04</td>
<td>1.55</td>
<td>1.58</td>
<td>1.71</td>
<td>1.67</td>
</tr>
</tbody>
</table>

Source: Catinat, Donni, and Italianer (1988).

(1989). Changing excise rates and imposing reduced and standard VAT rates of, respectively, 9 percent and 19 percent (to conform to the Commission's 1987 proposals) would reduce the volume of household consumption of alcoholic beverages and tobacco by, respectively, 6 percent and 4 percent. The volume of car expenses, motor fuel, and home energy consumption would rise as a result of decreases in tax rates on mineral oils and abolition of the increased VAT rate on cars. The elimination of the increased rate would also stimulate the demand for electronic appliances. In Germany (Table 14), the consumption of petrol is expected to fall by 5 percent as consumers shift to diesel, and higher excises on tobacco would decrease cigarette consumption by 10 percent (Seidel (1988)). In Belgium, as estimated by Gouzee, Bossier, and Englert (1988), prices for petrol and diesel would increase substantially, which is estimated to reduce the volume of expenditures associated with car travel ("car services") by 7 percent (Table 15). At the same time, the elimination of increased VAT rates on cars, heating, and lighting would stimulate the consumption of these commodities.

To summarize, tobacco consumption would fall in most of the above EC member countries. As regards alcoholic beverages, consumption would tend to decline in Mediterranean countries and to rise in Ireland and the United Kingdom. Although demand for petrol would decline in Belgium, Germany, and the United Kingdom, other member countries—including Italy, France, Denmark, and Ireland—would experience a rise in demand for petrol and diesel. At the same time, demand for luxury goods would probably increase in most member countries (Belgium, Denmark, France, Greece, Ireland, Italy, Portugal, and Spain) that currently levy increased VAT rates or specific excises on such commodities. Food consumption would fall in Ireland, Portugal, and the United Kingdom—but only to the extent that they were to eliminate the zero VAT rate on such products.

As regards welfare effects, the Commission's proposals are likely to reduce inefficiencies in production and consumption. Comparative advantage rather than tax factors would increasingly determine the location of production within the EC. In particular, border controls would no longer inhibit intra-EC trade. Harmonization of excises would also help to prevent member countries from using excise duties, even indirectly, for protectionist purposes. In an integrated EC market, companies would face incentives to improve production efficiency and to innovate as competitive pressures intensify. Moreover, they would be encouraged to realize learning-by-doing effects and the economies of scale attainable within a larger internal market.

General equilibrium models (Jones and Whalley (1988)) suggest that efficiency gains from economies of scale can be quite large and typically exceed the gains from trade calculated on the assumption of constant returns to scale. It is difficult, however, to isolate the impact of commodity tax harmonization from the effects of reducing nontax barriers to intra-EC trade. Narrowing the dif-
Consumption efficiency would improve for two reasons. First, the harmonization proposals would lead to more uniform tax rates within most countries, especially in countries levying increased VAT rates (Belgium, Greece, France, Italy, Portugal, and Spain) and high selective excise rates on luxury goods (Denmark and Ireland), many of which would be dropped or lowered. Overall consumer welfare would most likely increase because harmonization would reduce the effect of the tax system on how households allocate their consumption among various commodities.

Second, the proposals would reduce intercountry differences in tax rates. As a result, relative prices facing consumers residing in different countries would tend to converge, thereby improving the efficiency with which consumption spending is allocated across member countries. Most of the benefits would accrue to high-tax countries that would reduce their tax rate relative to the EC average; they would experience the largest expansion of transactions for which the social benefits (as reflected in the tax-inclusive price) exceed national costs (as reflected in the tax-exclusive price). The increase in these transactions would be especially large because lower foreign demand associated with higher tax rates in low-tax countries would prevent higher domestic demand from raising market prices. At the same time, it is also the case that high-tax countries, in lowering their VAT rates toward the proposed minimum rates, may experience long-run welfare losses. Such losses may arise as a result of a shift away from consumption toward leisure and the consequent fall in labor supply (Perraudin and Pujol (1991)).

The positive effects on efficiency need to be weighed against two potentially significant negative welfare effects. First, the harmonization process would increasingly constrain countries in selecting the tax structures that best meet their national social preferences. To illustrate, depending on social welfare functions, lower taxes on alcoholic beverages and tobacco may raise the marginal social costs above the private benefits of consuming these goods in Denmark, Ireland, and the United Kingdom. Furthermore, if labor mobility within the EC increases, taxes may become largely benefit charges. In that case the VAT may be the only major tax that countries can use to finance differences in expenditures on public goods corresponding to different preferences because the VAT base (private consumption) may most closely match the benefits from public goods. Second, the removal of border controls might exacerbate distortions from VAT rate differentials by encouraging individuals and exempt businesses that are not required to register for imports to engage in cross-border shopping. The overall efficiency losses associated with such behavior would, of course, be mitigated through spontaneous tax rate harmonization. Moreover, special arrangements for tax-exempt institutions, mail-order firms, and direct car

<table>
<thead>
<tr>
<th>Commodity Group</th>
<th>Price</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>2.87</td>
<td>-2.89</td>
</tr>
<tr>
<td>Fuel</td>
<td>4.00</td>
<td>-11.70</td>
</tr>
<tr>
<td>Clothing</td>
<td>3.10</td>
<td>-4.43</td>
</tr>
<tr>
<td>Transport</td>
<td>3.50</td>
<td>-4.05</td>
</tr>
<tr>
<td>Services</td>
<td>-1.1</td>
<td>-0.46</td>
</tr>
<tr>
<td>Beer</td>
<td>-16.30</td>
<td>23.14</td>
</tr>
<tr>
<td>Wine</td>
<td>-26.70</td>
<td>49.05</td>
</tr>
<tr>
<td>Spirits</td>
<td>-29.40</td>
<td>112.00</td>
</tr>
<tr>
<td>Other2</td>
<td>1.30</td>
<td>2.70</td>
</tr>
</tbody>
</table>


Note: Relative to the actual tax system in 1987, assuming that after harmonization the standard VAT rate is 15 percent (same as the current standard rate) and the reduced VAT rate is 4 percent (at present, most goods in the reduced rate band are zero-rated).

This assumes the absence of externalities. In the case of alcohol and tobacco products, the tax-inclusive price is likely to exceed net social benefits.

Low-tax countries raising their taxes to the EC averages might lose because the consumption of goods for which national benefits exceed costs would decline. In the case of alcohol taxation, however, alcohol-producing countries in southern Europe that raise these taxes might also gain because the social cost of alcohol consumption might have exceeded the national benefit in the tax system before harmonization. At the same time, southern European countries would not suffer a serious terms of trade loss as a result of higher domestic taxes because demand from northern European countries would rise as these countries reduce their excises on alcohol.

More generally, increased mobility of factors within the EC may result in inefficiently low levels for those expenditures for which it is difficult to find taxes that match the benefits.
purchases should help contain the incentive effects of remaining tax rate differentials.\footnote{In addition, cross-border shopping may induce governments to opt for higher personal income tax rates and lower commodity tax rates than in the absence of these transactions in order to protect retail businesses located near the borders. This may harm efficiency because, at current rates, the VAT is likely to yield lower marginal welfare costs than income taxes (Tait (1988, pp. 220–21)).}

**Distributional Effects**

Relative changes in either consumer or producer prices that accompany the allocative effects might generate larger effects on consumer prices than on producer prices because they tend to leave the average level of taxation in the EC largely unaffected.

In general, the proposals may widen income inequalities in most member countries.\footnote{As regards tradable goods, the EC proposals are likely to generate larger effects on consumer prices than on producer prices because they tend to leave the average level of taxation in the EC largely unaffected.} In particular, an increment in excise rates on certain income-inelastic goods (in Greece, Portugal, and Spain) and abolition of increased VAT rates or selective excises on income-elastic commodities (Belgium, Denmark, France, Greece, Italy, Portugal, and Spain) will by themselves tend to reduce the progressivity of the tax system. A possible removal of the zero VAT rates (Ireland, Portugal, and the United Kingdom) would compound this effect. Whether commodity tax harmonization would harm low-income households ultimately depends on the accompanying fiscal measures. Although some of these measures would primarily deal with the revenue implications of the harmonization proposals, others—for instance, personal income tax changes or adoption of targeted subsidies—could be designed explicitly to protect the living standards of low-income households.\footnote{Another way of attempting to offset the regressivity of the harmonization proposals is to redistribute the gains to low-income households. The tax revenues generated from the VAT harmonization would be used to finance welfare benefits such as cash benefits, social insurance contributions, and nondirect taxes. The Commission has estimated that a 1 percentage point reduction in the standard VAT rate (from 16% to 15%) would generate a 0.3% increase in welfare benefits. However, this approach may not be sufficient to offset the regressivity of the harmonization proposals.\footnote{Davis and Kay (1985) have shown how one can design a package of expenditure measures to offset the progressive effect of eliminating zero rating in the United Kingdom.\footnote{Keen (1987) demonstrated that tax harmonization typically redistributes income across countries. Accordingly, tax harmonization might benefit all EC member countries only if the countries that gain from harmonization compensate those that lose.\footnote{Jones and Whalley (1988) used an applied general equilibrium model to study the effects of Canadian federal tax policies on welfare in the various provinces. They found that federal taxes generate significant effects on the interregional distribution of income. To illustrate, removing all federal non-energy taxes would reduce Quebec’s regional income by more than 3 percent and raise Ontario’s income by about 2 percent. However, these welfare effects include the effects not only of changes in regional terms of trade but also of interregional redistribution of tax revenues across provinces by the federal government. National tax systems keep most tax revenues within the country; hence, the intra-EC distributional effects associated with national tax systems are likely to be small.}}}}
Table 13. France: Estimate of Expenditure Response to Commodity Tax Harmonization
(In percentage change)

<table>
<thead>
<tr>
<th>Commodity Group</th>
<th>Case 1 Price</th>
<th>Case 1 Volume</th>
<th>Case 2 Price</th>
<th>Case 2 Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food products</td>
<td>3.5</td>
<td>-1</td>
<td>1.5</td>
<td>-0.5</td>
</tr>
<tr>
<td>Alcoholic beverages</td>
<td>10.0</td>
<td>-6</td>
<td>10.0</td>
<td>-6.0</td>
</tr>
<tr>
<td>Tobacco</td>
<td>20.0</td>
<td>-4</td>
<td>18.0</td>
<td>-3.5</td>
</tr>
<tr>
<td>Heating, home, energy</td>
<td>-10.0</td>
<td>3</td>
<td>-12.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Car expenses</td>
<td>-6.0</td>
<td>4</td>
<td>-8.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Petrol</td>
<td>-10.0</td>
<td>2</td>
<td>-10.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Electronic appliances</td>
<td>-14.0</td>
<td>6</td>
<td>-16.0</td>
<td>6.5</td>
</tr>
<tr>
<td>Total</td>
<td>-0.1</td>
<td>0</td>
<td>-0.7</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Source: Darmon and L'Hardy (1989).

Note: Relative to the actual tax system in 1987. Case 1 assumes the 1987 EC Commission proposal for a standard VAT rate of 19 percent and a reduced VAT rate of 9 percent; case 2 assumes lower rates of, respectively, 17 percent and 7 percent. The actual standard rate was 18.6 percent; there were several reduced rates (see Table 1) and an increased rate (20 percent).

Revenue Effects

Estimates of first-order revenue effects assume the absence of compensatory fiscal measures and ignore induced substitution and income effects although relative price effects and the resulting changes in the structure of demand may be significant for certain member countries—as indicated above. In fact, any initial revenue losses caused by a cut in excise rates may largely be offset over time by a broadening of the tax base. Moreover, additional macroeconomic responses may offset the initial impact on tax revenues through induced changes in the tax base. Changes in cross-border shopping by individuals and tax-exempt entities may also affect revenue.

Various estimates of the revenue effects of the Commission's 1987 proposals for VAT and excise rate approximation are presented in Table 16. Denmark and Ireland are likely to suffer the largest revenue losses. In Denmark, the reduction of the standard VAT rate to 20 percent and the introduction of a reduced rate at the maximum level of 9 percent would lead to an estimated fall in revenue of about 3 percent of GDP, which could rise to as much as 6 percent of GDP with the elimination of all minor excises (excises on commodities other than alcoholic beverages, tobacco, and mineral oils) and the reduction of several major excise rates. The total revenue loss in terms of GDP in Ireland amounts to about 3 percent, primarily attributable to losses from excise revenue and (especially) a large reduction in tax rates on alcohol. The removal of zero rating would partially offset the revenue losses from a cut in the standard VAT rate from 25 percent (that is, the former rate assumed in the simulations) to 20 percent. In any event, in the absence of frontier controls, it would be difficult for Ireland to maintain a standard rate much above the 15 percent rate in the United Kingdom.

On the basis of informal calculations (in the absence of published studies), it appears that Greece, Portugal, and Spain would benefit from added revenue amounting to some 2 percent of GDP, chiefly from excise rate increments on products with a relatively low price elasticity of demand and including a net contribution of less than 1 percent of GDP from changes in VAT rates in Spain.

For most other EC member countries, the estimated revenue impact amounts to less than 1 percent of GDP. In France, a fall in VAT revenue

76 Most of the studies cited in the table make broadly similar assumptions about the VAT tax rates: in most countries, it is assumed that only the minimum changes are made to satisfy the VAT band. Most of the estimates in the studies are based on first-order revenue effects; however, the results reported in CEPS (1989) are drawn from various sources and may include some second-order effects. Some observers have argued that tax-induced cross-border shopping by individuals and tax-exempt institutions will force high-tax countries to reduce taxes even further than required by the 1987 EC proposals.

77 The assumed elimination of all minor excises overstates the estimated revenue loss in that excises on some nontradables could be retained under the proposals. In particular, the excise on motor vehicles (for example, in Denmark and the Netherlands) could be converted into registration fees.
II TAXES ON COMMODITIES

Table 14. Germany: Estimate of Expenditure Response to Excise Duty Harmonization (In percentage change)

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Price</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrol (leaded)</td>
<td>22.91</td>
<td>-5</td>
</tr>
<tr>
<td>Diesel</td>
<td>-0.32</td>
<td>3</td>
</tr>
<tr>
<td>Cigarettes</td>
<td>13.40</td>
<td>-10</td>
</tr>
<tr>
<td>Beer</td>
<td>14.78</td>
<td>-8</td>
</tr>
<tr>
<td>Wine</td>
<td>5.73</td>
<td>-3</td>
</tr>
<tr>
<td>Spirits</td>
<td>1.81</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Relative to excise duties in effect in 1987.

Table 15. Belgium: Estimate of Expenditure Response to Commodity Tax Harmonization (In percentage change)

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Price</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food, tobacco, drinks</td>
<td>0.71</td>
<td>-0.83</td>
</tr>
<tr>
<td>Clothing and footwear</td>
<td>0.24</td>
<td>0.34</td>
</tr>
<tr>
<td>Housing</td>
<td>0.19</td>
<td>-0.04</td>
</tr>
<tr>
<td>Heating</td>
<td>-4.54</td>
<td>2.03</td>
</tr>
<tr>
<td>Lighting</td>
<td>-7.88</td>
<td>3.55</td>
</tr>
<tr>
<td>Domestic services</td>
<td>0.21</td>
<td>0.01</td>
</tr>
<tr>
<td>Furniture</td>
<td>1.83</td>
<td>-1.71</td>
</tr>
<tr>
<td>Cars</td>
<td>-4.50</td>
<td>4.08</td>
</tr>
<tr>
<td>Car services</td>
<td>9.49</td>
<td>-6.66</td>
</tr>
<tr>
<td>Transportation</td>
<td>-3.80</td>
<td>0.77</td>
</tr>
<tr>
<td>Communication</td>
<td>-0.07</td>
<td>4.29</td>
</tr>
<tr>
<td>Medical services</td>
<td>-0.08</td>
<td>-0.14</td>
</tr>
<tr>
<td>Entertainment</td>
<td>1.90</td>
<td>1.39</td>
</tr>
<tr>
<td>Other</td>
<td>0.17</td>
<td>-0.07</td>
</tr>
</tbody>
</table>

Source: Gouzee, Bossier, and Englert (1988).
Note: Effects five years after implementing Commission proposals, relative to the actual tax system in 1987. Assumptions are a standard VAT rate of 19 percent, compared with the actual standard rate of 19 percent and a reduced VAT rate of 6 percent, three reduced rates (6 percent, 6 percent, and 7 percent), and two increased rates (25 percent and 33 percent).

dominates a small reduction in excise receipts. As suggested by the range of estimates, however, the loss in VAT revenue may be mitigated by flexible implementation, such as maintaining the current level of taxation on automobiles as well as on heating and lighting products. The small decrease in excise receipts corresponds to the net effect of a large decrease in revenue from taxes on oil products and a substantial increase in revenue from taxes on tobacco and alcohol. A small decrease in VAT revenue in Germany is anticipated, reflecting the opposite influence of a small broadening of the VAT base, on the one hand, and the increased coverage of the reduced rate, on the other. Harmonization of excises in Germany would involve increased revenue from excises on oil products, tobacco, and beer. The abolition of some minor excise taxes would only partially offset these revenue gains. As regards Italy, it is not clear whether the rise in revenue from VAT and excises on tobacco and alcoholic beverages would compensate for a possible fall in oil excise receipts. For the United Kingdom, the estimated first-order revenue gain reflects two large offsetting effects: a large fall in excise receipts (especially those on alcohol and diesel fuel), and a significant rise in VAT revenue arising from the elimination of zero rating. For Belgium, studies suggest a similar small gain in total revenue; a net fall in VAT revenue, which reflects lower taxes on cars and energy supply, is more than offset by a large increase in excise revenue, mainly from oil products. Luxembourg78 and (to a lesser extent) the Netherlands are likely to gain from first-round revenue effects, which could rapidly vanish due to a shrinking tax base associated with cross-border shopping.

Macroeconomic Effects

Although several model-based simulations have been performed on the macroeconomic effects of the Commission’s 1987 proposals, comparison of the results is made difficult by differing assumptions about implementation of the proposals, alternative policy assumptions, and different model structures. None of the models used for such simulations thus far seems to approximate sufficiently closely the medium-term, multicountry, multisectoral computational framework that in principle would be required for such an exercise. In particular, the models for the most part do not capture the allocative response to tax-induced price changes that underlies the macroeconomic effects and is likely to be the most significant over the medium term. Among the various models applied, the Commission’s HERMES seems to contain the richest sectoral disaggregation, whereas the OECD’s INTERLINK can capture in principle the transmis-

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78 An informal calculation for Luxembourg indicates an immediate revenue gain totaling some 5 percent of GDP, most of which, however, would be quickly eroded by a sizable response of cross-border shoppers to the alignment of standard VAT and excise rates to the proposed minima.
Effects of the Commission’s Proposals

### Table 16. Revenue Effects of Commodity Tax Harmonization in Selected EC Member Countries

(In percent of GDP)

<table>
<thead>
<tr>
<th>Country</th>
<th>VAT</th>
<th>Excises</th>
<th>VAT and excises</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>-0.3</td>
<td>0.8</td>
<td>0.3</td>
<td>Lee, Pearson, and Smith (1988)</td>
</tr>
<tr>
<td>France</td>
<td>-0.3/-0.6</td>
<td>-0.01</td>
<td>-0.7</td>
<td>Lee, Pearson, and Smith (1988)</td>
</tr>
<tr>
<td>Germany</td>
<td>-0.2</td>
<td>0.4</td>
<td>0.2</td>
<td>Lee, Pearson, and Smith (1988)</td>
</tr>
<tr>
<td>Ireland</td>
<td>-2.9</td>
<td>-0.9</td>
<td>-2.9</td>
<td>Lee, Pearson, and Smith (1988)</td>
</tr>
<tr>
<td>Italy</td>
<td>0.8</td>
<td>-0.6</td>
<td>0.2</td>
<td>Lee, Pearson, and Smith (1988)</td>
</tr>
<tr>
<td>Netherlands</td>
<td>-0.2</td>
<td>0.3</td>
<td>0.6</td>
<td>Lee, Pearson, and Smith (1988)</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0.9</td>
<td>-0.6</td>
<td>0.2/0.3</td>
<td>Lee, Pearson, and Smith (1988)</td>
</tr>
</tbody>
</table>

Assumes VAT standard rate of 15 percent and reduced rate of 4 percent.
Assumes VAT standard rate of 19 percent and reduced rate of 6 percent.
Assumes VAT standard rate of 20 percent and reduced rate of 9 percent.
No change in standard VAT or reduced rates: abolition of increased rate. The first estimate involves VAT harmonization excluding automobiles, heating, and lighting products: the second estimate assumes total harmonization.
No change in VAT rates.
Assumes VAT standard rate of 20 percent, reduced rate of 9 percent, and abolition of zero rate.
Assumes VAT standard rate of 20 percent and reduced rate of 3 percent.
No change in VAT rates.
The first estimate assumes unchanged expenditure; the second estimate allows for tax-induced expenditure changes.
No change in standard VAT rate: reduced rate of 4 percent and abolition of zero rate.

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Preliminary simulation results of medium-term macroeconomic effects of the VAT rate approximation under the 1987 proposals, based on the INTERLINK model, are given in Table 17. In the reported simulations, standard and reduced VAT rates are fixed at, respectively, 16.5 percent and 6.5 percent, with a 2.5 percentage point variation around the central rates. Each member country is assumed to select its actual VAT rate so as to minimize the first-order revenue effects (including the effects of a fully harmonized VAT base). Under this set of assumptions, the standard VAT rate is set at 19 percent for most countries, except for Spain, Germany, and the United Kingdom (in which the rate is fixed at 14 percent), and for Portugal and Italy (with rates of about 16 percent). Reduced VAT rates vary from 9 percent (Belgium, Denmark, and France) to about 7 percent (Germany) and between 4 percent and 6 percent for the remaining countries. No allowance is made for grandfathering of the zero rate, as suggested in May 1989 (EC Commission (1989c)).
Table 17. Macroeconomic Effects of VAT Harmonization  
(In percent deviation from baseline)

<table>
<thead>
<tr>
<th>Country</th>
<th>Price Level (GDP Deflator)</th>
<th>Nominal Wages</th>
<th>Real GDP</th>
<th>Real Private Consumption</th>
<th>Unemployment Rate</th>
<th>Current Account Balance</th>
<th>Budget Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 year</td>
<td>5 years</td>
<td>1 year</td>
<td>5 years</td>
<td>1 year</td>
<td>5 years</td>
<td>1 year</td>
</tr>
<tr>
<td>Belgium</td>
<td>-0.1</td>
<td>-0.1</td>
<td>-</td>
<td>-</td>
<td>0.1</td>
<td>0.1</td>
<td>-</td>
</tr>
<tr>
<td>Denmark</td>
<td>-5.1</td>
<td>-7.2</td>
<td>-3.4</td>
<td>-6.5</td>
<td>1.1</td>
<td>4.0</td>
<td>1.4</td>
</tr>
<tr>
<td>France</td>
<td>-0.6</td>
<td>0.8</td>
<td>-0.2</td>
<td>1.2</td>
<td>0.1</td>
<td>1.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Germany</td>
<td>0.1</td>
<td>0.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ireland</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Italy</td>
<td>-</td>
<td>0.2</td>
<td>0.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.3</td>
<td>0.3</td>
<td>-</td>
<td>-</td>
<td>-0.1</td>
<td>-0.2</td>
<td>-0.1</td>
</tr>
<tr>
<td>Portugal</td>
<td>-0.6</td>
<td>-0.6</td>
<td>-0.3</td>
<td>-0.4</td>
<td>0.2</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>Spain</td>
<td>0.1</td>
<td>0.1</td>
<td>-</td>
<td>-</td>
<td>-0.1</td>
<td>-0.1</td>
<td>-0.1</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0.4</td>
<td>-0.5</td>
<td>0.2</td>
<td>-0.9</td>
<td>-0.3</td>
<td>-0.3</td>
<td>-0.3</td>
</tr>
</tbody>
</table>


Note: Simulation with 1986 data base.

1 In percent of labor force.

2 In percent of GDP.

3 Includes Luxembourg.
simulations are based on a number of simplifying assumptions: fixed nominal exchange rates; fixed tax rates other than VAT; fixed real government expenditures; and fixed nominal money stocks for the four largest member countries (nominal interest rates are fixed for the remaining member countries). The simulations account neither for spillover effects from other countries nor for the effects of the removal of border controls. Besides the main direct impact of VAT rate changes on prices, secondary price effects may also occur through the wage indexation mechanism, which reinforces the effect of an initial price change on the price level, and through activity effects (assuming a Phillips curve relationship), which may weaken the initial price effect.

The general picture that emerges is that, with the exception of four countries (Denmark, France, Portugal, and the United Kingdom), the static macroeconomic effects—subject to the above caveats—of the proposal would be negligible. Consistent with the earlier findings on the revenue effects from VAT harmonization, and given the assumption that no compensatory fiscal action is taken, Denmark would experience the strongest macroeconomic response stemming from the initial strong deflationary effect on prices. Over the medium term, GDP in Denmark would rise about 4 percent above its baseline level, and prices would fall about 7 percent below their baseline level. In Ireland, the price response to VAT harmonization would be small because the effects of the cut in the standard rate is offset by the effect of the assumed abolition of the zero rate. In France, the liberalized deductibility of VAT would lead to inflationary pressures induced by a stimulus to economic activity that over time offsets the initial fall in prices; at the end of five years, prices exceed their baseline level by nearly 1 percent. In the United Kingdom, in which VAT rates rise and repeal of the zero rate is assumed, a similar mechanism would yield a small decline in the price level of about 0.5 percent in the medium term. In Portugal, the initial deflationary effect on the price level remains unchanged at about 0.6 percent. In all countries, the effect on the external current account balance is small because changes in international competitiveness and domestic absorption largely offset changes in the external account. In general, countries that reduce VAT rates experience a modest deterioration in their external balance relative to their baseline level.

If VAT and excise approximation work in opposite directions, the overall macroeconomic effects tend to be weaker than implied in the foregoing results. The results shown in Table 18, based on simulations with alternative models, illustrate this point for Belgium and Italy. Simulation results based on the Bank of Italy model (Bollino, Ceriani, and Voili (1988)) show that VAT harmonization would have stronger macroeconomic effects than the unification of excises. In contrast, the results reported for Belgium, based on the HERMES model (Gouzee, Bossier, and Englert (1988)), suggest that excise harmonization has a dominant macroeconomic impact; although the overall macroeconomic outcomes continue to be small, they are opposite in direction to the INTEGRAl simulations of VAT harmonization (EC Commission (1987)).

For France, the simulations of VAT harmonization obtained from the METRIC model (Bloch and Maurel (1989)) appear to be at odds with the INTEGRAl results, since the short-term price effects and medium-term activity effects are opposite in sign. The differences may arise because the METRIC model allows for offsetting changes in the relative prices of consumer and producer goods, which weaken the transmission of tax changes to output and domestic absorption. A comparable discrepancy emerges between the simulations conducted with HERMES (van der Putten (1987)) and INTEGRAl for the VAT rate changes for the United Kingdom with respect to the medium-term price effects.

The simulations for Ireland, based on a national model for Ireland (Bradley and FitzGerald (1989)), stand apart from the others because of the underlying assumption that compensatory fiscal action is taken to ensure revenue neutrality. This assumption explains in part the otherwise somewhat surprising modest macroeconomic consequences of both VAT and excise harmonization, except for a remarkable dip in the rate of unemployment of 1.5 percentage points over the medium term. The simulation incorporates an assumed increase in other indirect taxes to offset an estimated revenue loss of about 2.6 percent of GDP. Initially, consumer prices and external balance fall relative to the baseline while domestic absorption expands; after two years, prices rise about 0.2 percent above their baseline level. This outcome reflects the rise in disposable income and domestic absorption, whereas the deterioration in the external balance is reversed as a result of the improvement in competitiveness given the initial fall in domestic prices.

Although differing in specification detail and underlying policy assumptions, all the above models share a highly aggregated structure in which tax policy exercises its main macroeconomic effects through changes in the price level and domestic demand. Several limitations are common to all the models. The intertemporal effects of changes in tax structure on saving, investment, and the intertemp-
Table 18. Macroeconomic Effects of Commodity Tax Harmonization in Selected EC Member Countries
(In percent deviation from baseline)

<table>
<thead>
<tr>
<th>Country</th>
<th>Price Level</th>
<th>Real GDP</th>
<th>Real Private Consumption</th>
<th>Unemployment Rate</th>
<th>External Balance</th>
<th>Budget Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 year</td>
<td>4 years</td>
<td>1 year</td>
<td>4 years</td>
<td>1 year</td>
<td>4 years</td>
</tr>
<tr>
<td>Belgium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAT</td>
<td>-0.5</td>
<td>-0.8</td>
<td>0.3</td>
<td>0.3</td>
<td>-0.1</td>
<td>-0.1</td>
</tr>
<tr>
<td>Excises</td>
<td>0.9</td>
<td>1.0</td>
<td>-0.4</td>
<td>-0.3</td>
<td>-0.7</td>
<td>-0.5</td>
</tr>
<tr>
<td>Total</td>
<td>0.4</td>
<td>0.2</td>
<td>-0.2</td>
<td>-0.1</td>
<td>-0.3</td>
<td>-0.1</td>
</tr>
<tr>
<td>France</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAT</td>
<td>0.1</td>
<td>0.4</td>
<td>0.1</td>
<td>-0.2</td>
<td>0.4</td>
<td>-0.2</td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAT</td>
<td>3.1</td>
<td>-0.1</td>
<td>-0.4</td>
<td>0.4</td>
<td>-0.8</td>
<td>0.1</td>
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<tr>
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<td>-0.3</td>
<td>0.1</td>
<td>0.1</td>
<td>-0.1</td>
<td>0.3</td>
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</tr>
<tr>
<td>Total</td>
<td>3.0</td>
<td></td>
<td>-0.3</td>
<td>0.3</td>
<td>-0.5</td>
<td>0.1</td>
</tr>
<tr>
<td>Ireland</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAT</td>
<td>-0.3</td>
<td>0.2*</td>
<td>0.4</td>
<td>0.2*</td>
<td>0.7</td>
<td>-1.1</td>
</tr>
<tr>
<td>United Kingdom</td>
<td></td>
<td></td>
<td>-0.3</td>
<td>-0.4</td>
<td>-0.6</td>
<td>-0.4</td>
</tr>
</tbody>
</table>

Source: Belgium—Gouzee, Bosser, and Englert (1988); France—Bloch and Maurel (1989); Italy—Bojio, Ceriani, and Voil (1988); Ireland—Bradley and Fizgerald (1989); and United Kingdom—van der Putten (1987).

*In percent of labor force.

*In percent of GDP. Manufacturing trade balance for France; balance of payments for Ireland and the United Kingdom; and current account balance for Belgium.

*In percent of GDP. Change in net government indebtedness (in percent of GDP) for Italy, and exchequer borrowing (in percent of GDP) for Ireland.

*Two years rather than four years.
Temporal allocation of labor are ignored. Furthermore, changes in consumption tax rates are not anticipated. But above all, as mentioned, the high level of aggregation glosses over the effect of the sectoral responses to the substitution in private consumption. In addition, the simulations are based on separate national models and ignore international spillover effects of tax policy. Notwithstanding the relatively weak macroeconomic responses, especially for the larger EC countries, the above results may be magnified through dynamic repercussions, which are largely ignored in these simulations.

Effects on Non-EC Countries

Nonmember countries would be affected by the EC harmonization proposals through several channels. In the context of a federal system of government, Gordon (1983) formally derived the various types of externalities that a particular government can inflict on other jurisdictions. Spillover effects that appear relevant in the EC context include terms of trade effects as well as the consequences for tax bases in nonmember countries. In a second-best world with initial distortions (including nontax distortions), EC tax harmonization may influence the volume of those transactions in nonmember countries for which social benefits exceed social costs. However, spillover effects are difficult to identify in the absence of an explicit general equilibrium model that accounts for both tax and nontax distortions in the rest of the world.

The terms of trade effect depends on how the EC harmonization proposals would affect the demand for specific importables relative to that for exportables in the EC as a whole. The elimination of increased VAT rates might improve the terms of trade of nonmember countries in Europe by stimulating import-intensive demand for luxury goods in the Community. Similarly, excise harmonization might raise demand for high-quality tobacco, which is mainly imported from outside the Community. More generally, the harmonization proposals would limit the ability of individual member countries to use their tax structures as an instrument of protection. In particular, excise rate harmonization is likely to result in some trade creation vis-à-vis non-EC producers of certain commodities. On the whole, terms of trade gains and commodity trade creation would be very modest.

Several effects of the tax harmonization proposals are likely to harm non-EC economies. It is conceivable that the terms of trade of nonmember countries may worsen in the short run—for example, because of higher short-run investment demand in the EC associated with the restructuring of production. More important, the removal of border controls on intra-EC trade would result in trade diversion away from countries outside the EC, reflecting the substitution of consumption to higher-cost EC suppliers from lower-cost non-EC sources, upon abolition of intra-EC border controls and retention of border controls toward nonmember countries. Moreover, some producers would move their production facilities from non-EC economies to the Community to benefit from the integrated EC market (Bakhoven (1989)). This production shift may not only compound a possible deterioration in the non-EC terms of trade by shifting investment demand to the EC, but may also shrink the tax bases in nonmember countries.

In addition, the above measures should strengthen significantly the export competitiveness of the EC. However, the rest of the world would probably also benefit from the proposals. First, multinational companies based both inside and outside the EC are in a strong position to take advantage of the opportunities offered by the removal of such barriers. Second, higher EC consumption associated with income effects from enhanced efficiency may raise import demand in nonmember countries. On balance, coupled with removal of border controls (EC Commission (1988e)), commodity tax harmonization would probably have adverse net static effects on non-EC economies in the absence of compensatory macroeconomic policies. Dynamic effects may or may not offset these adverse effects.

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82 For an analysis of intertemporal effects, see Frenkel and Razin (1987). Some dynamic simulations provided in Frenkel, Razin, and Symansky (1990, 1991) show that, depending on the initial trade position and parameter elasticities, a cut in consumption tax rates induces an excess demand for current goods and tends to worsen the current account position.

83 Although in principle some of these effects could be captured through INTERLINK, in practice they are not.

84 Table 10 contains estimates for the costs of border controls borne by firms on trade flows between the EC and the rest of the world. Lipsey (1960) has discussed the distinction between trade diversion and trade creation. Several nontax proposals associated with the completion of the internal market: reduce nontariff barriers only for intra-EC trade. Trade diversion is likely to dominate the possible trade creation effects from the harmonization of excises.
III Taxes on Capital Income

A Survey

Edward H. Gardner

This chapter surveys the international taxation of income from capital and the measures and proposals for its harmonization in the EC, with particular attention to the taxation of corporate income and of financial investment income. The first section describes the basic tax principles that apply to international taxation of income from capital; discusses the allocative distortions that arise from differential taxation across countries; and defines the possible neutrality objectives of tax harmonization. The apportionment of the tax liability of a corporation operating in more than one country is also addressed in the context of intercountry equity. The second and third sections review current EC taxation of income from capital and proposals for harmonization, respectively. The fourth and last section reviews the allocative and budgetary implications of the EC harmonization proposals, as well as possible effects on nonmember countries.

Theoretical Background

Residence Principle Versus Source Principle

Because the ownership and the location of factors of production can fall under different jurisdictions, an important distinction in international taxation arises between the residence and the source principles of taxation. Under the residence principle, a country exercises a tax claim on all income earned by residents. Under the source principle, a country asserts the right to tax the income generated within its borders regardless of the residence of the income recipient. Most countries follow a mix of the two principles that exposes foreign income recipients to the risk of double taxation. Because in practice the source country has first opportunity to tax, it is typically the responsibility of the country of residence to establish provisions for relief from double taxation. Such provisions can take the form of a credit for foreign taxes against the domestic tax liability, a deduction of foreign taxes from the domestic tax base, or the exemption of foreign-source income from the domestic tax base—in effect following the source principle. Universal adoption of either credit or exemption would eliminate the problem of double taxation, albeit with different implications for efficiency. Although deduction does not eliminate the problem of double taxation, it can increase the national welfare of the capital-exporting country—as discussed below.

Allocative Distortions

Differences in the effective rate of capital income taxation among countries tend to create distortions in the international allocation of capital, saving, risk, and financial intermediation. In addition, as in the case of the closed economy, taxes may distort the overall level of savings and investment.

The allocative distortions brought about by differences in the tax burden on the income from capital can be regarded as: real distortions, to the extent that they affect saving and investment, or the composition of production and spending, or both; or as financial distortions, to the extent that they alter portfolio and financing choices and thereby affect the international allocation of risk. In addition, tax systems can affect the degree of economic integration because they influence intercountry and intracountry cooperation among enterprises, including mergers.

The real allocative implications of differential tax burdens on the income from capital depend on the incidence of the tax and on whether taxes are levied according to the location of investment or the residence of the saver. If, in the short run, the tax can be shifted to the immobile factor of production (for example, labor), no distortions will arise from the application of the source principle, whereby the tax burden varies according to the location of the investment. If the tax cannot be

1 Although conceptually useful, the distinction between real and financial distortions loses significance in the economic choice of agents, given the close integration of the financing and investment decisions of enterprises and the saving and portfolio decisions of households.
shifted—for example, because of short-run rigidity of real wages—and capital is mobile, source taxation at differential rates would result in an inefficient allocation of capital. In the long run, differential tax burdens on capital are absorbed by labor in the form of differential labor productivity and real wages. This allocation of capital violates the principle of capital-export neutrality, which states that taxes should not alter the locational choice of investment.

If the tax burden is not shifted and varies according to the residence of savers or investors, the tax-induced wedge between the marginal rates of time preference of different savers will force an inefficient allocation of global saving and affect the distribution of global capital ownership. This type of distortion violates capital-import neutrality, by which income from capital originating in a certain country should be subject to the same tax burden, irrespective of the country of residence of the savers or investors. An overall reduction in foreign investment, with possible efficiency costs, also results from double taxation of foreign investment income arising from the imposition of separate and not fully integrated source and residence taxes.

Financial distortions can be identified as tax-induced distortions in the financial structure of enterprises and in the portfolio composition of individuals that impede the efficient distribution of risk and allocation of financial intermediation across countries. To the extent that the tax systems of capital-importing countries discriminate against equity flows in international transactions, the capital-importing countries will rely more heavily on debt financing and will assume a portion of economic risk greater than is socially desirable. Moreover, to the extent that the investment and financing decision are interdependent, tax distortions on the financing or portfolio side are also likely to interfere with the efficient allocation of real capital and savings, as discussed above.

Tax systems can also interfere with the optimal level of international economic integration when they discriminate between domestic and cross-country mergers or acquisitions. Such discrimination can arise from two sources. First, international mergers incur a higher tax burden than domestic mergers if the capital gains attributable to the contributing or acquired company are taxed at the time of the merger rather than upon realization, as is the practice for domestic mergers. The second tax obstacle results from different degrees of personal and corporate tax integration. Specifically, the acquiring company may face a higher cost of capital if the tax advantages of dividend distributions are not extended to foreign-source income, and the after-tax value of dividend distributions of the acquired company may decline if the imputation system is not extended to foreign shareholders.

### Tax Neutrality

As a general proposition, capital-export neutrality would obtain if the residence principle were uniformly applied to all income from capital accruing to resident investors, however the tax burden is split between the personal and the corporate taxpayer. In this case, intercountry differences in the corporate and personal tax burdens would not affect the locational choice of investment. Conversely, capital-import neutrality would obtain under uniform source taxation of investors. In this case, residents of all countries would face the same tax burden on savings directed to any particular country. Intercountry differences in effective source tax rates would distort the location of investment but would not induce differences in the saving propensity of individuals residing in different countries.

Unless effective tax burdens on the income from capital are equalized across countries, tax systems can be targeted to meet only one of the two neutrality criteria. From the standpoint of global welfare maximization, the choice between the two criteria depends on the degrees of intertemporal substitution in consumption and of international substitutability of investment. With relatively low intertemporal substitution in consumption (that is, shifting, for example, because of short-run rigidity of real wages—and capital is mobile, source taxation at differential rates would result in an inefficient allocation of capital. In the long run, differential tax burdens on capital are absorbed by labor in the form of differential labor productivity and real wages. This allocation of capital violates the principle of capital-export neutrality, which states that taxes should not alter the locational choice of investment.

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Taxes on Capital Income

low interest elasticity of savings) and relatively high international capital substitution (that is, high elasticity of investment with respect to differences in after-tax rates of return), violations of capital-import neutrality should be less costly than violations of capital-export neutrality.7

The identification of capital-export neutrality with the residence principle, and of capital-import neutrality with the source principle, holds under a very general definition of residence and source, and only if profit taxes are not shifted either to rewards of other factors or to goods prices, and if profit taxes are not benefit charges (that is, the tax burden is not offset by proportional benefits—for example, in the form of better infrastructure). The taxation of income from capital at both the corporate and personal levels, allowing for international direct and portfolio (debt and equity) investment, involves a high degree of complexity in the design of a tax system that meets one of the two basic criteria of neutrality. Consistent application of one of the two principles is easier at the corporate level than at the personal level. Enforcement of the residence or source principle at the company level can achieve neutrality in the case of foreign direct investment. For foreign portfolio investment by individuals, enforcement of the residence or source principle becomes necessary at the personal level.

At the corporate level, tax exemption by the country of residence, consistent with the source principle, results in capital-import neutrality if the source country does not impose a withholding tax on dividends distributed to the parent company or a differential tax rate on resident versus foreign-owned company income. Capital-export neutrality requires, under the residence principle, that the country of residence provide a refundable credit for foreign taxes paid and recognize foreign-source losses for domestic tax purposes. All foreign-source profits should be attributed to the parent company without any domestic tax deferral on retained foreign-source income. In practice, however, deferral is ordinarily extended to foreign subsidiary income, and the foreign tax credit is subject to limitations on a per-country or overall basis, as well as on the basis of income categories (as in the United States after the 1986 tax reform).

Harmonization of company tax systems—intended for a common neutrality objective—is desirable for allocative efficiency only if tax burdens are not correlated with the level of public sector services rendered to corporations (infrastructure, legal structure, and so forth) among the countries involved in the harmonization effort—that is, if taxes are not benefit charges. Otherwise, harmonization of effective tax rates must take place net of differences in such benefits. Furthermore, if profit taxes are actually benefit charges or if they are shifted to the rewards of other (immobile) factors of production, differential source taxation is fully compatible with allocative neutrality, since in both cases net tax burdens are zero. The conditions for efficiency when profit taxes are shifted to product prices become much more complex.8 In particular, neutrality would require source taxation of profits (that is, exemption by the residence country) and border tax adjustments on tradable goods (Chapter II). Harmonization may also prove to be more distortionary if company tax systems retain their present nonneutrality with respect to inflation and if inflationary differences subsist among countries.9

Violations of the residence principle at the personal level of taxation need not always interfere with capital-export neutrality. The most common departure from the residence principle derives from the fact that, whereas most countries tax individual residents on the basis of their global income, income generated by foreign asset holdings often goes unreported to the tax authority. To the extent that foreign or offshore (notably Eurobond) markets serve as the marginal intermediation channel between individuals and enterprises from different countries, differences in tax burdens across assets at the individual level will be fully absorbed by inframarginal asset holders. Outflows of personal savings through such markets do not affect the location of investment, as long as domestic enterprises can borrow those funds on the same terms as foreign enterprises.

In the absence of full tax harmonization, neutrality depends on whether the effective tax burden borne by capital is determined by the country of residence or source, rather than on who gets the tax revenue. If the source country relinquishes its right to tax, the country of residence gets the revenue. If both countries exercise their right to tax, and if capital-export neutrality is met through the use of a foreign tax credit, the revenue is shared by the two countries, with a possible net revenue flow.

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8See Musgrave (1967) for a full taxonomy of tax neutrality.

9Application of the residence principle with full foreign tax credit will fail to uphold capital-export neutrality if foreign exchange gains and losses are accorded a preferential (or discriminatory) tax treatment. With a difference in inflation rates between the home and foreign countries, the corresponding expected rate of depreciation (or appreciation) of the domestic currency vis-à-vis the foreign currency will result in different tax burdens on equivalent foreign and domestic financial assets, even under the residence principle, if foreign exchange gains are taxed at a different rate than interest or dividend income, or simply if they are taxed on a realization rather than on an accrual basis.
transfer to the source country if its tax burden exceeds that of the residence country. As discussed above, given the priority of the source country in determining its tax claim, capital-export neutrality effectively depends on the adoption of a foreign tax credit by the residence country. Although beneficial from the point of view of international welfare, this choice does not necessarily maximize the welfare of the residence country. From the standpoint of the national welfare of a capital-exporting country, capital will be best allocated when the after-tax return on foreign investment and the domestic before-tax rates of return are equalized. This condition is met if foreign taxes are deducted from the domestic taxable base, rather than credited against the domestic tax liability (MacDougall (1960) and Caves (1982)).

**Intercountry Equity**

Equity in the distribution of the tax revenue between the source and the residence countries assumes meaning only in the context of an explicitly stated international welfare function. Intercountry equity encompasses not only corporate income taxation, but also withholding taxes on dividend and interest payments to nonresidents, as well as the degree of integration of the personal and corporate tax systems across countries. Given the priority of the source country in exercising its tax claim, the overall level of taxation and its distribution between the source and residence countries are effectively determined by the tax treatment of foreign-source income in the residence country.

The concept of intercountry equity is also at issue when differential source tax burdens can be exploited for tax fraud and evasion by individuals and by corporations, in the form of financing and pricing arrangements that shift the tax burden to low-tax jurisdictions, with implications for gross revenue and its allocation among countries. In particular, an equitable distribution of the tax base of a multinational corporation among the countries in which it operates requires an operational definition of the territorial tax base. At present, the allocation of profits of a multinational corporation operating in many countries follows the separate accounting method, which assigns profits to the different countries in which the multinational corporation operates, applying arm’s-length prices to intracompany transactions of goods and services. Implementation of this method of allocating profits to the different jurisdictions is particularly difficult when the company conducts highly integrated activities across countries. Determination of arm’s-length prices of highly differentiated finished or semifinished products and intangibles (such as royalties, brand names, marketing, and research and development) is particularly difficult in the absence of comparable transactions among unrelated buyers and sellers. Thus, differences in tax rates can be exploited to reallocate taxable profits to low-tax jurisdictions by means of transfer-pricing manipulations and financing arrangements, such as shifting debt burdens and the associated interest deductibility to high-tax jurisdictions. To prevent such practices, countries apply arm’s-length pricing rules and often impose restrictions on thin capitalization (that is, the reliance on debt financing for subsidiaries in the high-tax jurisdictions) in the form of limits on debt-equity ratios.

An alternative approach to the definition of the territorial base is that of formula apportionment, by which profits are allocated for tax purposes according to the geographic distribution of easily identifiable factors, such as the value of assets, payroll, or sales across jurisdictions. Under unitary taxation, the apportionment formula is imposed on the global income of the parent corporation and its affiliates, with a consequent risk of double taxation (or undertaxation) if the same apportionment formula is not adopted by all jurisdictions. Whether formula apportionment offers an equitable distribution of tax revenues depends on the correlation between the factors entering the formula and the economic concept of taxable income. As is the case with many presumptive income tax rules, it is debatable whether formula apportionment provides an adequate proxy for taxable income (for example, it assumes the same profit margin for all tax jurisdictions). Although formula apportionment has gained acceptance within federal systems such as Canada and the United States, it has been widely rejected at the international level. Factors typically used for the apportionment of the taxable base may be easy to identify conceptually, but their determination becomes particularly onerous and, possibly, arbitrary in the absence of a common currency and a common accounting and legal framework among tax jurisdictions (Kopits and Mutén (1984)).

The Canadian example of a uniform definition of taxable income and a common apportionment formula is a more attractive model than the United States example, where significant differences remain in the definition of the formula across states. The Canadian approach eliminates double taxation and reduces the compliance costs of corporations operating across borders. In any event, whether adhering to separate accounting or adopting formula apportionment, uniform tax accounting would be a logical companion to more uniform business accounting practices. Besides removing technical barriers to capital flows, uniform tax accounting may
render income measures more informative and comparable across countries.\textsuperscript{10}

Intercountry equity is also a relevant criterion in the field of taxation of portfolio investment income. Again, the basic question over the fair distribution of revenue between the source and residence countries depends on the choice of international welfare function. Tax-induced portfolio investments to low-tax countries clearly violate intercountry equity if the associated income flow goes unreported to the residence country. Such flows need not, however, entail investment distortions. To illustrate, consider two situations, one with a uniform rate of taxation across countries and the other with one low-tax country acting as the financial intermediation center for savers and investors from different countries, de facto under the source principle. As long as all participants have access to this financial center on the same terms, the two situations would be identical in terms of locational decisions, except for the location of financial intermediation. The differences would be in the overall tax burden, the distribution of tax revenue among jurisdictions, and the overall level (but not distribution) of savings and of investment.

\textbf{Present Tax Treatment}

\textbf{Corporate Income Taxation}

Table 19 summarizes the main features of the corporate tax systems of EC member countries. The table broadly illustrates the degree of diversity of these systems, although a more succinct measure of tax burden differentials is presented below, in the discussion of the effects of the Commission’s proposals, where estimates of the effective tax burdens on new investments are presented for each EC member country. Although no formal process of harmonization has yet been agreed upon, a certain degree of convergence is evident in the reduction of corporate and personal statutory income tax rates begun in the United Kingdom and outside the EC in the early 1980s and followed in most industrial countries (Table 20). The reduction in statutory tax rates has been coupled with base broadening, mainly through phasing out accelerated depreciation allowances and investment tax credits. Considerable differences in the degree of integration between personal and corporate taxation remain, however, with little apparent movement toward convergence (Table 21). The degree of enforcement also varies across EC member countries, with enterprises being given a considerable degree of discretion over the taxes they pay in some cases.

As regards the tax treatment of foreign direct investment income, Table 19 indicates the variety of methods used by residence countries to alleviate double taxation. In addition to taxing corporate income, source countries typically impose a withholding tax on dividend distributions to foreign shareholders. Such withholding taxes violate the principle of capital-import neutrality. Although the possibility of channeling dividend payments through a third (treaty) country can reduce the impact of high bilateral withholding rates, attempts to limit this form of “treaty shopping” have been undertaken by several countries (OECD (1987)).

Double taxation is minimized by the exemption and credit provisions established by the residence country, often in the context of bilateral treaties. The global allocative implications of these various provisions for double taxation relief are ambiguous given the complexity of the arrangements. Even under the credit system, however, the tax burden will often coincide with that of the source country. On the one hand, because of limitations on the foreign tax credit, enterprises typically pay the source-country tax when this is higher than the tax that would be borne under the residence principle. On the other hand, because companies can often defer the taxation of foreign subsidiary income (but not branch income) until repatriation, they can effectively elect to be taxed in the source country only, if its tax burden is lighter than the one that would be borne under the residence principle.

\textbf{Taxation of Financial Investment Income}

Table 22 shows the present system of taxation of personal financial investment income in the EC. All countries, in principle, tax residents on their global income. Relief from foreign-source taxes (withholding taxes on dividends and interest) is generally provided through a credit or deduction system. But the general absence of withholding taxes on interest paid to nonresidents and of reporting requirements to foreign tax administrations has enhanced the scope for tax evasion through foreign investment, leaving source taxes the only form of taxation. Member countries’ administrative practices have adjusted to the situation in a number countries’ of ways. Before 1990, revenues were protected by capital controls in a number of countries (France, Greece, Ireland, Italy, Portugal, and Spain) or by the requirement that foreign assets be purchased or held through domestic financial institutions (Denmark and Italy). With the liberalization of all capital flows in 1990, full taxpayer identification and communication of all financial

\textsuperscript{10}Steuerle (1990) emphasizes the link between improvements in financial and tax accounting.
Table 19. Summary of Corporate Tax Systems in the EC, 1990

| Country    | Statutory Corporate Income Tax Rate
d (in percent of income) | Net Worth and Capital-Based Tax Rate
de (in percent of asset value) | Investment Incentives
d (in percent of asset price) | Loss Carryover Carry-forward Carry-back | Taxation of Foreign Source Income (Foreign Branch Income and Remitted Subsidiary Income) | Capital Cost Recovery Allowances* (in percent per year) | First-year convention\(^{5}\) |
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</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>39</td>
<td>5 (D)</td>
<td>5</td>
<td>E(^{6})</td>
<td>SL 10 DB 20 SL 50/25 DB 50/49</td>
<td>Full Year</td>
<td>Full Year</td>
</tr>
<tr>
<td>Denmark(^{7})</td>
<td>40</td>
<td>3</td>
<td>2</td>
<td>D or E(^{14})</td>
<td>SL 10 DB 25 SL 10/10 DB 15/15</td>
<td>Prorated(^{12})</td>
<td>Prorated(^{12})</td>
</tr>
<tr>
<td>France</td>
<td>37/42(^{10})</td>
<td>0.6 (^{11})</td>
<td>3</td>
<td>C or E(^{8})</td>
<td>SL 10 DB 25 SL 10/10 DB 15/15</td>
<td>Full Year</td>
<td>Full Year</td>
</tr>
<tr>
<td>Germany</td>
<td>53/45(^{10})</td>
<td>0.13/0.58(^{13})</td>
<td>5</td>
<td>C or D(^{18})</td>
<td>SL 10 DB 25 SL 10/10 DB 15/15</td>
<td>Full Year</td>
<td>Full Year</td>
</tr>
<tr>
<td>Greece</td>
<td>35/16</td>
<td>0.11/0.88(^{11})</td>
<td>2</td>
<td>C or D(^{23})</td>
<td>SL 10 DB 25 SL 10/10 DB 15/15</td>
<td>Full Year</td>
<td>Full Year</td>
</tr>
<tr>
<td>Ireland</td>
<td>10/17</td>
<td>No limit</td>
<td>5</td>
<td>C or D(^{18})</td>
<td>SL 10 DB 25 SL 10/10 DB 15/15</td>
<td>Full Year</td>
<td>Full Year</td>
</tr>
<tr>
<td>Italy</td>
<td>46</td>
<td>6</td>
<td>5</td>
<td>C or E(^{8})</td>
<td>SL 10 DB 25 SL 10/10 DB 15/15</td>
<td>Full Year</td>
<td>Full Year</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>37/45(^{10})</td>
<td>0.13/0.58(^{13})</td>
<td>5</td>
<td>C or E(^{23})</td>
<td>SL 10 DB 25 SL 10/10 DB 15/15</td>
<td>Full Year</td>
<td>Full Year</td>
</tr>
<tr>
<td>Netherlands</td>
<td>35</td>
<td>No limit</td>
<td>5</td>
<td>C or D(^{23})</td>
<td>SL 10 DB 25 SL 10/10 DB 15/15</td>
<td>Full Year</td>
<td>Full Year</td>
</tr>
<tr>
<td>Portugal</td>
<td>40</td>
<td>6</td>
<td>5</td>
<td>C or D(^{23})</td>
<td>SL 10 DB 25 SL 10/10 DB 15/15</td>
<td>Full Year</td>
<td>Full Year</td>
</tr>
<tr>
<td>Spain</td>
<td>35</td>
<td>5 (C)</td>
<td>5</td>
<td>C or D(^{23})</td>
<td>SL 10 DB 25 SL 10/10 DB 15/15</td>
<td>Full Year</td>
<td>Full Year</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>35</td>
<td>No limit</td>
<td>5</td>
<td>C or D(^{23})</td>
<td>SL 10 DB 25 SL 10/10 DB 15/15</td>
<td>Full Year</td>
<td>Full Year</td>
</tr>
</tbody>
</table>

Sources: International Bureau of Fiscal Documentation, OECD, and various national sources.
1National and local income tax combined.
2Staff estimates of effective tax rates on the value of capital, excluding local property taxes on land and buildings.
3C = tax credit; D = tax deduction; E = exemption.
4Methods: SL = straight line, DL = declining balance.
5Share of the year over which depreciation is allowed in the first year.
6Exemption applies to foreign branch income (under treaty) and to 90 percent of net foreign dividends received from a permanent foreign participation.
7Denmark allows depreciation to start at the time the capital is ordered or construction initiated. Also, the depreciation base is indexed to the price level.
8Exemption if from France, Germany, Ireland, Portugal, Spain.
9The first rate applies to the first ten years.
10Split rate system: first rate applies to realized earnings, second rate to distributed earnings.
11Tax professional.
12Prorated from date of acquisition or installation.
13Gewerbesteuer and net worth tax. Rates for debt- and equity-financed capital, respectively.
14Exemption under treaty and for dividends from substantial participation in foreign companies.
15The first rate applies to the first four years, the second to the following three years, and the third to the remaining life of the asset.
16Rate for industrial companies quoted on the Athens stock exchange.
17Rate for industrial companies, to remain in effect until the year 2000. The standard rate for other companies is 43 percent.
18Credit under treaty.
19The first rate applies to the first year.
20The first rate applies to the first three years.
21Net worth tax and business capital tax. Rates for debt- and equity-financed capital, respectively.
22Machinery only.
23Exemption for foreign branch income under treaty and for remitted income from subsidiaries with at least a 10 percent participation.
24Credit when participation in foreign company exceeds a certain level.
25Credit or exemption under treaty.
transactions to the tax authority (Denmark, France, and Spain) has become the only administrative form of control now available in EC member countries (Greece, Ireland, and Portugal having been granted a derogation to the complete elimination of capital controls). Concerns about the adverse effects of administrative controls on interest rates, capital outflows, and the financial markets led other countries to allow complete taxpayer anonymity and unrestricted capital flows, relying fully upon income declaration by the individual investor for revenue collection (Germany and Luxembourg). The remaining three countries, absent capital controls, have relied on some form of enforcement at source— withholding with various degrees of coverage (Belgium and the United Kingdom), or reporting of income (of interest income in the Netherlands and the United Kingdom when no withholding applies). Relatively high succession taxes, combined with the possibility of reporting to the tax authority by domestic financial institutions, have provided further incentive toward foreign financial investment (Table 22).

Discriminatory provisions in national tax systems that favor individual investments in domestic securities—for example, in the form of security composition requirements on tax-exempt retirement funds or accounts and on tax-exempt small savings accounts—can partially offset the tax advantages of capital flight. However, such schemes may induce additional distortions in the composition of portfolios.

Other Taxes

In addition to taxes levied on the income from capital, capital is taxed directly in several ways in the EC. Property taxes are imposed in all member countries at the local level. Some countries levy a personal wealth tax, and, at the corporate level, taxes based on an assessed value of capital or net worth are levied in France, Germany, and Luxembourg. Capital duties (indirect taxes on the raising of capital) constitute another burden on capital formation. The capital duty was harmonized in the EC in 1969 (EC Commission (1969c)). In a 1985 amendment (EC Commission (1985d)), countries were given the possibility to lower the rate between 0 percent and 1 percent.11

Although taxes levied on labor income are not treated explicitly here because of the lesser international mobility of labor, they are relevant to the discussion of capital income taxation because of the unavoidable link in the taxation of income from corporate and noncorporate entities. Thus, pressures to harmonize capital income taxation have implications for countries' discretion over labor income taxation. Moreover, because differential tax burdens on highly mobile forms of labor in managerial positions can be shifted onto capital in the short run, differences in the taxation of labor income can have the same adverse allocative implications as differences in the taxation of capital income.

Proposals for Tax Harmonization

As discussed above, large differences remain among member countries in all areas of taxation of capital income. Concern over the distortionary effects of such differences has long motivated efforts by the EC Commission to advance pro-

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11 Only Belgium, which reduced its rate to 0.5 percent, and the United Kingdom, which eliminated the capital duty, have taken advantage of this amendment.
Table 21. Taxation of Equity Income, 1990

<table>
<thead>
<tr>
<th>Country</th>
<th>Statutory Corporate Income Tax Rate</th>
<th>Nonresident Institutional Investor</th>
<th>Payout Rate for Resident Individual Investor</th>
<th>Method of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>u</td>
<td>θ</td>
<td>wt</td>
<td>(1-u) θ (1-wt)</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.39</td>
<td>1.00</td>
<td>0.15</td>
<td>0.52</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.40</td>
<td>1.00</td>
<td>0.15</td>
<td>0.43</td>
</tr>
<tr>
<td>France</td>
<td>0.37</td>
<td>1.38</td>
<td>0.15</td>
<td>0.74</td>
</tr>
<tr>
<td>Germany</td>
<td>0.57</td>
<td>1.28</td>
<td>0.15</td>
<td>0.47</td>
</tr>
<tr>
<td>Greece</td>
<td>0.35</td>
<td>0.42</td>
<td>0.58</td>
<td>0.58</td>
</tr>
<tr>
<td>Ireland</td>
<td>0.10</td>
<td>0.42</td>
<td>0.58</td>
<td>0.58</td>
</tr>
<tr>
<td>Italy</td>
<td>0.46</td>
<td>0.46</td>
<td>0.46</td>
<td>0.46</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>0.37</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.35</td>
<td>0.55</td>
<td>0.55</td>
<td>0.55</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.40</td>
<td>0.55</td>
<td>0.55</td>
<td>0.55</td>
</tr>
<tr>
<td>Spain</td>
<td>0.35</td>
<td>0.55</td>
<td>0.55</td>
<td>0.55</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0.35</td>
<td>0.73</td>
<td>0.73</td>
<td>0.73</td>
</tr>
</tbody>
</table>

Sources: International Bureau of Fiscal Documentation and OECD.

Note: Rates are expressed in decimal form.

1. Typical rate under treaty.
2. Share of gross corporate income that reaches the resident shareholder after corporate and personal income taxes (top marginal tax rate) and any form of integration. Computation is similar to payout ratio for nonresident investor, on the basis of relevant data on dividends in Table 22.
3. Payout rates are based on relevant data on dividends in Table 22.
4. Nonresident investor, on the basis of relevant data on dividends in Table 22.
5. Special rate for industrial enterprises.
6. Rate on industrial company quoted on the Athens stock exchange.
7. Special rate for industrial enterprises.
### Table 22. Taxation of Financial Investment Income of EC Resident Individuals, 1991

**Table in percent**

<table>
<thead>
<tr>
<th>Country</th>
<th>Bond Interest</th>
<th></th>
<th>Dividends</th>
<th></th>
<th>Marginal Rate on Long-Term Capital Gains</th>
<th>Reporting of Financial Investment Income</th>
<th>Declaration in Case of Succession</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Withholding tax rate</td>
<td>Top marginal income tax rate or withholding if final</td>
<td>Withholding tax rate</td>
<td>Top marginal income tax rate or withholding if final</td>
<td>Marginal Rate on Long-Term Capital Gains</td>
<td>Reporting of Financial Investment Income</td>
<td>Declaration in Case of Succession</td>
</tr>
<tr>
<td>Belgium</td>
<td>10</td>
<td>10</td>
<td>25</td>
<td>25</td>
<td>0</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Denmark</td>
<td>0</td>
<td>57</td>
<td>30</td>
<td>57</td>
<td>0</td>
<td>Yes†</td>
<td>Yes</td>
</tr>
<tr>
<td>France</td>
<td>17.5</td>
<td>17</td>
<td>0</td>
<td>57/364</td>
<td>16.7</td>
<td>Yes‡</td>
<td>Yes</td>
</tr>
<tr>
<td>Germany</td>
<td>0</td>
<td>53</td>
<td>25</td>
<td>53/276</td>
<td>0</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Greece</td>
<td>10</td>
<td>10</td>
<td>429</td>
<td>42</td>
<td>0</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Ireland</td>
<td>0/30¹⁰</td>
<td>52</td>
<td>0</td>
<td>52/336</td>
<td>30¹¹</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Italy</td>
<td>12.5</td>
<td>12.5</td>
<td>10</td>
<td>50/226</td>
<td>12.5/12</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>0</td>
<td>50</td>
<td>15</td>
<td>50</td>
<td>0</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0</td>
<td>60</td>
<td>25</td>
<td>60</td>
<td>0</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Portugal</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>0¹¹</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Spain</td>
<td>0/25¹³</td>
<td>56</td>
<td>25</td>
<td>56/526</td>
<td>8¹⁴</td>
<td>Yes†</td>
<td>Yes¹⁹</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0/25¹⁷</td>
<td>40</td>
<td>0</td>
<td>40/206</td>
<td>40¹⁸</td>
<td>Yes‡</td>
<td>No</td>
</tr>
</tbody>
</table>

**Sources:** Conseil National du Crédit, OECD, IMF staff estimates, and various national sources.

1 Capital gains on ordinary financial transactions.  
2 "(Yes)" indicates if declaration is not automatic but only upon request by the tax authority.  
3**Interest only.**  
4*Assets held over three years and bonds.*  
5Bonds quoted on the stock exchange.  
6Second rate includes the dividend credit.  
7**Interest only.**  
8Assets held over six months.  
9*Second rate includes the dividend credit.*  
10*Assets do not exceed F307,600. Capital gains are exempt.*  
11*The marginal rate declines with the length of the holding period and reaches a minimum of 8 percent.*  
12For assets held over 18 months.  
13Zero rate for government bonds.  
14Rates for assets held over six years.  
15For assets held over 18 months.  
16A dividend credit of 11.25 percent can be claimed if dividend income is globalized with other income.  
17*For shares held over 12 months.*  
18Zero rate for Treasury notes.  
19*For shares held over 12 months.*  
20The marginal rate declines with the length of the holding period and reaches a minimum of 8 percent.  
21Zero rate for certain public loans.  
22*For assets held over six months.  
23*For shares held over 12 months.*  
24A £5,000 exemption applies. Capital gains taxed on real rather than nominal basis.

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Proposals for Tax Harmonization

Proposals for a more uniform tax treatment of income from capital. Such efforts at harmonization of direct taxes gained momentum under the liberalization of capital movements in mid-1990.

General Objectives

The Commission has identified three areas for convergence in the taxation of income from capital: company income taxation; taxation of interest income; and specific provisions that favor domestic financial investments (EC Commission (1988a)).

The Commission has favored not only increased coordination in the area of company taxation in the EC but also an approximation of tax practices and statutory rates, for several reasons. First, approximation in this area would enhance the transparency of tax systems, reduce compliance costs, and promote intercompany cooperation in the form of joint ventures and mergers. Second, tax competition among jurisdictions, in the absence of a formal approximation process, would force a process of convergence that may be too slow, leaving the EC open to the distortions inherent to the present tax systems, and that may lead to an overall suboptimal level of taxation. This may be true, particularly in light of the potential repercussions of effective corporate tax rates on personal income tax rates, if a link between personal and corporate income taxes must be maintained to avoid unintended breaks between incorporated and unincorporated forms of business activity. Third, although the precise neutrality objective underlying the Commission's proposals remains ill-defined, both capital-export neutrality in the case of a deduction system. No definite choice between the two principles has yet emerged. Under the recently proposed statute on the European company (EC Commission (1988d)), cross-border mergers and joint ventures incorporating as European companies would be able to consolidate the group's income for taxation purposes. effectively allowing enterprises to opt for the credit system even in countries where it is not presently in use.

The inconsistency between the two allocative goals of capital-import neutrality and capital-export neutrality at the corporate level would disappear if the corporate tax burdens were equalized across countries. Such equalization, or at least approximation, of corporate tax systems was the object of an ambitious 1975 proposed directive (EC

Proposals and directives in the area of corporate income taxation address two main goals: the elimination of double taxation and the harmonization of tax systems. The Commission initially proposed the elimination of double taxation of foreign-source corporate income in 1969 (EC Commission (1969a)). The directive adopted in July 1990 (EC Commission (1990d)) allows member states to choose between exemption and domestic taxation with credit for foreign taxes (including withholding taxes), up to the amount of the corresponding domestic tax. The directive prohibits source countries from imposing withholding taxes on the dividends distributed by the subsidiary to the parent company. Derogations are granted to countries that provide preferential tax treatment for distributed profits, such as Germany and Greece, and to Portugal, for budgetary reasons. As mentioned above, the two systems of double tax relief permitted under the directive correspond to different allocative criteria——capital-export neutrality in the case of a credit system, and capital-import neutrality in the case of a deduction system. No definite choice between the two principles has yet emerged. Under the recently proposed statute on the European company (EC Commission (1988d)), cross-border mergers and joint ventures incorporating as European companies would be able to consolidate the group's income for taxation purposes, effectively allowing enterprises to opt for the credit system even in countries where it is not presently in use.

The inconsistency between the two allocative goals of capital-import neutrality and capital-export neutrality at the corporate level would disappear if the corporate tax burdens were equalized across countries. Such equalization, or at least approximation, of corporate tax systems was the object of an ambitious 1975 proposed directive (EC

12Germany may maintain a compensatory withholding tax of 5 percent on profits distributed by subsidiaries to foreign parents as long as its corporate tax rate on distributed profits is at least 11 points below the rate on retained profits: Greece may maintain withholding taxes provided for in double taxation treaties for as long as it allows for the deduction of distributed profits from the corporate income tax; Portugal is permitted to apply a maximum withholding tax rate of 15 percent until 1995 and of 10 percent until 1998.
III TAXES ON CAPITAL INCOME

Commission (1975a)). The main features of the proposed directive were a single statutory corporate income tax rate, set between 45 percent and 55 percent; a common (partial) imputation system along the lines of the French avoir fiscal method, with a single rate of credit to the shareholder for the company tax underlying the distributed dividends; the source principle with respect to the imputation system, with the tax credit set and its budgetary cost borne by the host country, unless differently agreed under a bilateral treaty, and with a clearinghouse mechanism set up to deal with the intercountry transfers resulting from the extension of tax credits to foreign-source dividends; and a 25 percent withholding tax on all dividends except for dividends distributed by a subsidiary to a parent corporation in the EC, and where own-resident investors are known to the tax authority or shares are registered.

The proposed directive on rate harmonization was never adopted because the European Parliament stressed the prior need to harmonize the rules of computation of the company tax base (EC, European Parliament (1987)). Some of the concerns expressed by the European Parliament were addressed by a proposed directive on the harmonization of the provisions for the carry-over of losses (EC Commission (1984, 1985a)). The proposal would limit the carry-back of losses to three years and place no limits on their carry-forward.

More recently, the Commission drafted a comprehensive proposal on the harmonization of rules for the determination of taxable profits of enterprises: depreciation allowances, capital gains, stocks, provisions for reserves, inventory valuation adjustment, and deductible charges and expenditures. The basic purpose of the proposal was to establish greater transparency in the tax treatment of corporate income—to meet the objections to the 1975 proposed directive and to prevent, through the harmonization of the rules underlying the computation of the tax base, indirect subsidization or taxation. Under this draft proposal, tax incentives would have to be administered in a more transparent fashion through an investment tax credit or preferential statutory company income tax rates or both, rather than through generous depreciation allowances or other alterations of the tax base. Sectoral or regional subsidies could still be used to remedy genuine structural problems.

In April 1990 the Commission temporarily abandoned the broad objective of corporate tax harmonization to focus instead on the elimination of remaining forms of double taxation. As a result, the 1975 proposal for the harmonization of company tax systems was formally withdrawn, and a committee of experts was established in 1991 to advise the Commission on future proposals. The committee released its findings in March 1992, supporting the view that total harmonization is not justified at this stage, though a common system of corporate taxation remains a desirable long-term objective. The committee recommended that action be concentrated on three areas: removal of remaining discriminatory features that impede intra-EC cross-border investment and shareholding; establishment of a minimum statutory corporate tax rate of 30 percent and common rules for the computation of the tax base to avoid excessive tax competition; and greater transparency of investment incentives granted through the tax system (EC Commission (1992)).

Some progress has already been achieved on the first point with the adoption, in July 1990, of two directives and a multilateral convention. The two directives, dating back to proposals made by the Commission in 1969, are the directive on parent companies and subsidiaries described above (EC Commission (1969a, 1990d)) and the directive on the taxation of mergers (EC Commission (1969b, 1990c)). The multilateral convention, based on a 1976 proposed directive, sets out common rules for transfer pricing and establishes a binding arbitration procedure to eliminate the risk of double taxation at the enterprise level (EC Commission (1976, 1990f)). The directive on mergers eliminates the tax disadvantages of international mergers by deferring the taxation of any capital gains relating to the assets of the contributing or acquired company until they are realized, as is done for domestic mergers. Moreover, to safeguard the tax interests of the country in which the company is established, the proposed directive requires that the original value of the assets of the contributing company be carried separately in the books of the new permanent establishment.

Taxation of Interest Income

The liberalization of capital flows was widely expected to exercise pressures on tax revenue collection in all member countries, but particularly in those that had been relying on capital controls. In response to these concerns, the Commission considered three possible, and not necessarily mutually exclusive, ways to prevent tax-induced portfolio reallocation and corresponding loss of tax revenue:

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13 The rate of the tax credit is to fall in a range set between 45 percent and 55 percent of the amount of corporation tax at the normal rate on a sum representing the distributed dividend increased by the tax.

14 The draft directive was never published, but a description of an earlier draft of the proposal is found in Kuiper (1988).
Effects of Corporate Income Tax Proposals

In order to analyze the economic effects of corporate income tax harmonization, the complexities of the tax system must be reduced to a succinct measure of the effective tax burden. The concept of the corporate tax wedge—defined as the difference between the market rate of return on financial assets and the gross or before-tax rate of return on investment required to cover the cost of financing—provides a useful summary measure of the effect of tax systems on marginal investment decisions. (Estimates of corporate tax wedges for the 12 EC member countries, derived from the statutory tax treatment of corporate profits and capital—including the statutory corporate income tax rate, capital cost recovery allowances, grants and investment credits, wealth and net worth taxes—are presented in Chapter IV.) The absolute value of the tax wedge (subsidy, if negative) under current tax systems or announced and proposed tax reforms, describes the situation that would prevail in the absence of any harmonization. Large differences in effective tax rates can still be addressed at the national level, where tax enforcement can take the form of tax identification of all asset holdings of residents, and thus possibly capital transfers abroad by residents. Such provisions, as practiced in Denmark and France, are of course fully consistent with the projected liberalization of capital movements.

Following the second approach, the Commission’s initial proposal (1989b) envisaged the establishment of a common minimum withholding tax on interest income for EC residents that would be set at 15 percent. The tax could be imposed as a final tax or as an advance payment creditable against the ordinary income tax. Where the withholding tax is allowed as a credit or is refunded in another member state, the source country bears the budgetary cost of crediting or refunding the tax, unless differently agreed under a bilateral treaty. In consideration of the risk of inducing capital outflows to third countries, with adverse effects on interest rates in member countries and on EC financial institutions, the proposal provides for numerous exemptions that would dilute its effectiveness considerably. The proposed directive only applies to debt instruments issued by EC residents, and it defers to national authorities the tax treatment of interest from Eurobonds, interest received from non-EC residents, interest on small savings deposits, interest received by non-EC residents, interest received by own residents when full taxpayer identification exists, and intra-enterprise interest income. Although in principle the proposed directive also applies to the interest income derived from investment unit trusts, some ambiguity remains over the tax treatment of interest capitalized through the share value of an investment unit trust that does not redistribute the interest. The proposal does not preclude the possibility of multiple rates, or of rates on own residents that are higher than those on non-residents. The proposal also views the minimum withholding tax as a possible prototype for a common tax on financial investment income in a wider international context, to be negotiated with the main EC partners (primarily in the OECD area).

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15Bank secrecy is widely protected by banking tradition, although Germany and Luxembourg gave bank secrecy legal protection in 1989.

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16However, the proposed directive (EC Commission (1989b)) explicitly disallows interest capitalization through discount bonds, requiring that withholding be applied to the notional interest component of the capital gain on such instruments.

17The reforms considered are: for Belgium, reduction of the investment deduction from 13 percent to 5 percent and the corporate income tax rate from 43 percent to 38 percent; for Denmark, reduction of the corporate income tax rate from 50 percent to 35 percent; for Germany, reduction of the corporate income tax rate on retained earnings from 56 percent to 50 percent.
corporate tax wedge, at about 4 percent; Denmark, Ireland, and Luxembourg stand at the other end of the spectrum, with wedges ranging between zero and 1 percent. Analysis of the effect of tax harmonization on the tax wedges (discussed in detail in Chapter IV) indicates that harmonization of the tax base, along the lines suggested by the EC in its draft proposal of 1989, would not appear to reduce greatly the degree of dispersion of effective tax rates across countries and, hence, the potential for a misallocation of capital; and that the added harmonization of statutory tax rates, leaving methods and degrees of integration between personal and corporate tax systems, depreciation rates and investment incentives unchanged, would reduce the degree of dispersion of effective rates of taxation but only to a limited extent. More important, the country ordering would change considerably as a result of rate and base harmonization. In particular, Germany would lose its high-tax position, moving closer to the EC average, and would be replaced by Italy, Spain, and the Netherlands. Ireland and Denmark would also move closer to the average, and the low-tax position would be taken by Luxembourg, France, and the United Kingdom.

Allocative Effects

The creation of the single market in the EC and the removal of the remaining impediments to intra-EC trade (border controls, differential standard requirements) should increase the locational responsiveness of enterprises to differential tax burdens. With the complete integration of financial markets, moreover, differences in effective company rates would become the primary source of allocative distortions. In particular, if financial market integration in the EC will give enterprises from all member countries access to the same financing opportunities, the approximation of effective company tax rates would go a long way toward meeting the conditions for investment neutrality. Given the difficulty of enforcing the residence principle for the taxation of portfolio income in the EC (as discussed below), the equalization of effective company tax rates would be necessary for complete neutrality. The merits of harmonization or approximation of company tax systems should be assessed by the likely gain in the allocative efficiency for EC member countries.

Approximation of effective rates of company taxation is likely to produce some efficiency gain, but its quantification remains highly controversial given the ambiguous empirical evidence on the allocative effects of tax rate differentials across countries and in federal systems. In principle, investment flows across jurisdictions should respond to tax-induced changes in the net rate of return in the same way as they do to changes attributable to other economic factors. Statistical investigation of the effect of taxes on direct foreign investment by multinational enterprises indicates that capital flows are in fact responsive to tax burden differentials, although some studies fail to find statistically significant effects. Similarly, tax rate differentials appear to have the expected effect on dividend remittance or retention of earnings of foreign subsidiaries (Kopits (1972) and Hartman (1981)). Evidence from cross-state differences in effective tax rates in the United States indicates that state taxes do affect the geographical pattern of business location, although, again, the effects are usually small (Papke and Papke (1986) and Papke (1989)). Some observers have argued that competition among tax authorities prevents taxes from diverging sufficiently to have a statistically measurable impact on locational decisions (Benson and Johnson (1986)). In their view, the phenomenon of tax competition suggests indirectly that tax rate differentials do influence locational choices. In all, tax factors appear to have the expected effect on capital flows, although the statistical weakness of the empirical results may reflect the more significant differences in a host of other factors affecting capital movements.

18In the EC context, the locational decisions of U.S. multinational enterprises will also become more sensitive to intra-EC differences in effective tax rates because of the U.S. Tax Reform Act of 1986. Under the U.S. foreign tax credit provisions, U.S. corporations pay the highest of the U.S. and foreign tax liability on branch income and subsidiary dividends from abroad. The 1986 Tax Reform Act lowered the U.S. effective rate of taxation on foreign income and, therefore, may have increased the number of firms in an excess credit position for whom the foreign tax rate is the marginal tax rate (although excess credits can be deferred by not repatriating subsidiary income). See Ault and Bradford (1989).

19With inflation differentials and different tax rates applicable to foreign exchange gains and losses, firms of different member states could alter their cost of financing by assuming foreign exchange debt. Where discriminatory provisions on the financing side favor domestic over foreign enterprises—preferential credit, tax incentives for the purchase of domestic assets—capital-export neutrality would be maintained if the tax benefits are entirely absorbed by domestic (inframarginal) savers, or, in the case in which the tax benefits reduce the cost of capital to the firm, if the same tax conditions for financing prevail regardless of whether the enterprises invest at home or abroad.

Effects of Corporate Income Tax Proposals

Estimates of the effects of tax harmonization on the allocation of capital in the EC have been derived (Chapter IV) on the basis of simplified assumptions about fixed and immobile labor force; fixed but mobile capital stock; a neoclassical, constant-returns-to-scale technology; profit maximization by enterprises; and nonbenefit, nonshifted corporate taxes. The main conclusion drawn from these estimates is that the static efficiency gain from harmonization appears to be relatively small, especially in light of the degree of adjustment required for some EC member countries. For example, tax base harmonization alone would produce capital erosion of around 8 percent in Denmark and Luxembourg, offset by capital accumulation of nearly 4 percent in Greece, France, and Portugal, without any significant increase in output at the EC level. Harmonization of the statutory tax base and rate would produce the largest cumulative loss of capital in Ireland (16 percent) and the largest gain in Germany (9 percent), with barely any static efficiency gain in EC output.

Although harmonization of the rules for computation of taxable corporate income may not reduce the dispersion of effective tax rates, it could, nevertheless, achieve significant efficiency gains from increased transparency and reduced tax compliance costs of multinational firms. The harmonization of the rules for computation of taxable income may also enhance the locational sensitivity of investment to tax rate differentials, thus increasing the pressures towards convergence of statutory tax rates.

Revenue and Distributional Effects

Government revenue from corporate income taxation accounts for about 6 percent of total revenue on average in the EC (Chart 1), with consider­ably larger shares in Luxembourg and the United Kingdom. In any case, because of the necessary link that must be maintained between corporate and personal income taxation, any reduction in effective corporate tax rates may undermine the tax base of those countries relying on relatively high rates of personal income taxation.

The EC directive on parents and subsidiaries will eliminate the double taxation of intercompany dividends through the taxation of direct investment income (EC Commission (1990a, 1990b)). On the one hand, capital-importing countries would be prevented from extracting excess taxes from capital income accruing to nonresident parent companies (in the form of withholding taxes on remitted interest and dividends). On the other hand, capital-exporting countries will be forced to grant full relief against double taxation (in the form of full credit or exemption). The net budgetary effect of this proposal on each country depends on its net foreign asset position (net capital exporter versus net capital importer) and on the effective tax treatment of direct investment income defined in its bilateral treaties.

Related to the issue of tax base harmonization is the question of apportionment rules for the attribution of the tax base of multinational enterprises among competing jurisdictions. As noted, EC member countries at present adopt separate accounting to determine corporate tax liability. In light of the experience of Canada and the United States, however, the EC may find it difficult to maintain separate accounting once the internal EC market is established and firms operating across national borders become increasingly integrated. The complete liberalization of capital movements may also increase the scope for tax avoidance or evasion through the shifting of deductible interest expenses to high-tax jurisdictions, although this problem is likely to be less severe than the appropriate pricing of highly differentiated goods and intangibles. Continued application of separate accounting in the EC will thus require greater coordination among tax authorities—exchange of information, transfer-pricing arbitration procedures.

21 The relative importance of corporate tax revenue does not necessarily reflect the ordering of countries by the tax wedges presented above because of several factors—difference between marginal and average rates of taxation, taxation of the financial sector, discretionary tax practices, and so on. Therefore, the effects of harmonization proposals on tax wedges cannot easily be translated into a budgetary effect. Even the average decline in the tax wedge shown under the two harmonization proposals depends on hypothetical assumptions about the direction of harmonization.

22 Some observers have proposed to harmonize corporate tax systems by assigning the tax to the central level. Centralization could imply that a central EC tax authority would collect the corporate tax and return revenue to member countries on the basis of a tax-sharing formula reflecting the source of the revenue. This would be equivalent to a system of national taxes levied on a uniformly defined base at a uniform rate by each country's tax authority under the source principle. Alternatively, revenue could be shared with member countries under an arrangement whereby revenue would be distributed on the basis of factors other than source. See, for example, Musgrave (1983) and McLure (1983). McLure (1983) also argued that decentralized levels are poorly suited to carry out stabilization and redistribution duties that may be associated with corporate taxes.
common accounting standards, and controls on the assignment of deductible interest expenses across jurisdictions—to uphold the territorial definition of the tax base, as addressed in part by the multilateral convention on transfer-pricing arbitration (EC Commission (1990f)). Alternatively, some observers have pointed to the possibility of moving to unitary taxation of groups of affiliated firms (McLure (1989)). Such a step would protect revenue of EC member countries by reducing the elasticity of their corporate tax collections with respect to the national tax rate, preserving some degree of sovereignty over rates because multinational corporations would lose some opportunities for tax evasion or avoidance. As noted above, however, the legal and administrative complexities of administering unitary taxation among jurisdictions that do not share a common currency or common legal and accounting practices make this solution much less desirable in practice. Conflicts and costly negotiations between taxpayers and authorities about arm’s-length transfer pricing would be replaced by conflicts over the appropriate assessment of the factors of apportionment.

An assessment of the equity implications of corporate income taxation must take into account the question of the short-run and long-run incidence of capital income taxation. In general, the higher international mobility of capital relative to labor implies that differential rates of capital income taxation will be borne to some extent by labor in the form of lower wages. This would argue against the use of corporate income taxation for redistributive purposes, particularly in small open economies. Hence, any reduction in effective corporate tax rates resulting from harmonization or competitive convergence would not necessarily have adverse distributive effects. But the degree to which labor will effectively bear the burden of capital income taxation in the steady state also depend on a host of other factors. Moreover, because the process of capital reallocation takes time, the steady-state results of incidence may be inappropriate over shorter time horizons, and changes in corporate income taxation can have lasting effects on the distribution of income and the tax burden between labor and capital.

**Effects on Non-EC Countries**

Adoption of the proposals for capital income tax harmonization in the EC would have several ramifications for non-EC countries. Harmonization of the base of corporate tax systems would reduce the compliance costs of multinational enterprises in the EC. In the adjustment to the single market, multinational firms based inside or outside the EC would be better placed to take advantage of this reduction in compliance costs than would national enterprises.

The more ambitious proposal for the harmonization of company tax systems could have an important effect on the pattern of capital flows between the EC and non-EC countries if the provisions for the integration of personal and corporate income taxes are not extended to investors from non-EC countries or to dividends paid out of non-EC income. In this case, the total tax burden on intra-EC investment would clearly fall relative to other investments. The distribution of the reduction in the tax burden between the corporate and personal sectors depends on the degree of integration and the size of the EC capital market vis-à-vis that of the rest of the world. Under the assumption of a small open economy, with the return from capital determined in international markets and fully substitutable domestic and foreign capital, integration would have no effect on international market returns and EC investment; its effects would be captured solely by higher after-tax rates of return to EC savers. Saving incentives would rise in the EC, but integration would not alter the pattern of investment. Under the more realistic assumption of the EC as a large open economy, integration within the EC would also reduce the cost of EC investments, thus raising both saving and investment incentives in the EC.

**Effects of Interest Income Tax Proposals**

**Allocative Effects**

Differences in the level of source taxation of financial investment income will affect portfolio composition, capital allocation among countries, interest rates, and tax revenue if the residence principle is not enforced in practice. In some EC member countries, barriers to capital flows have limited the use, for tax evasion purposes, of low source tax rates accorded to nonresidents in other countries. Accordingly, the liberalization of capital flows in the EC, completed by July 1990 except for postponements granted to Greece, Ireland, Portu-

21The proposed EC company statute (EC Commission (1988d)) may resolve some of these problems by giving multinational enterprises in the EC a supranational legal status. For different views, see Bird (1988) and Mutén (1988).

22A major factor is the relative capital intensity of the tradables and nontradables sectors. See Harberger (1982).

23An analysis of long-run and short-run incidence in the context of a growth model can be found in Broadway (1979) and Turnovsky (1982).
gal, and Spain, was expected to affect some countries more than others. Although long-term portfolio investment had, for the most part, already been liberalized, it was the restrictions on short-term capital and monetary flows that prevented some countries (France and Italy, most notably) to be fully exposed to tax-induced capital flows. The placement of financial assets abroad, which is necessary for tax evasion or fraud, was impeded by restrictions on foreign deposits or by the outright requirement that foreign assets be held through domestic financial institutions. The scope for tax evasion was thus greatly enhanced by the removal of these restrictions in 1990 and may be given further stimulus by the process of financial integration, allowing financial institutions from low-tax jurisdictions to provide cross-border financial services anywhere in the EC. However, as mentioned earlier, countries may still require domestic financial institutions to report (automatically or upon request) income and asset holdings, thus improving detection and control over tax evasion through capital outflows.

In principle, capital liberalization should exercise upward pressures on the rates of return of highly taxed assets that were (or are) currently protected by capital controls or by the high cost of access to substitutable foreign financial instruments. Conversely, the rates of return on the assets that serve as a conduit for tax evasion—particularly bearer securities that protect the anonymity of the taxpayer—could be subject to some downward pressures. The extent of such interest rate adjustments depends on the interaction between investors for whom capital liberalization increases the opportunity for tax evasion and those for whom it does not—tax-exempt investors, non-EC residents, and others who comply with the residence principle of taxation. The larger are the size and the interest elasticity of financial asset demand of the former group, the greater will be the necessary interest rate adjustments.

Tax evasion—in the absence of obligatory disclosure—through capital flight clearly displaces intermediation from high-tax countries to countries offering a more favorable tax treatment to nonresidents, inside and outside the EC.26 Because of the generally more favorable withholding tax treatment of interest compared with dividend income, tax evasion through capital flight induces an inefficient allocation of economic risk in the EC, with individual investors holding more debt free of withholding tax—particularly government paper and Eurobonds—than they would in a neutral tax environment.

Tax-induced capital flight and the attendant loss of domestic financial intermediation may also force some countries to allow more channels for domestic tax avoidance (such as tax-exempt retirement accounts and capitalization of interest and dividend income through mutual funds), or even to tolerate the emergence of income capitalization schemes through instruments whose tax treatment remains ill-defined (swaps, repurchase agreements, and the like). Under competitive pressures from foreign financial markets and intermediaries, these measures and schemes help high-tax open economies retain some of the domestic financial intermediation that would otherwise be lost to low-tax jurisdictions. At the same time, however, such schemes further contribute to erosion of the tax base. Therefore, the position of some high-tax countries with respect to such schemes has been rather ambiguous.

Investment unit trusts or mutual funds that capitalize the financial income they receive in the value of their shares constitute an important channel for tax avoidance. First introduced in Luxembourg in the early 1980s, and subsequently marketed in neighboring countries by local commercial banks that feared a loss of market shares, these trusts have operated freely anywhere in the EC since October 1, 1989.27 In response to the threat of a displacement of financial intermediation to Luxembourg, France and Belgium recently decided to permit the establishment of such institutions there, rather than simply allow their marketing.

The aim of the proposed minimum withholding tax, or of measures to strengthen administrative cooperation, including exchange of information, is to reduce allocative distortions ensuing from capital liberalization by removing or reducing the implicit tax advantage accorded by most EC member countries to the residents of other member countries. Notably, EC member countries, with the exception of Italy, Portugal, and Spain, exempt nonresidents from withholding tax on some form of interest income. However, because of the limited coverage that any proposal at the EC level would have in a global financial market—with Eurobonds and third-country assets remaining outside the scope of the withholding tax—allocative distortions and budgetary leakage are inevitable.

Because in principle the proposed withholding tax or alternative measures in this area do not change the tax liability of savers, the effect on asset

\[26\] Much of this capital outflow may flow back into the high-tax country as tax-exempt nonresident investment.

\[27\] Countries retain control over the laws regulating their advertisement.
demand and interest rates depends on the extent of (potential or actual) tax evasion. According to some estimates, in Germany taxation is evaded on three fourths of financial investment income (Conseil National du Crédit (1988)), whereas in Belgium the proportion was close to 90 percent in 1978, before the withholding tax became a final tax (Delporte (1987)). In light of these estimates, the introduction of a withholding tax or of reporting requirements is likely to have significant allocative and interest rate implications for those countries that do not at present impose either. The gross-up effect of such measures on the interest rates of taxable assets would be limited, however, by the presence of investors not affected by it—non-EC residents and tax-exempt institutional investors. The magnitude of the gross-up effect is inversely related to the share of assets held by such investors and to the interest elasticity of their asset demand. Where asset prices (interest rates) do not adjust sufficiently to the induced changes in asset demand, net capital outflows will also come about. The cases of Belgium, Germany, and the Netherlands provide useful examples of the potential effects of withholding taxes (for the first two) or of reporting requirements (in the case of the Netherlands).

Germany levied a 10 percent withholding tax on interest income during the first half of 1989. In reaction to the announcement of the withholding tax on October 1987, long-term interest rates on public bonds rose by as much as 50 basis points relative to comparable Euro-deutsche-mark issues, and long-term capital outflows nearly trebled from their 1987 level. The precise contribution of the withholding tax to capital outflows cannot be easily determined, but the pressures engendered by it in the presence of widespread tax evasion, investor anonymity, and easy access to neighboring tax havens were obviously considerable. The effect of the withholding tax was further enhanced by its wide coverage over asset holders, affecting both residents and nonresidents. In the Netherlands, the introduction of a reporting system on interest payments to domestic residents by Dutch banks in January 1988 also induced a drop in domestic savings deposits and large short-term capital flight—short-term capital exports increased by 1.4 percent of GDP in the period following the announcement of the reporting system in July 1987 (Italianer (1989)). In March 1990, Belgium reduced its final withholding tax rate on interest income for residents from 25 percent to 10 percent. The measure had the intended effect of reducing domestic interest rates and stemming the tax-induced flight of portfolio capital, which was gradually eroding the tax base. The interest differential vis-à-vis comparable foreign bonds narrowed considerably, although this also reflected the simultaneous firming of the exchange rate policy. In fact, any gross-up effect of the withholding tax on domestic interest rates had already been greatly diminished with the expansion of the holdings of investors not affected by the withholding tax, principally domestic financial institutions and nonresidents. Even more pronounced, however, was the reversal in the outflow at portfolio capital, which moved from a deficit exceeding 3 percent of GNP in 1989 to a small surplus in 1990, mostly because of the liquidation of foreign assets by domestic residents.

Violations of the residence principle at the personal level, as manifested by tax-induced capital flight, do not interfere with capital-export neutrality as long as such funds can finance domestic and foreign investments on the same terms. Capital exported to the Euromarkets obviously meets this criterion. The virtual absence of private bond issues in Belgium is an indication that the Belgian withholding tax is not borne by large domestic enterprises. Similarly, the intermediation of domestic savings through foreign markets does not have significant balance of payments effects. Capital outflows are easily repatriated in another form, as evidenced by the apparent direct roundtripping of short-term capital through the interbank market in Belgium and the Netherlands. Complications may arise if foreign intermediation, for institutional or other reasons, also involves currency substitution.

In all, opposition to the Commission's proposal for a minimum withholding tax stems in large part from concerns about the potential adverse effects on interest rates and about capital flight, given the continued presence of channels of tax evasion or avoidance through third countries, offshore markets, and (possibly) interest capitalization through investment unit trusts. Attempts to limit these effects by restricting the coverage of the directive (EC Commission (1989a)) would simply exacerbate tax-induced distortions on assets that bear the tax. An additional argument against the Commission's proposal is the probable compliance cost of a measure that might be largely ineffective—unless buttressed by increased cooperation and exchange of information among tax authorities.

Indeed, the case for a common withholding tax would be strengthened considerably if its coverage were to be extended to a wider range of financial assets and to a broader group of countries—say, OECD member countries. Distortions would continue to exist, however, if the withholding tax at source were not considered to be a final tax by the country of residence, or if residents continued to be subject to a higher rate of withholding than nonresidents. In this case, tax-induced capital flight would continue to prevail.
The debate over tax evasion in the EC has highlighted the fact that measures against tax evasion can be most effectively pursued at a global level—through the use of a universal withholding tax, some limitations on bank secrecy, improved cooperation, or some combination of these measures. A number of bilateral and multilateral conventions have addressed the issue of administrative assistance among tax authorities. Most notable at the multilateral level, besides the EC directive and proposed suggested amendment mentioned above, is a Council of Europe-OECD draft convention on mutual assistance for the exchange of information and recovery of tax claims (OECD (1981) and Council of Europe and OECD (1989)). The convention has been signed in part by the United States but has found considerable opposition in several other countries. To the extent that measures pursued in the Community provide reinforcement for agreement in a wider context such as the OECD, they could have important implications for limiting capital flight worldwide.

Budgetary Effects

The net budgetary effect of liberalization under the present tax systems depends both on the direct tax revenue effect and on the interest rate effect on public debt service. In general, liberalization is bound to cause a net budgetary loss for countries where the potential for tax evasion has not yet been fully exploited because of remaining barriers to capital movements. In these countries, the budgetary loss, in the form of a reduced taxable base and higher domestic interest rates, will be proportional to the size of potential flight capital and to the interest elasticity of asset demand of tax-evading investors facing more favorable tax treatment abroad. Revenue from withholding taxes on interest and dividends accounts for only a part of the total tax revenue from interest and dividend income—except where the withholding tax is final (Table 22). Hence, the tax loss in countries exposed to increased tax evasion could be large and would not be directly offset by tax gains elsewhere, since capital flight would seek markets with complete tax exemption.

The budgetary loss of countries facing existing or potential new competition from low-tax jurisdictions would possibly be contained with the adoption of a common withholding tax on interest income, although it is difficult to estimate the size of the budgetary effect of liberalization and of a common withholding tax relative to the present system. The same considerations would apply to the adoption of EC-wide reporting requirements. The following discussion of the budgetary effect of the withholding tax subsumes, therefore, the analysis of the effects of alternative tax-enforcement measures.

The extent to which a withholding tax would contain the budgetary loss of high-tax countries depends on the availability of other channels of tax evasion or avoidance (through Eurobonds, small tax-exempt bank deposits, tax-haven investment, capitalization schemes); on the relative elasticities of investors for whom the withholding tax would constitute a net tax burden and of those for whom it would not; and on the relative size of each of these types of investor. Because of the proximity of financial centers outside the EC (Switzerland, the Channel Islands) and the exclusion of Eurobonds from the proposed directive, the proposed minimum withholding tax would do little to stem the budgetary loss resulting from tax evasion on portfolio investments. The proposed withholding tax is likely to have more of an effect on tax evasion on short-term deposits, since such evasion would have to rely primarily on the easy access to such deposits in other EC member countries. Countries that have the administrative setup and legal tools for the verification of capital transfers abroad—most notably Denmark, France, and Spain—may be more successful in detecting and deterring tax-evading capital outflows.

All EC member countries, with the exception of Germany and Luxembourg, have either a withholding tax or interest reporting requirements, or both, and thus also have incentives for tax evasion through capital outflows and for tax avoidance through domestic asset substitution, although the potential for tax evasion through foreign investment is still contained in Greece by capital controls. The extent to which such tax evasion has occurred (or could potentially occur) also depends on other country-specific factors such as tax morality and proximity to tax havens.

Some of the countries whose tax regimes already incorporate a withholding tax and where tax evasion is widespread or potentially high stand to gain from a common withholding tax or reporting requirements, especially upon full removal of capital controls. The effect on other countries of this group is likely to be ambiguous. Denmark does not, at present, impose a withholding tax, but its reporting system is relatively extensive. A common withholding tax would probably not constitute an additional tax burden and may prevent tax-induced capital flight.
outflows in a more integrated European capital market. The recent introduction of a final withholding tax in Greece limits the potential revenue losses of complete capital liberalization and, as in the case of Denmark, a common withholding tax would not impose an additional tax burden. Ireland still maintains some restrictions on short-term capital and monetary flows and imposes a withholding tax with a more limited coverage than that envisaged under the Commission's proposal. A common withholding tax with broader coverage might stem potential tax evasion when capital restrictions are lifted but also might worsen the attractiveness of Ireland relative to non-EC tax havens if the withholding tax is extended to previously exempt assets such as government bonds. The same advantages and risks apply in Spain, where capital controls were removed in 1990.

The Netherlands introduced interest reporting requirements for its financial institutions as of 1988. The common withholding tax may constitute a new form of taxation, particularly of interest from bearer securities. If so, it would worsen the attractiveness of some domestic assets vis-à-vis assets held in non-EC tax havens. However, it would also reduce the relative attractiveness of bank deposits in neighboring countries. In the United Kingdom, despite a withholding tax on interest paid to residents, the elimination of exchange restrictions in 1979 did not, allegedly, motivate tax-induced capital flows to the extent experienced by Belgium or Germany in 1988. For the United Kingdom, the withholding tax thus appears to have no direct adverse effects.

The net budgetary impact of the proposed withholding tax system on countries that have liberalized all capital flows and do not impose withholding taxes or reporting requirements—Germany and Luxembourg—is ambiguous. The withholding tax would enlarge the taxable base to include tax-evading investment income, but this effect would be offset by outflows of taxable capital and upward pressure on interest rates. If the interest elasticity of tax-evading investors is sufficiently large relative to other investors and their share of assets is sufficiently small, the introduction of a withholding tax could even lead to an adverse budgetary outcome (as shown in the appendix below).

**Distributional Effects**

As with corporate income taxation, the equity consequences of capital income taxation at the personal level must account for the incidence of the tax. In a closed economy, the taxation of portfolio income reduces capital formation in the same way as corporate income taxation, with the same implications for incidence. In a small open economy, a tax on the portfolio investment income of residents will not affect the cost of capital or the domestic capital stock if the residence principle is enforced or, lacking that, if domestic and foreign capital can be financed in the world market on the same terms (for instance, through the Eurobond market). Under these conditions, the tax on portfolio income is borne entirely by domestic asset holders. If the residence principle is not enforced, tax-induced portfolio outflows will have a direct redistributive effect, reducing the tax burden of asset holders and, should compensating revenue measures be necessary, raising the tax burden on labor—whether through commodity or labor income taxation.

In a large open economy or in an economy with a closed capital market, the taxation of portfolio investment income is borne in part by labor because such taxation affects the supply of financial capital and, hence, the financing cost of enterprises. The same holds true in a small open economy that imposes a tax on the portfolio investment income of residents and nonresidents alike, if the latter cannot credit the tax against their domestic tax liability.²⁹

Hence, the reduction in the average effective tax burden on asset holders that is likely to result in the absence of increased cooperation or harmonization of tax policies in the EC will largely benefit asset holders. Because of the relatively large size of the EC and the imperfect substitution of EC and non-EC capital, lower taxation of portfolio investment income could increase the supply of financial capital to EC enterprises, with positive effects on capital growth, labor productivity, and real wages. This would partially offset the adverse income-distribution effect of lower taxation of portfolio investment income. As mentioned earlier, because of the time lags inherent in the process of capital formation, these steady-state effects are of limited relevance in a medium-term policy context.

The potential reallocation of financial intermediation induced by a common withholding tax on interest income in the EC would clearly benefit non-EC countries, especially neighboring ones. Although this reallocation would displace some of the financial intermediation activity in the EC, it would have an ambiguous effect on gross saving and on the external balance of the EC vis-à-vis the rest of the world.

²⁹See Brean (1984) for an analysis of the effects of the Canadian withholding tax on nonresident income.
Appendix: Net Budgetary Effects of a Withholding Tax on Interest from Government Bonds

Consider a simple model in which only the interest from government bonds is subject to the tax and in which investors can be classified by three broad categories: (type 1) tax-exempt institutional investors; (type 2) tax-evading individual investors who are taxed only at source and for whom the withholding tax (at a rate of \( t_2 \)) constitutes a final tax; and (type 3) individual and other tax-paying investors who report all income, are taxed on the residence principle (at a rate of \( t_3 \)), and for whom the withholding tax on domestic assets does not constitute an additional tax burden.

Define the demand for government bonds by type \( i \) investors as \( B_i \), and let \( B \) be the outstanding stock of bonds. From the asset market equilibrium condition \( B = B_1 + B_2 + B_3 \), one can derive

\[
d r_i/dt_2 = B_2 r_l / [B_1 + B_2 (1-t_2) + B_3 (1-t_3)] .
\]  

where \( r \) is the domestic interest rate and \( B_i \) is the derivative of investor \( i \)'s demand for bonds with respect to the domestic interest rate.

Let \( S \) be the interest expenditure of the government, net of tax revenues from interest earnings, or

\[
S = r (B - t_2 B_3 - t_2 B_2).
\]  

Solving for \( dS/dt_2 \), the following condition obtains:

\[
dS/dt_2 > 0 \text{ if } \left[ b_1 (1-e_1/e_2) + b_3 (1-e_3/e_2 - t_3) > 0, \right.\ ]
\]  

where \( b_i \) is the share of bonds held by type \( i \) investors and \( e_i \) is the interest elasticity of bond demand of type \( i \) investors—that is,

\[
e_i = B_i r (1-t_i)/B_i .
\]

Under the assumption that type 2 and type 3 investors have the same elasticity of demand, condition (3) reduces to

\[
dS/dt_2 > 0 \text{ if } \left[ b_1 (1-e_1/e_2) - b_3 t_3 > 0. \right.\ ]
\]

Condition (4) states that the net interest cost of the introduction of a withholding tax will be negative if the induced interest rate effect outweighs the tax revenue effect, which can occur if there is a large share of type 1 (tax-exempt) investors, and such investors have a sufficiently low interest elasticity of demand relative to other investors, and if there is a low share of type 3 investors (taxed on their global income) and the tax rate applicable to them is sufficiently low.
Economic theory suggests that high tax rates on income from capital are likely to discourage capital formation and that differences in tax burdens across countries can be expected to induce an inefficient allocation of capital. As discussed in Chapter III, this issue is particularly relevant to the EC because the drive to remove all barriers to the free flow of goods, labor, and capital under the Single European Act will fully expose investment decisions to differences in tax burdens across member countries.

Attempts to quantify the importance of these distortions have been complicated by the intricacy of modern tax systems, wherein the effective marginal tax rate on income from capital depends in a complex way on the statutory tax rates, depreciation allowances, and other rules underlying the computation of the tax base, as well as on macroeconomic variables such as the rate of interest and the expected rate of inflation. Earlier studies used average tax rates computed from actual tax collections as approximations for the theoretically more relevant marginal tax rates. More recently, following a study by King and Fullerton (1984), researchers have constructed standardized measures of the marginal tax burden on capital directly from the tax code. In this approach, effective tax rates are based, more or less explicitly, on the formula for the user cost of capital derived by Jorgenson (1967) from the neoclassical theory of the firm. The user cost of capital provides a comprehensive measure of the real marginal cost of capital to the firm, inclusive of taxes and economic depreciation. By subtracting depreciation and the rate of return on the underlying financial asset from the user cost, one obtains a measure of the effective tax on the marginal unit of capital in the form of a wedge—driven by taxes—between the net marginal product of capital and the return to the owners of the firm.

The advantage of this approach is that it allows comparisons of tax wedges across countries, sectors, or hypothetical changes in the tax code.

In the first section of this chapter, the conditions under which differences in corporate taxation (as opposed to personal taxation) of income from capital provide a sufficient description of potential tax distortions in the allocation of real assets. In the second section, we construct measures of effective tax burdens on corporate investment income for the 12 EC member countries under the tax rules in effect in 1990 (including preannounced changes) and five alternative harmonization proposals. The dispersion of effective tax rates across countries serves to illustrate the potential allocative distortions of the tax systems. The analysis is based on the assumption that international capital movements take the form of portfolio flows; under certain conditions, however, the same results would apply to the case of direct investment.

In the third section of the chapter, the estimated effective tax rates are used in the context of a simplified general equilibrium model to assess the long-run allocative effects of the different tax harmonization scenarios. Given the simplistic assumptions underlying the model, the exercise serves merely to indicate the direction and broad order of magnitude of the effects of the tax changes under scrutiny. Concluding remarks are contained in the last section of the chapter. Differences in the taxation of income from capital also distort saving behavior and affect the location of financial intermediation, but these issues remain outside the scope of this analysis.

Taxation of Capital in an Open Economy

Corporate and Personal Tax Wedges

Taxes on the income from capital drive a wedge between the gross rate of return on real assets (p) and the net rate of return received by households...
on their financial claims on those assets \((s)\). The distortionary effects of taxation can, in turn, be related to this wedge: its size affects the degree of capital accumulation, whereas differences across countries distort the international allocation of capital and of savings as well as the location of financial intermediation.

Because income from capital is taxed at both the corporate and personal levels—with some degree of integration provided in certain countries—the total wedge can be broken down into two components: the corporate tax wedge, measured as the difference between the before-tax rate of return on the real asset \((p)\) and the market rate of return on the underlying financial asset \((r)\); and the personal tax wedge, measured as the difference between the market rate \((r)\) and the after-tax rate of return on the financial asset \((s)\) from the point of view of the final investor.

The decomposition of the overall tax wedge on investment income into a corporate and a personal component is analytically convenient in addressing allocative issues among small open economies when international capital movements take the form of portfolio flows—that is, transactions in foreign financial assets normally not involving controlling ownership. The integration of financial markets implies that \(r\), although affected by the average level of taxation, is determined in world markets. The personal and corporate tax wedges of each country will then have separate and specific effects only on the after-tax rate of return on domestic financial assets \((s)\) and on the gross rate of return on domestic real assets \((p)\), respectively. A tax on capital income at the personal level reduces \(s\) and only affects saving behavior. Differences in personal tax wedges across countries thus induce an inefficient allocation of saving and distort the pattern of ownership of capital. A tax on capital income at the corporate level raises, instead, the level of \(p\) necessary to cover \(r\), the cost of financing, and thereby reduces the size of the desired capital stock. Differential rates of taxation of capital income at the company level thus prevent equalization of the marginal rate of return from capital and induce an inefficient allocation of capital.\(^5\)

\(^5\) Alternatively, the tax can be expressed in terms of a rate by dividing the absolute value of the wedge \((p - s)\) by any of the two rates of return \((p\) or \(s)\).

The integration of personal and corporate tax systems, intended to alleviate the problem of double taxation, reduces the size of the overall wedge \((p - s)\) but also complicates the breakdown into its two components. The reduction in the size of the overall wedge can either translate into a rise in \(s\) or a reduction in \(p\), with very different implications for saving and investment. In a small open economy, the effect depends on the mode of application of integration. If the method of integration extends to foreign shareholders, it will effectively lower the required rate of return on the underlying financial asset, and the benefit will be entirely captured by domestic corporations in the form of a lower cost of capital \((p)\). If the method of integration does not reach the foreign shareholder, then integration of the two tax systems has no effect on the rate of return on the financial asset, and the benefit is fully captured by resident households in the form of a higher after-tax return \((s)\) (Broadway and Bruce (1988)).

**Implications for the EC**

It was argued above that, with integrated financial markets and small open economies, the source of tax distortions to the allocation of capital can be reduced to differences in corporate tax wedges.\(^6\) The specific conditions under which this simplification holds for the EC are examined herein. The assumption of integrated financial markets appears to be broadly consistent with the abolition of capital controls and is, in any case, consistent with the goal of the Single European Act.

The small-economy assumption is clearly more questionable, since it cannot be supposed that all EC member countries are price takers in capital markets. In larger countries, domestic demand and supply conditions could affect the rate of return on financial assets, and the personal tax system could, consequently, distort the relative cost of funding investment in domestic and foreign markets. Under these circumstances, the potential for allocative distortions could not be traced to differences in corporate tax wedges alone.

The integration of credit markets in the EC provides an alternative condition that ensures the irrelevance of personal income taxation to the allocation of real capital. If domestic firms have access to foreign and offshore financial markets on

\(^6\) In addition, domestic and foreign capital must be fully substitutable from the point of view of the saver. Failing this condition, personal taxation will also affect the allocation of the capital stock. Otherwise, differences in the taxation of income from capital at the personal level only affect saving and the pattern of ownership of the capital stock.
the same terms as foreign enterprises, they can effectively avoid absorbing the gross-up effect of local personal and withholding taxes on financing costs. The lowest-cost financial market would then become the marginal source of financing for all enterprises—the Eurobond market being a case in point—and taxes at the personal level would affect inframarginal savers and investors as well as the location of intermediation.

Access to foreign and offshore markets cannot, however, neutralize the allocative distortions of taxes on financial investment income when the tax treatment of domestic assets is more favorable than that of offshore or foreign assets. Such is the situation of dividend taxation when integration of personal and corporate tax systems is limited to resident shareholders, locally earned profits, or both. In this case, through integration, the larger economies can effectively reduce the cost of equity financing of domestic investments. The problem cannot be easily resolved analytically, and the small-economy assumption is retained in the calculations below; that is, any form of integration that does not reach the international investor is assumed to be passed on to domestic households in the form of higher after-tax returns, rather than to firms in the form of lower financing costs.

Another condition under which taxes on financial investment income would not affect the allocation of capital even among large countries is if the residence principle of taxation were enforced. Under this principle, taxes do not discriminate among assets but only on the basis of the residence of the investor. This guarantees the convergence of the rates of return on all financial assets and, hence, of the cost of capital to enterprises residing in different countries.

Although investors in all EC countries are, in principle, taxed on this basis, the residence principle fails to hold for several reasons. First, as discussed in Chapter III, uneven enforcement implies that financial investment income is often taxed at source only, and differences in source taxation can therefore be reflected in asset prices. A second reason for the failure of the residence principle is that foreign assets may be subject to a heavier tax burden than domestic assets. This possibility arises when foreign withholding taxes are not fully creditable in the country of residence, a problem that applies mostly to tax-exempt institutions. A third reason is that, with differences in inflation rates and compensatory exchange rate adjustments, the effective taxation of foreign and domestic assets will diverge, even under the residence principle, if exchange rate gains and losses are taxed at a different rate than that for ordinary interest income, or are simply taxed on a realized rather than accrual basis. Finally, the integration of personal and corporate income taxes, when available at the national level, is usually not extended to nonresidents or to domestic recipients of foreign-source dividends, thus creating another form of discrimination among assets, as discussed above.

To account for these complications, the allocative issue could be examined by constructing a matrix of tax wedges (or effective tax rates), inclusive of both personal and corporate taxes, associated with investment flows to and from each of the 12 EC member countries. This approach was adopted by Bovenberg and others (1990), who construct bilateral tax wedges for portfolio investment flows between the United States and Japan. The inclusion of personal income taxation in the tax wedges may, however, be misleading for our purposes. First, widespread tax evasion at the personal level, the proliferation of tax avoidance schemes (such as pension accounts and nondistributing mutual funds), and the uneven tax treatment of individuals and institutional investors make it difficult to construct comparable effective rates of personal taxation. Second, as discussed above, the availability of offshore financing limits the adverse effect of personal taxes and withholding taxes on the cost of capital at the margin.

Our analysis supposes that foreign investment takes the form of portfolio flows, but under specific circumstances the results would extend to investment channeled through financial intermediaries or in the form of corporate direct investment. In the case of foreign investment undertaken by financial institutions, the same allocative implications would obtain if these institutions were competitive and if intermediated capital income were subject to the same tax treatment as personal portfolio income. The analysis of foreign direct investment can be subsumed by the present analysis if foreign direct investment income is taxed only in the source country. This effectively requires that the country

---

7 This is one of the reasons why offshore or foreign equity markets rarely provide a cheaper source of funds than domestic equity markets. Under a proposed EC directive for the harmonization of company taxation, a common withholding tax on dividends and a common system of integration extended to all EC residents would have eliminated differences in the cost of equity financing across markets in the EC. The proposed directive was, however, formally withdrawn in 1990. See EC Commission (1975a).

8 Under the residence principle, a country exercises a tax claim on all income earned by residents and taxes it at a uniform rate.

9 This form of tax transparency fails to hold when financial institutions cannot credit withholding taxes paid abroad against their domestic tax liability—for instance, if the institutions are tax-exempt.
of residence not exercise any claim on that income. Although practices vary widely, there are two cases in which this condition is met: first, if foreign source income is exempt outright in the country of residence and, second, if taxes in the country of residence can be postponed indefinitely by deferring the repatriation of foreign profits. The first condition is applied less frequently than the second, which normally can be used for subsidiary income. In general, however, the complexity of tax practices with regard to foreign direct investment income would require a separate analysis. Again, a matrix of effective tax rates would have to be constructed for flows to and from each of the EC member countries.\(^\text{10}\)

**Corporate Tax Wedges**

**Methodology**

The methodology used in this exercise is based on the concept of the required rate of return or user cost of capital.\(^\text{11}\) A profit-maximizing firm requires a gross return on the last unit invested that allows the firm to pay market returns on internal and borrowed funds after covering depreciation and corporate taxes. (A detailed derivation is presented in the appendix to this chapter.) By subtracting depreciation from the user cost (divided by the price of capital goods), a measure of the before-tax rate of return on capital is obtained:

\[
p = \frac{1}{1 - u} \times (1 - zu - k) \times (p + \delta - \pi) - \delta,
\]

where \(u\) denotes the statutory corporate income tax rate, \(z\) is the present value of the depreciation allowance, \(k\) is the present value of investment grants, \(p\) is the firm's marginal cost of capital, \(\delta\) is the rate of economic depreciation, and \(\pi\) is the expected rate of inflation. The discount factor \((p)\) depends in turn on the market rate of return on the underlying financial instrument.

If we denote by \(r\) the market rate of return on the financial instruments sold by the firm to raise capital, the corporate wedge can be defined as

\[
w = p - r.
\]

This expression can be converted into an effective marginal corporate income tax rate, expressed in terms of the before-tax rate of return:

\[
t = \frac{(p - r)}{p}.
\]

In practice, there are as many “market” rates as there are sources of financing available to the firm. With debt and equity as the two broad forms of financing, a single composite market rate reflecting the financing mix of the enterprise can be constructed, and a single wedge derived from it. The alternative, followed here, is to compute separate tax wedges for debt- and equity-financed projects and then calculate a weighted average.\(^\text{12}\)

In the case of debt (subscript \(d\)), the appropriate measure of the real market return is clearly the nominal interest rate less the expected rate of inflation:

\[
r_d = i - \pi.
\]

Because interest payments are deductible as expenses for tax purposes, the (nominal) marginal cost of funds is given by

\[
p_d = (1 - u)i,
\]

and the company wedge on a debt-financed investment project is given by

\[
w_d = p_d - r_d = \left[1/(1 - u)\right] \times \left(1 - zu - k\right) \times (p_d + \delta - \pi) - \delta - (i - \pi).
\]

For equity (subscript \(e\)), the computation is complicated because the required market return \((r_e)\) cannot be directly observed. A convenient way to derive \(r_e\) is to impose an arbitrage condition requiring that the net, risk-adjusted returns on debt and equity be equal from the perspective of a representative investor who is willing to hold both instruments.\(^\text{13}\) This condition can be expressed as

\[
r_e = r_d + h,
\]

where \(h\) is an exogenous risk premium. Consistent with the assumption of an internationally integrated capital market discussed in the previous part of this section, the arbitrage condition (7) must hold for the same representative investor for the whole of the EC. To make matters tractable, the representative investor is chosen to be an international (institutional) investor with a nonresident status in each EC member country. Because nonresident investors are usually exempt from withholding taxes on interest income, the net return

\(^{10}\)For some estimates of tax wedges on foreign direct investment income see Crooks and others (1989).

\(^{11}\)For a derivation from the objective function of the firm, see Hall and Jorgenson (1969). An international comparison of the required rate of return based on this methodology is given in Kopits (1982).

\(^{12}\)The financing mix depends on the relative tax treatment of debt and equity financing. The analysis abstracts from this form of endogeneity, and common fixed weights are attributed to debt and equity financing for all 12 EC countries on the basis of source of funds data for private nonfinancial corporations in OECD (various years).

\(^{13}\)Some studies have approximated the marginal return to equity by the ex post return on the stock market; see Auerbach (1983). Another possibility is to impose the arbitrage condition at the level of the firm, thus equating the marginal cost of debt and equity financing.
IV CORPORATE TAX HARMONIZATION AND CAPITAL ALLOCATION

from a debt instrument is then simply the real interest rate, \( r_d \), as in equation (4).\(^{14}\)

We can now work back from \( r_c \) to determine the marginal cost of equity finance to the firm \( (p_c) \). We assume that a fixed fraction \( (v) \) of the firm's real yield on equity \( (p_c - \pi) \) is distributed as dividends.\(^{15}\)

The real return paid out by the firm \( (p_c - \pi) \) and that received by the representative investor \( (r_c) \) can differ for several reasons. First, dividends paid to nonresidents are usually subject to a withholding tax \( (wt) \) (Table 21 in Chapter III).\(^{16}\) As a result, part of the firm's payout does not reach the investor, and for a given required return \( r_c \) and payout ratio \( v \), this tends to raise the firm's cost of funding. Second, because of partial or full integration of the personal and corporate tax systems, dividends may receive a preferential tax treatment over retained earnings in the form of a dividend tax credit (or deduction) or a split rate system (Table 19 in Chapter III).\(^{17}\) In that case, each dollar distributed by the firm may be worth more than one dollar to the investor. This effect would tend to reduce the cost of equity financing. The degree of integration is measured by the integration variable \( \theta \), defined as the opportunity cost of retained earnings in terms of gross dividends forgone. Finally, the undistributed portion of earnings is presumably capitalized in the price of the stock and can be taxed, in principle, at the investor's level through a tax on capital gains. In practice, such taxes are virtually nil, either by statutory treatment or because they are levied on a realized rather than accrual basis. Considering all these factors, the firm's marginal cost \( (p_c) \) of providing the required return to the marginal shareholder can be expressed as

\[
p_c = (i + h - \pi) / [v\theta(1-wt) + 1 - v] + \pi. \tag{8}
\]

The before-tax rate of return on equity-financed capital \( (p_c) \) can then be computed by substituting equation (8) into equation (1), and the tax wedge on equity is then derived as

\[
w_e = p_c - r_c. \tag{9}
\]

where \( r_c \) is defined as \( (i + h - p_c) \).

The derived tax wedges provide a comprehensive measure of the effective tax burden on capital income but cannot, obviously, capture differences in the degree of enforcement of tax collection and in the scope for tax avoidance through financial transactions across member countries. Moreover, the tax wedges cannot account for differences in the tax treatment of losses.

Measurement

Tax wedges can be measured to illustrate differences in the effective taxation of income from capital under current systems and alternative scenarios. The degree of dispersion of tax wedges reflects the potential for distortions in the allocation of capital across countries, by type of asset and by form of financing. Corporate tax wedges for domestic investment have been calculated under six scenarios for all EC member countries. Under each scenario, tax wedges were computed separately for investment in buildings and machinery, financed with either debt or equity. The real interest rate is assumed to be constant, at 5 percent, in combination with two alternative inflation rate assumptions: an average inflation rate of 2 percent and different inflation rates for five country groups (2 percent for Belgium, France, Germany, Ireland, Luxembourg, and the Netherlands; 5 percent for Denmark, Italy, Spain, and the United Kingdom; and 10 percent for Greece and Portugal).\(^{19}\)

The six tax scenarios are summarized in Table 23. Scenario 1 is based on tax systems effective in 1990, qualified by proposed tax reforms (see Table 19).\(^{20}\) Scenario 2 assumes adoption of the

\(^{14}\)Even where nonresidents are not exempt from withholding tax on interest from corporate bonds, it is assumed that such taxes do not alter the cost of debt because of the possibility of borrowing from banks or through the Euromarket.

\(^{15}\)Based on average data for the EC stock markets, the parameter \( v \) is set at 50 percent. Following the traditional view of dividend taxation, taxes and credits on dividends and other imputation measures are assumed to affect the cost of capital in proportion to the share of earnings distributed as dividends, rather than in proportion to the share of new equity issues in equity financing (“new view”). See Peterba (1987) for a discussion of the two views.

\(^{16}\)For the institutional investors the tax is also a final tax. The rate varies and is usually lower under tax treaty. The values chosen for each country correspond to the most favorable rate generally applicable to nonresidents.

\(^{17}\)Only the forms of integration that reach the representative investor are considered.

\(^{18}\)A full pass-through of inflation rates in nominal interest rates is assumed. Our calculations correspond to the fixed case discussed in King and Fullerton (1984).

\(^{19}\)In principle, the existence of the EMS, coupled with agreement on phase one of the Delors Committee's proposal for monetary integration (see EC Council of Ministers (1989)), including the removal of capital controls, should result in the convergence of inflation rates for the EC members. With the deutsche mark continuing to play the role of nominal anchor for the system, such convergence would presumably be toward the lower end of the spectrum. A common inflation rate of 2 percent is therefore our benchmark assumption. It is plausible, however, that such convergence may take time, with considerable inflation differentials prevailing during a transition period, making the second inflation scenario a reasonable alternative.

\(^{20}\)For Belgium, we use the corporate income tax rate announced for 1992, or 39 percent. For Denmark, the newly introduced tax rate of 40 percent is used.
following rules for the determination of taxable profits of enterprises by EC member countries:

1. Full first-year convention for depreciation, allowing enterprises to claim the full amount of depreciation the first tax year, irrespective of when in the year the investment actually takes place; reduction of the depreciable base by the amount of the subsidy received through investment tax credits and deductions; elimination of accelerated depreciation; elimination of depreciation of capital not yet in use (advance depreciation); elimination of indexation of the depreciable base; and straight-line or declining-balance methods of depreciation (assumed at 2.5 times the existing straight-line rate) allowed for both buildings and machinery, with switchover from declining balance to straight-line depreciation during the life of the asset (Table 24).

2. Scenario 3 includes equalization of corporate income tax rates at the weighted EC average rate of 43 percent and elimination of local income taxes, in addition to the assumptions under scenario 2 (Table 25).

3. Scenario 4 includes the elimination of taxes levied on the value of assets or net worth in France, Luxembourg, and Germany, in addition to assumptions under scenario 3. It also assumes the adoption of a common imputation system, consisting of credit on dividends equivalent to 50 percent of the corporate income tax extended to both residents and nonresidents, and a common 15 percent withholding tax on dividends paid to nonresidents (Table 25); only differences in depreciation rates and investment grants remain. Scenario 5 assumes the equalization of tax rates and imputation systems and the elimination of capital-based taxes and investment grants but maintains current differences in depreciation rates and in the definition of the depreciable base. Scenario 6 assumes complete equalization of company income tax systems; only inflation rates differ among the three groups of countries.

For each scenario, 48 different tax wedges (12 countries, 2 types of assets, 2 sources of finance) were computed. Effective tax rates, calculated from the average wedges over both sources of finance and asset types, provide a normalized measure of the overall tax burden on capital income in each country (Tables 26 and 27).

Standard deviations capture the degree of dispersion in tax burdens across countries. Differences in the tax wedges across sources of financing (Table 28) and asset types (Table 29) reflect the biases of the tax systems.

### Results

Under the tax practices that are likely to prevail in the absence of any concerted harmonization, on average, Germany appears to be the country with the highest corporate tax burden (Tables 26 and 27). In the low-tax range, starting from the lowest wedge, are Ireland and Luxembourg, followed by Denmark, Belgium, and the United Kingdom (the ordering of the last three depends on the underlying assumption about inflation). The other countries’ wedges all lie well within one standard deviation of the mean. The ordering of countries according to the average wedge is quite sensitive to the weights assigned to the two types of assets (Table 29) and sources of financing (Table 28).

As also can be seen from Tables 28 and 29, tax systems discriminate in favor of machinery and in favor of debt financing. The relative tax advantage accorded to investment in machinery reflects more generous tax depreciation allowances, although the results also depend strongly on the assumed rates of economic depreciation.

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21See the description in Kuiper (1988) of a draft proposal considered earlier by the EC Commission.

22For some countries the declining-balance method is not currently allowed. In that case the declining-balance rate is derived as a multiple (2.5) of the current straight-line rate.

23Weights are derived from national capital stocks. The German rate on distributed profits is kept at 36 percent.

24Local property taxes are not included in the analysis.

25The weights assigned (0.6 to machinery and equipment and 0.4 to buildings; 0.6 to equity and 0.4 to debt) are based on national accounting averages of financial flows and on the composition of fixed capital formation.

26The rates are 15 percent for machinery and 7 percent for buildings. In the case of Luxembourg, machinery investment also benefits from an investment tax credit not applicable in the case of buildings.
the corporate tax systems uniformly result in a subsidy at the margin for debt-financed investments. In large part the subsidy comes from the deductibility of interest payments from the corporate tax, which lowers the discount rate below the market rate of interest. Inflation raises the advantage of debt financing because of the deductibility of nominal rather than real interest payments. In contrast, inflation reduces the present value of depreciation allowances, based on historical cost, under both debt and equity financing, except for Denmark where the depreciable base is indexed for changes in the price level.27 The difference between the debt and equity cases also depends on the chosen arbitrage assumption, which excludes any effect on the cost of capital of integration systems that are not extended to nonresidents. Hence, the wedge under equity financing—and thus the distortion in favor of debt financing—would be smaller for Germany and Italy under a purely domestic arbitrage assumption. The average wedges do not change significantly under alternative assumptions about inflation. In countries with a higher inflation rate, the advantages of the increased nominal interest deductibility appear to be offset by the reduced real value of depreciation allowances, although the distortion in favor of debt increases.

Under tax base harmonization (scenario 2), most country wedges would fall, in large part because of more liberal depreciation allowances—specifically, more than double declining balance for buildings and full first-year convention for all assets. Only Denmark, because of the elimination of advance depreciation and of indexation of the depreciable base, and Luxembourg, because of the reduction of the depreciable base by the value of the investment tax credit, would experience a rise in their average wedges. However, base harmonization would on balance contribute minimally to the convergence of effective tax rates, as reflected in the virtually unchanged standard deviation of country wedges. Germany would remain the highest-tax country; Ireland would remain the lowest-tax country, followed by the United Kingdom, Luxembourg, and France.

The equalization of income tax rates at 43 percent (scenario 3)—superimposed on base harmonization but without equalizing depreciation rates—produces a more significant contribution to the convergence of country wedges, yielding a

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27 For a discussion and estimates of the sensitivity of the required rate of return to inflation under various forms of indexing in industrial countries, see Kopits (1983).
The distortional effect of inflation differentials is illustrated with full harmonization of corporate tax systems. As mentioned above, inflation non-neutrality arises from the deductibility of nominal interest payments and from historical-cost depreciation allowances tend to work in opposite directions, and the resultant net effect of inflation on tax wedges is nonlinear. The tax wedge rises from 0.4 to 0.7 as the inflation rate is increased from 2 percent to 5 percent, but it falls to 0.6 as inflation is increased from 5 percent to 10 percent.

In general, the results do not change markedly between the two inflation variants of the simulations, suggesting that the harmonization measures considered do not exacerbate the inflation non-neutrality inherent in the corporate tax systems. Also, the standard deviation of wedges under current or proposed systems (scenario 1) is virtually the same under the two inflationary assumptions, indicating that present differences in tax systems do not, in an average sense, compensate for or enhance the distortional effects of inflation differentials on effective tax rates.

**Simulation of Allocative Effects**

### The Model

A simple computable general-equilibrium model is derived in this section to explore the potential effects of differential effective tax burdens and of changes in tax systems on the allocation of capital in the EC. The model is based on fixed and immobile labor endowments and profit-maximizing competitive firms and uses the wedge calculations described above to simulate the allocation of a perfectly mobile capital stock under various harmonization scenarios. Simulations are conducted under two different assumptions about the supply of capital. The first assumption is that of a fixed but mobile capital stock within the EC. This assumption allows us to isolate and quantify, albeit in a

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**Table 25. Corporate Tax Rate Harmonization**

<table>
<thead>
<tr>
<th>Country</th>
<th>Effect of Elimination of Capital Taxes on Effective Tax Rate (in percent)</th>
<th>Change in Statutory Corporate Income Tax Rate (in percent)</th>
<th>Change in Payout Rate to Nonresident Shareholder (in percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>4</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>3</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>6</td>
<td>-1</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>-14</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>8</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>33</td>
<td>-17</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>-3</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Luxembourg</td>
<td>6</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>8</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>3</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>8</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Harmonization of corporate tax rates (scenarios 3-6) and of dividend withholding and dividend credit rates (scenarios 4 and 5) relative to current systems (scenario 1; see Chapter III, Table 19). — = decrease in effective tax rate; . . . = no effect or no change relative to current practice.

1To common rate of 43 percent.

2The payout rate is defined as the share of profits reaching the shareholder after corporate and dividend taxation (inclusive of dividend credit); the common rate of 73 percent is derived assuming a common 15 percent withholding tax rate and a 50 percent dividend tax credit.

3National and local income taxes combined.

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Despite excellent analytical work in this area by Smn (1987) and Bovenberg (1986), among others, there have been few attempts to integrate estimates of tax wedges into a general equilibrium model to provide numerical estimates of the effect of tax changes on the allocation of capital. An exercise similar to ours was carried out by Fukao and Hanazaki (1987).
very simplified way, the purely allocative and efficiency implications of harmonization, leaving aside the effects of tax changes on the total capital stock.29 In this framework, the interest rate—common to the whole EC—adjusts endogenously to satisfy capital market equilibrium.30 Within each country the wage rate adjusts to clear the labor market, and the level of output of each country is endogenously determined. Given fixed factor supplies, changes in the level of output of the EC as a whole provide a convenient measure of the efficiency gains and losses of alternative scenarios in comparative static terms.

The second assumption is that capital is fixed but mobile worldwide—the world consisting of the EC, changes in the average level of taxation in the EC. This would correspond to the assumption of a small open economy and seems unrealistic.

29The introduction of capital accumulation would not eliminate the allocative distortions inherent to differential tax wedges, although the dynamics of capital accumulation could delay significantly convergence toward a steady state.

30An alternative would be to take the interest rate as given and allow the overall capital stock to change in response to
Table 17. Effective Corporate Tax Rates  
(In percent of after-tax rate of return)  

<table>
<thead>
<tr>
<th>Country</th>
<th>Annual Inflation Rate (in percent)</th>
<th>Scenario</th>
<th></th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Common inflation rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Belgium</td>
<td>2.0</td>
<td>17.5</td>
<td>17.5</td>
<td>20.0</td>
<td>3.6</td>
<td>11.5</td>
</tr>
<tr>
<td>Denmark</td>
<td>2.0</td>
<td>16.7</td>
<td>19.1</td>
<td>20.8</td>
<td>5.0</td>
<td>2.0</td>
</tr>
<tr>
<td>France</td>
<td>2.0</td>
<td>24.5</td>
<td>13.0</td>
<td>12.5</td>
<td>3.0</td>
<td>20.1</td>
</tr>
<tr>
<td>Germany</td>
<td>2.0</td>
<td>40.2</td>
<td>33.3</td>
<td>25.8</td>
<td>6.5</td>
<td>14.6</td>
</tr>
<tr>
<td>Greece</td>
<td>2.0</td>
<td>29.0</td>
<td>17.6</td>
<td>20.4</td>
<td>9.2</td>
<td>26.1</td>
</tr>
<tr>
<td>Ireland</td>
<td>2.0</td>
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Note: Weighted average over buildings (0.4) and machinery (0.6) and over debt (0.4) and equity (0.6).

Weighted average over countries' shares of EC capital stock.

Japan, and the United States. In this context, changes in effective company tax rates can affect both the total EC stock of capital and its allocation among member countries. The two effects cannot be isolated, but this exercise provides a gauge of the pressures placed on the rest of the world by changes in the level of taxation in the EC.

Within each country we consider a representative firm that operates under competitive conditions. There is a single good produced under constant returns to scale and with production function $F(K, L)$, where $K$ and $L$ are the capital and labor inputs. The representative firm of country $i$ maximizes profits

$$F(K_i, L_i) - g_i L_i - c_i K_i, \quad i = 1, 2, \ldots, n.$$  

where $g_i$ is the gross real wage (inclusive of any tax on labor use or income) and $c_i$ is the user cost of capital,\(^{31}\) where

$$c_i = (r + \delta + w_i) q_i .$$  

$r$ is the real market rate of return on the underlying financial instrument, $\delta$ is the rate of economic depreciation, $w_i$ is the corporate tax wedge, and $q$ is the real price of capital goods in country $i$. The

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\(^{31}\)This can be shown to be consistent with expressions (1) and (2), insofar as $\rho = \epsilon/q - \delta$.  

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Note: Weighted average over buildings (0.4) and machinery (0.6).
Weights correspond to countries' shares of EC capital stock.
model is solved by using a Cobb-Douglas production function:32
\[ \phi_i = AK_i^{(1-\alpha)}L_i^{\alpha}, \] (12)
with \( \alpha \) estimated from labor’s share in GDP and the scale parameter \( A \) set to reproduce the real interest rate assumed to prevail under current tax systems (scenario 1).33 A capital demand function can then be explicitly derived from profit maximization:
\[ K_i(c_i) = L_i (A\omega/c_i)^{1/(1-\alpha)}, \] (13)
At the aggregate level, the model is closed by requiring that factor and goods markets clear. With fixed and immobile labor endowments \( (N_i) \) in each country, and fixed but mobile global supply of capital \( (S) \), the factor market equilibrium conditions reduce to
\[ L_i = N_i \] (14)
\[ \sum K_i(c_i) = \sum N_i [A\omega/c_i (r)]^{1/(1-\alpha)} = S. \] (15)
Given a fixed supply of capital, whether in the EC or in the world, the goods market clears implicitly in the absence of net saving or capital accumulation.

The equilibrium values of the interest rate and each country’s wage rate, capital stock, and output level can then be expressed as functions of factor endowments and tax parameters. The country corporate tax wedges presented earlier—averaged over the two types of financing and assets—are substituted for \( \omega_i \) in equation (11) and then in equation (13), so as to solve the model subject to conditions (14) and (15).34

By construction, a uniform change in wedges \( (\Delta\omega_i = \Delta\omega) \) has no effect on the allocation of the capital stock across countries \( (\Delta K_i = 0) \), and capital market equilibrium obtains through a one-for-one offsetting change in the interest rate \( (\Delta r = -\Delta\omega) \) so as to leave the cost of capital unchanged \( (\Delta c = 0) \). Only relative changes in tax wedges have real effects. Specifically, the relative change of a country’s capital stock attributable to a change in its tax wedge is inversely related to the country’s size.

A tax rate increase in a large country will reduce significantly both the world demand for capital and the world interest rate. The fall in the interest rate compensates partly for the rise in the cost of capital due to the tax change, with a consequently smaller proportional decline in the country’s equilibrium capital stock. Meanwhile, the other countries benefit in terms of lower interest rates and higher capital stocks. In the case of a small country, the induced effect of a tax rate increase on the world demand for capital—and, by implication, on the interest rate—is negligible. The loss of own capital is proportionately larger, and the spillover effect on other countries is insignificant.

There are several inherent limitations in this exercise. First, the magnitude of the allocative effects of differential tax burdens depends entirely on the assumed technological parameters. Although the assumed form and the parameter values of the production function are broadly consistent with available estimates, more sophisticated specifications could alter the magnitude of the effects. Second, the assumption of a fixed capital stock ignores entirely the effect of taxation on capital formation, savings, and growth. Third, the analysis does not provide an explicit treatment of the government sector; in particular, it is assumed that budgetary measures compensating for changes in corporate taxation—which account for a relatively small share of general government revenue in most EC countries—do not affect the production function or relative labor costs.35 Fourth, international capital flows take the form of portfolio claims on foreign capital, and only corporate taxation matters—a reasonable assumption in view of the large role of institutional investors and widely held corporations. Finally, the absence of country-specific risk is being approximated by the creation of a single EC market.

Results

The first column of Table 30 shows the equilibrium solution after the equalization of after-tax rates of return on capital. The resulting capital stocks and corresponding changes in potential output are shown relative to their estimated current (stylized “autarky”) values. Both are necessary as a benchmark for the harmonization scenarios.36 The

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32 The unit elasticity of substitution between factors implied by the Cobb-Douglas production function is broadly consistent with estimates in Kopits (1982).

33 Estimates of the capital stock of each country for 1975 are obtained from Leamer (1984), updated to 1985. The labor force is adjusted by using the share of professional workers in the labor force as an index of quality; see United Nations (1988).

34 Because the tax wedges are themselves functions of the interest rate, the solution process requires an iterative procedure: initial values of the tax wedges are used to derive an equilibrium interest rate. The values of the tax wedges are then recalculated, using the interest rate, until convergence is achieved.

35 This would be generally true if corporate taxes were not benefit charges or, more specifically, if a constant expenditure level were maintained through compensating changes in labor income taxation and fully absorbed in lower after-tax wages, with no consequences for labor supply and employment.

36 Tax wedges for Japan and the United States are set to reproduce the equilibrium solution in scenario 1 and are held fixed thereafter.
### Table 29. Corporate Tax Wedges by Type of Asset
(Percentage-point difference between gross and net-of-tax real rates of return)

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<td>-2.2</td>
<td>-2.8</td>
</tr>
<tr>
<td>Portugal</td>
<td>-1.9</td>
<td>-3.2</td>
<td>-3.5</td>
<td>-3.3</td>
<td>-1.8</td>
<td>-2.8</td>
</tr>
<tr>
<td>Spain</td>
<td>-1.4</td>
<td>-1.9</td>
<td>-2.4</td>
<td>-2.3</td>
<td>-0.9</td>
<td>-2.8</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-1.2</td>
<td>-2.1</td>
<td>-2.8</td>
<td>-2.8</td>
<td>-1.6</td>
<td>-2.8</td>
</tr>
<tr>
<td>Weighted average</td>
<td>1.4</td>
<td>2.9</td>
<td>2.6</td>
<td>2.7</td>
<td>1.2</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Note: Weighted average over equity (0.6) and debt (0.4); common 2 percent annual inflation rate.

Weighted average corresponds to countries' shares of EC capital stock.

The reallocation of capital predicted by the model is considerable, with Portugal and Ireland more than doubling their capital stocks and Germany losing nearly 40 percent in the new steady state. The allocative results of the model are driven by the assumption that corporate taxes confer no associated benefits and by the fact that taxes and factor proportions are the only determinants of differences in the rates of return on capital across countries. If taxes were benefit charges, tax rate differentials would have no allocative effects. Moreover, if appropriate consideration were given to all other
Simulation of Allocative Effects

Table 30. Allocative Effects of Corporate Tax Harmonization

<table>
<thead>
<tr>
<th>Country</th>
<th>&quot;Autarky&quot; Case (index: actual capital and output = 100)</th>
<th>Scenario (index: column 1 = 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EC context</td>
<td>World context</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Capital stock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>94.9</td>
<td>93.5</td>
</tr>
<tr>
<td>Denmark</td>
<td>104.3</td>
<td>91.8</td>
</tr>
<tr>
<td>France</td>
<td>76.2</td>
<td>103.6</td>
</tr>
<tr>
<td>Germany</td>
<td>63.2</td>
<td>101.5</td>
</tr>
<tr>
<td>Greece</td>
<td>189.0</td>
<td>103.9</td>
</tr>
<tr>
<td>Ireland</td>
<td>211.3</td>
<td>95.9</td>
</tr>
<tr>
<td>Italy</td>
<td>99.3</td>
<td>94.3</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>83.0</td>
<td>92.2</td>
</tr>
<tr>
<td>Netherlands</td>
<td>82.3</td>
<td>102.0</td>
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<tr>
<td>Portugal</td>
<td>247.0</td>
<td>103.5</td>
</tr>
<tr>
<td>Spain</td>
<td>152.8</td>
<td>98.4</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>180.2</td>
<td>101.5</td>
</tr>
<tr>
<td>EC</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>United States</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Japan</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Output (net domestic product)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>98.9</td>
<td>98.5</td>
</tr>
<tr>
<td>Denmark</td>
<td>100.9</td>
<td>98.1</td>
</tr>
<tr>
<td>France</td>
<td>94.7</td>
<td>100.8</td>
</tr>
<tr>
<td>Germany</td>
<td>90.7</td>
<td>100.4</td>
</tr>
<tr>
<td>Greece</td>
<td>118.4</td>
<td>100.9</td>
</tr>
<tr>
<td>Ireland</td>
<td>120.5</td>
<td>99.2</td>
</tr>
<tr>
<td>Italy</td>
<td>99.8</td>
<td>98.6</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>96.6</td>
<td>98.3</td>
</tr>
<tr>
<td>Netherlands</td>
<td>95.9</td>
<td>100.5</td>
</tr>
<tr>
<td>Portugal</td>
<td>128.5</td>
<td>100.8</td>
</tr>
<tr>
<td>Spain</td>
<td>111.1</td>
<td>99.6</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>115.9</td>
<td>100.3</td>
</tr>
<tr>
<td>EC</td>
<td>101.9</td>
<td>100.0</td>
</tr>
<tr>
<td>United States</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Japan</td>
<td>100.0</td>
<td>100.0</td>
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<tr>
<td>World</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Memorandum items

<table>
<thead>
<tr>
<th></th>
<th>EC average wedge</th>
<th>Standard deviation</th>
<th>Real interest rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>2.4</td>
<td>1.8</td>
<td>1.7</td>
</tr>
<tr>
<td>Denmark</td>
<td>1.0</td>
<td>1.1</td>
<td>0.9</td>
</tr>
<tr>
<td>France</td>
<td>5.0</td>
<td>5.6</td>
<td>5.7</td>
</tr>
<tr>
<td>Germany</td>
<td>1.7</td>
<td>1.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Greece</td>
<td>1.1</td>
<td>0.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Ireland</td>
<td>5.3</td>
<td>5.3</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Note: Common 2 percent annual inflation rate.

1 Weights are calculated from the capital stock distributions for each scenario. Average wedges differ from those of Table 26 because the weights and the interest rate are recalculated for each equilibrium solution.

nontax factors affecting returns, greater uniformity in after-tax rates of return adjusted for such factors would be found in the "autarky" case.

Alternatively, the result may be explained by the fact that capital has not yet fully adjusted to equalize expected rates of return, in which case capital tends to move toward countries with a higher than average after-tax rate of return. Higher than average after-tax rates of return may be the result, other things being equal, of either lower than average taxes—in which case the reallocation of capital would cause an efficiency loss—or low capital-labor ratios—in which case an efficiency gain would ensue. The fact that overall EC output rises by nearly 2 percent indicates, under this interpretation, that the efficiency gain from the equalization...
of capital-labor ratios would outweigh the efficiency loss from tax-induced distortions. An additional explanation for cross-country differences in the deviations shown in the first column is the likely measurement error inherent in the underlying factor proportions.

The allocative effects of harmonization are measured relative to the equilibrium results of column 1—that is, after equalization of after-tax rates of return. The indices thus reflect solely the effect of changes in effective tax rates under selected harmonization scenarios. Because factor supplies are assumed to be fixed, albeit mobile in the case of capital, the aggregate output index provides a static measure of the efficiency gain from harmonization. As discussed earlier, harmonization of the tax base (scenario 2) does not significantly reduce the dispersion of effective tax rates and consequently produces no efficiency gain; that is, the aggregate output index remains unchanged. In the EC context (the EC isolated from the rest of the world), the reallocation of capital reflects the change in the country ordering, with the largest proportional loss for Denmark and Luxembourg (8 percent) and the largest proportional gain for Greece, France, and Portugal (nearly 4 percent). Luxembourg, Belgium, Italy, Ireland, and Spain would also lose capital. The reduction in the dispersion of effective tax rates under the added harmonization of statutory income tax rates (scenario 3) would not be sufficient to produce a noticeable change in aggregate output. Tax rate harmonization would produce a relatively large gain in capital for Germany (9 percent), followed by France (3 percent), at the expense of all other countries: at the other end of the spectrum, Ireland would experience the largest proportional loss (16 percent). A small gain in overall EC output (0.1 percent) appears under complete harmonization (scenario 6). Relative to base and rate harmonization (scenario 3), most changes in capital stock would result on account of the elimination of investment tax credits (Luxembourg and Spain), the elimination of capital and net worth taxes (France, Germany, and Luxembourg), and the reduced cost of equity financing attributable to integration. This last change would affect all countries except France and the United Kingdom, where integration already applies under current conditions and the chosen arbitrage assumption.

By construction, the average wedge declines as harmonization is broadened from base to rates, with a consequent rise in the demand for capital. In the EC context, capital market equilibrium is restored through a rise in the interest rate. In a "worldwide" context, however, the rise in the interest rate spills over to the United States and Japan, forcing a reallocation of capital towards the EC. The net inflow of capital to the EC reduces the size of the capital losses—which in some instances turn into a gain—and raises the magnitude of the gains of individual countries.

This effect derives purely from the specific (average) effective tax rate toward which the EC would converge. The large loss of capital for Japan and the United States from complete harmonization (scenario 6), relative to base and rate harmonization (scenario 3), can be explained largely by the effect of integration on the cost of capital in the EC under the chosen arbitrage assumption. By assumption, the extension of corporate-personal tax integration to all EC residents (but not necessarily to non-EC residents) is fully passed on to the firm. How much the extension of integration to all EC residents can in practice contribute to a reduction in the cost of equity financing remains an open empirical question. The answer depends on the relative size of each country's capital market relative to the EC and the rest of the world and on the degree of integration among equity markets—factors that are not treated explicitly in our simplified arbitrage condition. This illustrates the important role of the arbitrage assumption and the associated empirical difficulties.

**Conclusions**

Differences in the taxation of income from capital are likely to become a determining factor in the allocation of capital as the remaining barriers to the free flow of goods, labor, and capital are progressively removed within the EC. With the complete liberalization of financial capital movements accomplished by mid-1990, differences in the taxation of financial investment income across countries may lead to a misallocation of financial assets but, because of the parallel integration of credit markets, would not interfere significantly with the allocation of real assets. Differences in the tax treatment of corporate income could thus become the primary source of allocative distortion in fixed capital formation; consequently, the harmonization of corporate tax systems could go a long way toward establishing allocative neutrality in the EC.

Three important empirical policy questions have been addressed here: first, the magnitude of existing differences in effective corporate tax rates; second, the degree of harmonization that would be necessary to reduce the dispersion of effective tax rates; third, the allocative and efficiency implications of tax harmonization (or nonharmonization). In answer to the first question, our calculations have shown that there is considerable divergence in effective corporate income tax rates among EC
member countries, with effective tax rates varying from 40 percent for Germany to 5 percent for Ireland. Second, it was shown that only the harmonization of both the statutory tax rate and the tax base results in a meaningful convergence of effective tax rates. Harmonization of the statutory tax rate without base harmonization yields a lower degree of convergence and diminished transparency. Harmonization of the tax base alone, leaving statutory tax rates and investment grants in place, increases transparency but does not produce any significant reduction in the dispersion of effective tax rates.

As regards the third question, the allocative implications of differential effective tax rates—and, conversely, of harmonization—depend on the elasticity of capital formation with respect to differential tax rates. In principle, investment flows should respond to tax-induced differences in the after-tax rate of return as they do to differences caused by other components of the rental cost of capital. The empirical evidence is, however, mixed, and many authors have found only small effects. Using a simple computable general-equilibrium model, where capital is allocated to equalize after-tax rates of return, we derived steady-state allocative effects of company tax harmonization in the EC. The results show a modest efficiency gain from harmonization but very significant effects for individual countries. When the overall EC capital stock is held unchanged, Germany’s share rises by 15 percent, and Italy’s by 5 percent, relative to the equilibrium capital stock under the present tax systems. Ireland and Luxembourg are the largest losers, with a 17 percent and 15 percent contraction in their respective shares.

The case for concerted harmonization of effective corporate tax rates has relied crucially on efficiency considerations. These results suggest that the overall static efficiency gains from equalization of tax burdens may in fact be quite small, although tax equalization may imply substantial adjustments in some countries. In the event, the debate over company tax harmonization may have to rely primarily on fiscal considerations.

The case for concerted harmonization seems strongest as regards definition of the tax base (capital cost recovery allowances, loss carryover, and so forth). Although the results of our analysis indicate that harmonization of the tax base does not produce significant convergence of effective tax rates, base harmonization may have very important efficiency implications within the EC by increasing transparency and reducing the compliance costs for multinational enterprises. Harmonization of the tax base would not in any way constrain the determination of effective tax rates, because national authorities would continue to exercise sovereignty over statutory tax rates and explicit fiscal incentives for investment (tax credits, cash grants). In practice, however, with the advent of the single market, EC member countries are likely to be under considerable pressure to engage in spontaneous, downward harmonization of statutory rates, a trend that has already been under way in most industrial countries since the early 1980s.

Appendix: Cost of Capital and the Corporate Tax Wedge

This Appendix develops the model of the firm underlying the derivation of the tax wedge. We consider a competitive firm operating in a stationary environment in a one-good neoclassical world with no adjustment costs and derive a demand for capital function from the necessary conditions for the maximization of the firm’s market value. In a steady state, the optimal capital-labor ratio is a decreasing function of the user cost of capital, itself a function of the rate of economic depreciation, corporate tax parameters, the rate of inflation, and the market rate of return on the financial asset (r). For a firm with a mixed financial structure, r is given by a weighted average of the interest rate and the return on equity.

Firm Optimization

The production technology is described by a production function \( F(K, L) \) where \( K \) is the firm’s capital stock and \( L \) its level of labor input. The function \( F(K, L) \) is assumed to be concave and twice differentiable, with positive and decreasing marginal products and \( F_{KL} > 0 \). All firms produce a single homogeneous output that can also be used as capital in production and can be installed or dismantled instantaneously and at no cost. The evolution of a firm’s capital stock over time is described by the equation

\[
K' = I - \delta K. \tag{16}
\]

where \( K' \) is the time derivative of \( K \), \( \delta \) is the rate of economic depreciation, and \( I \) is the level of real investment expenditures.

---

We consider a competitive firm operating in a stationary environment in which input and output prices increase at a constant rate of inflation \( \pi \) (alternatively, the firm has static expectations). At each point in time the firm chooses levels of labor input and investment expenditures and may raise financial capital by selling a single type of security defined as bonds \((B)\). Output is sold at a price \( p \), and after-tax profits plus the proceeds from the sale of new bonds are either paid out to security holders or used to finance investment:

\[
\rho[F(K, L) - WL] + B' = iB + pl, \tag{17}
\]

where \( W \) is the real wage rate, \( i \) is the nominal rate of interest on bonds, and \( T_e \) denotes real corporate tax payments by the firm. Dividing both sides of this expression by \( \rho \) and rearranging gives the firm's cash flow constraint in real terms:

\[
b' = (i - \pi)h - [F(K, L) - WL - I - T_e], \tag{18}
\]

where \( h = B/p \).

Corporate income is taxed at a flat rate \( t_c \). However, the government provides a grant or investment tax credit at a rate \( g \) per unit of new capital purchased and allows the deduction of depreciation of the (nominal) book value of the firm's capital at a rate \( d \). Finally, payments to security holders may also be subject to a tax or a subsidy at source. Real corporate tax payments are given by

\[
T_e = t_c [F(K, L) - WL] + \phi b - t_c V d - gV, \tag{19}
\]

where \( \phi \) is the unit tax or subsidy on payments to security holders and \( V \) is the deflated book value of the firm's capital stock, which evolves over time according to the equation

\[
V' = I - (d + \pi)V. \tag{20}
\]

Substituting equation (18) into equation (17) yields

\[
b' = (i - \pi + \phi)h - [(1-t_c)[F(K, L) - WL] + t_c dV - (1-g)V]. \tag{21}
\]

Assume that the firm behaves so as to maximize the market value of its initial securities, \( b(0) \). Integrating equation (21) allows the firm's problem to be written as

\[
\max b(0) = \int_0^\infty e^{-(\rho - r)t} \left[ (1-t_c)[F(K, L) - WL] + t_c dV - (1-g)V \right] dt,
\]

subject to

\[
K' = I - \delta K
\]

and

\[
V' = I - (d + \pi)V,
\]

where \( \rho = i + \phi \) is the cost of financial capital to the firm. The current-value Hamiltonian for this problem is given by

\[
H = (1 - t_c) [F(K, L) - WL] + t_c dV - (1-g)V + (1 - \delta)K + v[I - (d + \pi)V],
\]

where \( q \) and \( v \) are the costate variables or multipliers associated with the dynamic constraints. The necessary conditions for an optimal solution to this problem are given by

\[
\partial H/\partial L = (1-t_c) [F_t(K, L) - W] = 0,
\]

hence \( F_t(K, L) = W \), and

\[
F_t(K, L) = c(r, \pi, \tau_c). \tag{22}
\]

Here \( \tau_c = (\tau_c, d, g, \phi) \) is the vector of corporate tax parameters, and the user's cost of capital is defined as

\[
c(r, \pi, \tau_c) = (1 - g) - v) (\rho - \pi + \delta) / (1 - t_c), \tag{23}
\]

where \( v \) is the present value of the tax savings from the depreciation of one unit of capital, given by

\[
v = t_c dV / (\rho + d).
\]

**Demand for Capital**

If the production function exhibits decreasing returns to scale, the necessary conditions (22) and (23) can be solved for the optimal capital stock \( K^* \) and the optimal level of employment as functions of factor prices and tax parameters (that is, these equations characterize the firm's factor demand functions). From a partial equilibrium perspective (and in the absence of installation costs), there is nothing to prevent an individual firm from achieving its optimal input level at market-determined prices, even if that involves a discrete jump in the capital stock. Hence, \( I \) will be set so as to reach and maintain \( K^* \).

Under the assumption of constant returns to scale, the firm's size is indeterminate, but conditions (22) and (23) characterize the optimal capital-labor ratio \( k^* \) as a function of factor prices and tax parameters.

---

39By definition, \( b = B/\rho \); hence \( b' = d(B/\rho)/dt = (pB' - Bp)/p^2 \) = \((B'/\rho) - \pi h\). and \( B' = p(b' + \pi h) \).

40For example, interest payments on debt are considered a deductible expense. In that case \( \phi = -i, \) the tax-induced wedge between what the firm pays out and what the security holder gets is negative.

41The general solution to this differential equation can be written in the form

\[
b(t) = e^{-c(t-\rho)} [b(0) + \int_0^t e^{c(s-\rho)} c(s) ds],
\]

where \( c \) is an arbitrary constant. Setting \( c = 0 \) is equivalent to the assumption that the value of the securities is determined by "fundamentals" (that is, reflects the underlying cash flow of the firm).
parameters. At the national level, the size of the corporate sector will be determined by the size of the labor force, \( N \), which we take as given. In that case \( K^* = NK^* \) in a steady state, investment is set accordingly, and condition (23) evaluated with \( L = N \) determines the equilibrium wage. If there is population growth, on a balanced growth path investment will be set so as to maintain a constant stock of capital per worker.

To derive the per capita demand for capital function, it will be convenient to work with the per capita production function, defined as

\[
F(k) = F(K/L, 1),
\]

where \( k = K/L \) is the capital-labor ratio. This allows us to rewrite the marginal productivity conditions in the form

\[
f'(k) = c(r, \pi, \tau_c).
\]

Equation (26a) implicitly defines the per capita demand for capital as a function of the user cost of capital, which is in turn a function of corporate tax parameters and the rates of inflation and interest; that is

\[
k^d = k[c(r, \pi, \tau_c)].
\]

Differentiating equation (26a) implicitly, we find that

\[
k'(c) = -1/f''(k) < 0 \quad (28a)
\]

\[
\partial k/\partial r = [k'(c)](\partial c/\partial r) \quad (28b)
\]

\[
\partial k/\partial \tau_c = [k'(c)](\partial c/\partial \tau_c) \quad (28c)
\]

\[
\partial k/\partial \pi = [k'(c)](\partial c/\partial \pi). \quad (28d)
\]

Thus, we may think of the firm as renting capital services from itself and the imputed rental on capital as being equal to the user’s cost. At any rate, the firm’s optimal capital stock per worker is a decreasing function of the cost of capital, and inflation, interest rates, and tax parameters affect the demand for capital only through their effect on \( c \).

**Capital Market Equilibrium and the Arbitrage Condition**

A complication arises because the rate of return on the financial assets \( r \) is actually a function of the financing mix of the firm. Consider an economy in which firms and households trade two types of securities, debt \( d \) and equity \( e \). Income from each type of security \( n = d, e \) is taxed at both the corporate and personal levels. Thus, taxes on financial assets levied at source \( (\phi_n) \) are subtracted from the firm’s marginal cost of funds \( (\rho_n) \) to arrive at a market return \( (r_n) \); from this, personal taxes on security income \( (\eta_n) \) are deducted to obtain the net return \( (s_n) \) to the security holder:

\[
\rho_n = s_n + \phi_n + \eta_n,
\]

where \( n = d, e \).

We ask whether a systematic relationship can be expected to exist between the equilibrium returns on the two assets. One possible answer is based on arbitrage considerations: if in equilibrium both securities are held (or issued) by the same agent, their return (or cost to the issuer) must be the same at the margin.44

A problem arises because existing tax systems typically treat income from equity and debt differently. The theory suggests that firms will use both sources of finance only if their marginal cost is the same \( (\rho_e = \rho_d) \) and that households will hold both types of securities only if their net-of-personal-tax returns are the same \( (s_e = s_d) \). In general, however, \( \phi_d + \eta_d \neq \phi_e + \eta_e \), and differences in the tax treatment of debt and equity make it impossible for both conditions to hold at once.

On theoretical grounds, then, there does not seem to be a clear-cut case for a specific arbitrage assumption. In practice, however, which particular assumption is chosen makes a big difference because tax wedges are quite sensitive to the discount rate. In this analysis we have taken a “middle ground” and have assumed that the arbitrage is done by an international (institutional) tax-exempt investor that requires a risk premium \( (h) \) on equity.

**Cost of Capital for a Firm with Mixed Financial Structure**

The overall cost of capital of a firm with a mixed financial structure can be computed in one of two

44In a stochastic environment, returns are defined in terms of expected utility, and differences in asset return can be ascribed to differences in risk. In a certainty setting, differences in equilibrium rates of return can be explained by differences in the rates of taxation on interest income, dividends, and capital gains among investors, with some investors favoring one type of asset over another. In this kind of segmented equilibrium, the returns on debt and equity need not be equalized at the personal level because no investor needs to hold both them.

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The cost of financial capital to the firm can then be written as the (weighted) average of the pure equity and pure debt cases—part equity and part debt, with exogenously determined weights (\( \xi_e, 1 - \xi_e \)). Then, the nominal “market” return to the holders of the firm’s securities is given by

\[
i = (1 - \xi_e) i_d + \xi_e i_c
\]

where \( i_d \) is the nominal return on debt (the interest rate) and \( i_c \) is the nominal return on equity. The cost of financial capital to the firm can then be written as

\[
p = i + \phi = (1 - \xi_e)(i_d + \phi_d) + \xi_e(i_c + \phi_e)
\]

where \( \phi = (1 - \xi_e) \phi_d + \xi_e \phi_e \) is the tax-induced wedge between the firm’s payout and its return on equity. The parameters \( \phi_d \) and \( \phi_e \) depend on withholding taxes on interest and dividends and on the system of integration of personal and corporate taxes. Using the arbitrage condition to write \( i_c \) as a function of \( i_d \), leaves a single rate of return to be determined endogenously. From the arbitrage condition, the real return to holders of the composite security is given by

\[
r = (1 - \xi_e)r_d + \xi_e r_e
\]

in conclusion, the discount rate for a firm with a mixed financial structure (with weights \( \xi_e \) for equity and \( 1 - \xi_e \) for debt) can be written as

\[
p = (1 - \xi_e)\rho_d + \xi_e\rho_e
\]

with

\[
\rho_d = (1 - \xi_e)(1 - t_c)(r_d + \eta) + \xi_e[(r_d - \eta)/\omega] + \pi
\]

where \( \omega = [v\theta(1 - t_d) + (1 - v)] \), \( v \) is the share of real earnings distributed as dividends, and \( \theta \) is the integration variable.

45See Boadway, Bruce. and Mintz (1987) for a discussion on the two approaches.
The cost of capital is a complex, nonlinear function of the market interest rate, the rate of inflation, and company tax parameters \( t_c = (g, d, t_c, o) \). The partial derivatives of this function are shown in Table 31.

As we would expect, increases in the investment tax credit and the rate of tax depreciation lower the cost of capital, and increases in the real interest rate increase the cost of capital. In contrast, the effects of inflation and of the corporate tax rate are in principle ambiguous.

The direct effect of an increase in the corporate tax rate on \( c \) is clearly positive, reflecting the decrease in the after-tax marginal product of capital. An increase in \( t_c \), however, lowers the real discount rate (through the interest deductibility provision) and increases the present value of the tax savings from depreciation (as a result of both the lower discount rate and the increased value of the tax savings associated with any given \( d \)).

In the case of inflation, the situation is more or less analogous. Because nominal interest payments are tax deductible, an increase in \( \pi \) reduces the real discount rate and, other things being equal, tends to lower the cost of capital. In the absence of indexing of the depreciable base, however, the increase in inflation reduces the present value of the tax savings from depreciation (even at the lower discount rate).

The corporate tax wedge is a natural by-product of the user cost of capital. We may think of the cost of capital as the sum of three components: economic depreciation, a return to the owners of the firm's securities \( (r) \), and the tax burden on the marginal unit of capital. This last component \( (c - r - \delta) \) is what we refer to as the corporate tax wedge.

The concept of the wedge is useful in that it provides a summary measure of the corporate tax rate on the marginal unit of capital. It corresponds to the size of the tax-induced shift in the demand for capital relative to the net marginal product schedule and can therefore be interpreted as an indication of the incentive effect of corporate taxation.
An Analysis of the EC Structural Funds

James Gordon

The EC Structural Funds comprise the European Social Fund (ESF), the European Regional Development Fund (ERDF), and the Guidance component of the European Agricultural Guidance and Guarantee Fund (EAGGF) (Table 32). Although the cost of the Common Agricultural Policy (CAP)—the guarantee part of the EAGGF—dominates the EC budget, Structural Fund disbursements have become increasingly important in recent years. Under the reform completed in 1989 (EC Commission (1989e)), they are to double in size, rising from ECU 7.7 billion in 1988 to ECU 14.5 billion by 1993, with a total allocation over the period 1989–93 of close to ECU 60 billion (Table 33). By 1993, it is envisaged that total disbursements will represent 25 percent of the EC budget and 0.3 percent of Community GDP.

Reform of the Structural Funds in the mid-1980s was particularly timely. The accession of Spain and Portugal in 1986 significantly increased the degree of inter-regional inequality within the Community and, hence, the need and scope for regional intervention (EC Commission (1987k)). Structural measures gained added priority with the emphasis, in the Single European Act (EC Commission (1986a)), on promoting economic and social cohesion. The Act explicitly commits the EC to reducing regional disparities and the backwardness of less favored regions. Larger Structural Funds were regarded as necessary to complement the other initiatives being taken to further cohesion—in particular, the completion of the single market coupled with tax harmonization by end-1992, and the eventual convergence of countries' macroeconomic policies.

It is possible to interpret the doubling of the Structural Funds as an attempt to compensate those who stand to gain least, or even to lose, from increased European integration. The possible emergence of losers from integration, however, although raised in Padoa-Schioppa, Emerson, and others (1987), does not appear to have received explicit official attention until April 1989. At that time a motion passed by the European Parliament recognized the likely negative regional consequences of completion of the internal market and questioned whether the Structural Funds, even at the new levels, would prove adequate to offset them (EC Commission (1989f)).

In addition to increasing resources, the 1989 reform rationalized and streamlined the different Structural Funds, pursuant to the following objectives: (1) promotion of development and structural adjustment in less developed regions, (2) rehabilitation of areas affected by industrial decline, (3) reduction of long-term unemployment, (4) occupational integration of the young, (5a) acceleration of agricultural adjustment, and (5b) promotion of rural development.1 For 1989–93, more than half of total resources have been allocated under objective 1, as shown in the breakdown by objective in Table 33.

Financial assistance from the reformed Structural Funds is provided in the form of grants sup-

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Table 32. EC Structural Fund Commitments, 1989–90 (In billions of ECU)

<table>
<thead>
<tr>
<th>Structural Fund</th>
<th>1989</th>
<th>1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Agricultural Guidance and Guarantee Fund (EAGGF), Guidance Component</td>
<td>1.4</td>
<td>1.7</td>
</tr>
<tr>
<td>European Regional Development Fund (ERDF)</td>
<td>4.5</td>
<td>5.4</td>
</tr>
<tr>
<td>European Social Fund (ESF)</td>
<td>3.4</td>
<td>4.1</td>
</tr>
<tr>
<td>Other1</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Total</td>
<td>9.5</td>
<td>11.5</td>
</tr>
</tbody>
</table>


1Specific initiatives relating to fisheries, energy, environment, and transport infrastructure.

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1Objective-1 regions are defined as those with GDP per capita less than 75 percent of the EC average. Objective-2 regions are those with above-average unemployment plus industrial employment that is above average but declining.
Arguments for Intra-Community Transfers

Table 33. Projected Structural Fund Commitments, 1989–93
(In billions of ECU, 1989 prices)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 1</td>
<td>5.6</td>
<td>6.6</td>
<td>7.4</td>
<td>8.2</td>
<td>9.2</td>
<td>37.0</td>
</tr>
<tr>
<td>Objective 2</td>
<td>1.0</td>
<td>1.2</td>
<td>1.3</td>
<td>1.4</td>
<td>1.5</td>
<td>6.4</td>
</tr>
<tr>
<td>Objectives 3 and 4</td>
<td>1.2</td>
<td>1.2</td>
<td>1.4</td>
<td>1.6</td>
<td>1.8</td>
<td>7.2</td>
</tr>
<tr>
<td>Objectives 5 (a and b)</td>
<td>0.9</td>
<td>0.9</td>
<td>1.2</td>
<td>1.4</td>
<td>1.6</td>
<td>6.0</td>
</tr>
<tr>
<td>Other</td>
<td>0.3</td>
<td>0.4</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Total</td>
<td>9.0</td>
<td>10.3</td>
<td>11.6</td>
<td>12.9</td>
<td>14.5</td>
<td>58.3</td>
</tr>
</tbody>
</table>


Objectives under the 1989 reform: (1) promotion of development and structural adjustment in less developed regions, (2) rehabilitation of areas affected by industrial decline, (3) reduction of long-term unemployment, (4) occupational integration of the young, (5a) acceleration of agricultural adjustment, and (5b) promotion of rural development.

1Transitional and innovative measures.

Arguments for Intra-Community Transfers

Standard arguments for transfers within a federation encompass equity, efficiency, and regional stabilization. Additional arguments particular to the EC and the single European market include the need to compensate for the regional income, employment, and revenue effects and for the constraints imposed by tax harmonization and removal of border controls.

Equity

Arguably, integration of the economies of EC member countries should involve reductions in regional income inequality. In terms of GDP per capita, there was significant convergence within the six-member EC during the 1960s and early 1970s, but the process was arrested and reversed by the accession of Denmark, Ireland, and the United Kingdom in the mid-1970s and of Greece, Portugal, and Spain over the following decade (EC Commission (1990b,c)). Regional inequality within the EC is now considerably greater than that, for example, within the United States.4 Wilson, Percy, and

2Grants from the Structural Funds for investment in firms may not exceed 50 percent of costs in objective-1 regions and 30 percent of costs in other regions. For infrastructure projects, there are ceilings on grants that vary inversely with the expected profitability of the project (EC Commission (1989e)).

3The reform also specifies the procedure guiding allocation of the Funds: member states submit their own plans and then negotiate with the Commission, culminating in a Community-wide ranking of different programs across member states (the “Community support framework”).

Some limitations of the Structural Funds are discussed in the third section. The fourth section offers conclusions.

4See EC Commission (1990b). The recognition that regional differences required positive intervention at the EC level led to the formation of the ERDF in 1975 (Sutherland (1986)). More recently, the reform of the Structural Funds has made regional development a priority. For a history of EC regional policy, see Nevin (1990).
Norrie (1981) have argued that the equity case for transfers to poor regions is stronger the more immobile are resources: indeed, regional economics is sometimes called the economics of factor immobility. Moreover, if the most able and productive factors move out of a less developed region, there is an equity argument for helping those who remain behind.\(^5\)

Whereas considerations of vertical equity underlie the use of Structural Funds to promote convergence, the standard case for intergovernmental grants is that they should be used to ensure horizontal (also called fiscal) equity within a federal system (Buchanan (1950)). Fiscal equity is violated if the net effect of government activity (including both expenditure and tax revenue) differs between individuals or households who would be equally well off in the absence of government. It is possible to distinguish between a broad and narrow view of horizontal equity, depending on how much government is assumed to be absent in the before-after comparison (Boadway and Flatters (1982)). The broad view compares the actual situation with what would obtain without either federal or lower-level (national) government, whereas the narrow view attempts to isolate only the effect of federal government. The potential for broad horizontal inequities is endemic to a federal system: even if member countries attempt to provide the same level of services, tax bases of different size will imply different tax rates across countries. This establishes a role for federal government grants to equalize taxable capacity, a practice that is widespread in federal systems.

Implicit in the narrow view, by contrast, is the principle that individuals have a right to the net fiscal benefits derived from national taxes and expenditures. It is this more restricted notion of horizontal equity that seems applicable in the EC context. There is no mention in the Single European Act of fiscal equalization, nor is there any measure to prevent individual income tax and benefit systems from differing across countries so that, for example, an unemployed German is better off than an unemployed Greek. Thus, although a vertical-equity case for Structural Fund transfers can be made in terms of convergence, it is not clear that there is also a broad horizontal-equity (or fiscal-equity) argument in support of it.

That the EC should be concerned only with the restricted principle of narrow horizontal equity is inevitable, given that countries retain national sovereignty. The EC is a looser type of federation than

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\(^5\)Relevant upon completion of the single market, this viewpoint would support a tax on emigration—a suggestion made by Bhagwati (1988) in a different context.

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**V AN ANALYSIS OF THE EC STRUCTURAL FUNDS**

Efficiency

Although equity considerations are clearly present, arguments based on allocative efficiency are fundamental to each of the five objectives of the Structural Funds enumerated above. The efficiency case for transfers to disadvantaged regions under objectives 1 and 2 is market failure: productive opportunities in the disadvantaged regions exist, but for some reason—imperfect information, shortages of capital or skilled labor, or externalities—they remain unexploited or are slow to be exploited by private agents. Expenditures under the other objectives are primarily intended to improve the allocative efficiency of European labor markets; reducing variations in unemployment rates within the EC is another way in which the Funds attempt to achieve convergence.

Regional policy aside, the standard efficiency case for intergovernmental grants arises from the existence of interjurisdictional spillovers. These may be conventional externalities (for example, one country showers acid rain upon its neighbor), in which case federal government grants are analogous to Pigovian taxes and subsidies to correct market failure within a national economy. Although the three Structural Funds have no mandate for pursuing environmental concerns, a new initiative (ENVIREG) will link regional development and environmental policy (EC Commission (1990a)).

Other externalities are fiscal in nature. For example, Padoa-Schioppa, Emerson, and others (1987) recognized that the benefits of Portuguese and Irish educational spending leak to countries to which their citizens migrate and therefore recommended that the Structural Funds be used to provide general education in poorer regions. More generally, fiscal externalities occur when there is factor movement for reasons other than differences in marginal productivity, such as access to resource rents or more favorable welfare benefits. Consider Meade’s (1955) example of two countries with identical marginal but different average products
of labor, both providing the same level of government services. The difference in tax rates means that tax rates will be higher in one country than in the other, inducing rent-seeking migration. Alternatively, free mobility can lead to inefficiency because migrants fail to take full account of the effect they have on both the country they leave and the country they join through changes in congestion costs.6

Such inefficiencies will not arise if differential fiscal residuals (benefits from national government services net of taxes) are capitalized in asset values (Boadway and Flatters (1982)). For example, lower taxes will be insufficient to attract labor if house prices and rentals are commensurately higher.7 It is unlikely, however, that capitalization will be perfect because this requires zero elasticity of asset supply, and in the absence of capitalization there is an efficiency argument for equalizing transfers to poorer or less populated jurisdictions in order to discourage factor movement (Wilson, Percy, and Norrie (1981)).

Stabilization

Central government grants can be used to redistribute aggregate demand between regions, thus cushioning the impact of both positive and negative, region-specific exogenous shocks. For example, Sachs and Sala-i-Martin (1989) found that a US$1.0 negative shock to the average U.S. region only reduces local income by US$0.62–US$0.65 once the effect on federal taxes and transfers is taken into account. Stabilization as yet does not form part of the EC’s stated mandate, although implicitly it is already an issue in the context of the EMS and may assume some importance with the establishment of the EMU (Mortensen (1990)).

Welfare Effects of the Single Market

If the integrated European market is inhabited by larger firms reaping economies of scale, then it seems inevitable that some firms will have had to shut down.8 When failing firms are concentrated geographically, the regional consequences for income and employment may be severe. However, the official study by Cecchini, Catinat, and Jacquemin (1988) made no attempt to trace the distributional implications of the single market, including tax harmonization—arguing that, difficult as it is to estimate the aggregate gains, the task is relatively manageable compared with forecasting the distribution by country or region.9

Subsequent analysis of the likely regional consequences of the 1992 initiative is mostly conjectural. On a priori grounds, the regions most likely to lose are those that are noncompetitive already (or competitive only under the protection of nontariff barriers) or that have poor infrastructure and vulnerable sectors (Begg (1989b)). A study of which regions fit this description has yet to be performed. However, at the country level, Neven (1990) identified labor-intensive industries in Spain and Portugal and skilled labor-intensive industries in the United Kingdom as likely beneficiaries, and Spain in general as a gainer from economies of scale. Neven’s thesis that only southern Europe stands to gain significantly is contentious. In global terms, Spain and Portugal do not have a comparative advantage in labor-intensive industries, so classical gains from trade will not materialize if future liberalization with the rest of the world is anticipated. Moreover, Baldwin (1989) has argued that France (not Spain) has most to gain from economies of scale. In addition, the thesis contradicts the Cecchini findings of sizable gains for northern Europe (Norman (1990)) and the commonly encountered argument that transport cost disadvantages and general isolation make the periphery of a federation least likely to gain from integration. There thus appears to be little agreement about the distributional effect by country.

The 1992 program is also likely to have important effects on labor markets, although even if qualifications are standardized and social security and pension rights made transferable, labor movement will continue to be inhibited by language and cultural barriers. For example, the liberalization of labor movement when the six-member EC was formed does not appear to have stimulated intra-EC migration (Straubhaar (1988)), which is consistent with the prediction of classical trade theory that commodity trade and factor movements are

6 As regards (quasi) public goods for which the average cost of provision falls with population size: see Buchanan and Goetz (1972).
7 For evidence of such capitalization in England, see Bayoumi and Gordon (1991).
8 For example, Smith and Venables (1988) have predicted that one sixth of firms in the European electrical industry will cease operations after integration.
9 Emerson and others (1988, p. 9). Cecchini, Catinat, and Jacquemin (1988) identified direct gains from market integration totaling between 4 1/4 percent and 6 1/2 percent of Community GDP. Because of data limitations, only the aggregate effects on the larger countries were considered. Community-wide estimates were made by scaling up the estimate for the included countries by a factor reflecting the omitted countries’ share in Community GDP. This linear extrapolation clearly does not entertain the possibility that an omitted country might be a net loser and illustrates how far the study was from being able to break down the economic effects of the 1992 program by country, let alone by region.

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substitutes. Labor is likely to move in the 1990s in response to skill shortages in particular regions rather than because of different factor proportions (Krugman (1987)). This would cause labor to move simultaneously in different directions, with no reason to expect major changes in population densities or any major regional impact. As noted earlier, there may also be migration in response to fiscal variables (Sinn (1990)), but, as with higher factor rewards, this will be discouraged if variations in after-tax incomes are capitalized into property values.

Lack of evidence aside, it must be recognized that creation of the single European market is only potentially Pareto-improving; for it to be actually Pareto-improving requires that those who gain from the completion of the single market compensate those who lose, and the Structural Funds can be viewed as an appropriate means of effecting such compensation. The equity argument is obvious, but an analogy can also be drawn with making side payments in order to attain a cooperative outcome.

Revenue Effects of Tax Harmonization

The revenue effects accruing to specific member countries from tax harmonization can give rise to claims for compensation as, for example, a switch is made from residence-based to source-based income taxation.\(^{10}\) Although harmonization of taxes on capital income within the EC would have limited budgetary implications for some countries (Chapter III), it is not clear that the proposals that are likely to be adopted (including the elimination of double taxation of intra-EC investment income) will create much of a need for compensation.

By contrast, commodity tax harmonization (Chapter II) is expected to have significant adverse budgetary consequences for some countries, notably Denmark and Ireland. In theory, a simple option is available that would give such countries time to adjust: as a transitional arrangement, those who gain revenue from tax rate increases could compensate those who lose from rate cuts. Although such a scheme is feasible because total revenue gains are estimated to be similar to total revenue losses (Centre for European Policy Studies (1989, Table 4)), it would encounter difficulties because it would be inconsistent with the EC’s vertical equity objectives; Denmark, for example, which would be a recipient, is one of the richest countries.

\(^{10}\)Canada, for example, redistributes from provinces that gain revenue from taxing nonresident firms and factors to those provinces where the firms and factors are resident.

Constraints on Fiscal or Regulatory Instruments

The harmonization of taxes and the removal of nontariff barriers reduces the ability of individual countries to achieve their own regional objectives (for example, attracting investment with tax incentives, or indirectly protecting certain industries through selective excises). This suggests an increased role for Structural Funds or similar transfers after 1992 as a substitute for the tax instruments subject to removal. Moreover, those instruments over which countries retain discretion may become impotent. To illustrate the dangers that removing barriers to factor movement pose for national regional policy, note that in a barrier-free Europe, any attempt by the United Kingdom to use zoning regulations to encourage a firm to locate, for example, in Yorkshire rather than in London would run the risk that the firm would instead set up in France (Bird (1967)). This is similar to the point made earlier that migration induced by fiscal externalities constrains the ability of individual countries to pursue independent distributional objectives; any country offering high benefits financed by high taxes risks the emigration of productive citizens and the immigration of unproductive foreign citizens (Sinn (1990)).

These examples suggest increased responsibility at the EC level after 1992 for both regional and redistributive policy. Increased regional responsibility may involve further expanding the Structural Funds; similarly, increased redistributional responsibility may involve creation of an EC-wide unemployment insurance scheme in the framework of a uniform social charter (Bean and others (1990)). These are issues, however, that impinge on the very assignment of powers between the EC and the member countries; although the 1992 program effectively reassigns some of these to the supranational level, the final assignment remains largely unresolved.

Operations of the Structural Funds

Operations of the ESF, ERDF, and the Guidance component of the EAGGF are described in the following paragraphs. The results of regression analysis, using 1988 data, to analyze the accuracy of targeting the Funds, are also presented.

European Social Fund

Steinle (1988) has documented how the priorities of the ESF have changed since its founding in 1960. Whereas an original intention for the ESF was to provide income support to the unemployed, the
Operations of the Structural Funds

Table 34. Structural Fund Commitments by Country, 1988

<table>
<thead>
<tr>
<th>Country</th>
<th>ESF (in millions of ECU)</th>
<th>ESF per Capita (in ECU)</th>
<th>ERDF (in millions of ECU)</th>
<th>ERDF per Capita (in ECU)</th>
<th>Global ESF (in percent of country commitment)</th>
<th>GDP per Capita 100</th>
<th>Harmonized Unemployment Rate (in percent of labor force)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>457</td>
<td>4.7</td>
<td>25.3</td>
<td>2.6</td>
<td>62.0</td>
<td>100.9</td>
<td>11.3</td>
</tr>
<tr>
<td>Denmark</td>
<td>307</td>
<td>6.0</td>
<td>13.1</td>
<td>2.6</td>
<td>108.6</td>
<td>113.1</td>
<td>6.3</td>
</tr>
<tr>
<td>Germany</td>
<td>175.0</td>
<td>2.9</td>
<td>111.6</td>
<td>1.8</td>
<td>58.9</td>
<td>113.1</td>
<td>4.5</td>
</tr>
<tr>
<td>Greece</td>
<td>242.8</td>
<td>24.5</td>
<td>340.6</td>
<td>34.4</td>
<td>71.8</td>
<td>110.5</td>
<td>7.4</td>
</tr>
<tr>
<td>France</td>
<td>373.1</td>
<td>6.8</td>
<td>309.1</td>
<td>5.6</td>
<td>11.1</td>
<td>113.1</td>
<td>10.4</td>
</tr>
<tr>
<td>Ireland</td>
<td>214.0</td>
<td>59.4</td>
<td>147.9</td>
<td>41.1</td>
<td>58.9</td>
<td>113.1</td>
<td>6.3</td>
</tr>
<tr>
<td>Italy</td>
<td>592.2</td>
<td>10.4</td>
<td>939.7</td>
<td>16.5</td>
<td>243.1</td>
<td>103.8</td>
<td>10.6</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>1.7</td>
<td>4.4</td>
<td>0.7</td>
<td>1.8</td>
<td>120.9</td>
<td>102.6</td>
<td>2.7</td>
</tr>
<tr>
<td>Netherlands</td>
<td>69.6</td>
<td>4.8</td>
<td>25.2</td>
<td>1.7</td>
<td>58.0</td>
<td>102.6</td>
<td>9.7</td>
</tr>
<tr>
<td>Portugal</td>
<td>330.8</td>
<td>32.7</td>
<td>348.6</td>
<td>34.4</td>
<td>45.4</td>
<td>104.7</td>
<td>7.1</td>
</tr>
<tr>
<td>Spain</td>
<td>495.5</td>
<td>12.8</td>
<td>701.1</td>
<td>18.1</td>
<td>0.7</td>
<td>74.7</td>
<td>20.8</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>607.3</td>
<td>10.7</td>
<td>562.0</td>
<td>9.9</td>
<td>57.1</td>
<td>107.4</td>
<td>11.1</td>
</tr>
<tr>
<td>EC Total</td>
<td>2,935.7</td>
<td>9.1</td>
<td>3,525.0</td>
<td>10.9</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

Source: EC Commission (1989g, 1990a) and data provided by the Commission.

1 Proportion of ESF commitments that is global (benefits more than one region) rather than region specific, out of total commitments for country.

The present focus is almost exclusively on supply-side measures. The post-reform ESF attempts to combat long-term and youth unemployment in accordance with objectives 3 and 4 of the Structural Funds (EC Commission (1989g)). It finances training (particularly with respect to new technology), vocational guidance, job placement, and self-employment initiatives. All told, about 80 percent of ESF expenditure serves to promote vocational training. The addition of a regional emphasis, incorporating measures to benefit the unemployed in less favored regions under objectives 1, 2, and 5b, has represented a second change in the orientation of ESF operations.

Total ESF commitments for 1990 were budgeted at ECU 4.1 billion (see Table 32). In real terms, this will increase considerably by 1993 (see Table 33). On a yearly per capita basis, EC-wide commitments are modest, amounting to not much more than ECU 10 in 1990. For 1988, however, the year before the reform of the Structural Funds but the most recent year for which a detailed breakdown is available, the allocation amounted to ECU 225 per unemployed person and ECU 1,175 per assisted person, with the number assisted accounting for close to one fifth of total EC unemployment (EC Commission (1989g) and author's calculations). The breakdown by country of 1988 ESF commitments is given in Table 34. In contrast to the ERDF, most regions received some assistance, with Ireland (including Northern Ireland) receiving the most per capita. In 1988 Ireland as a whole received about ECU 800 per unemployed person, almost four times the EC average. Of the total commitment, about 40 percent was allocated to region-specific rather than global programs, although the region-specific proportion varied sharply across countries (Table 34).

Each year, applications for ESF transfers exceed the amount available by at least a factor of two, and regression analysis can be used to assess the extent to which the screening process gives priority to programs meeting EC goals. The ESF commitments made to 151 basic EC administrative regions in 1988 were regressed on indicators of regional need according to the following equation:

\[ s_i = \sum_j a_{ij} u_j + \sum_j a_{ij} y_j + v_i \]

for region \( i \) in country \( j \), where \( s_i \) is the per capita region-specific ESF commitment, \( u_j \) is the unemployment rate, \( y_j \) is a GDP per capita index, and \( v_i \) is the error term.\(^{11}\) The \( j \) subscript allows the inter-

\(^{11}\)Regional data are available on overall unemployment, youth (that is, those under 25 years of age) unemployment, and long-term (that is, in excess of 12 consecutive months in duration) unemployment. The three series are highly collinear in 1988, with correlation coefficients of 0.88 between youth and overall unemployment, 0.93 between long-term and overall unemployment, and 0.90 between youth and long-term unemployment. As a result, only overall unemployment, the most general, was included in the regression.

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cept and coefficient on the unemployment variable to differ according to the country in which the region is located.

The results of estimating equation (1) using 1988 data indicate that, despite the concern with priority regions, GDP per capita does not appear to affect directly regional ESF commitments (Table 35). F-tests support the hypothesis of a common coefficient on the unemployment variable across countries, but the hypothesis of a common intercept is rejected. Re-estimation of the equation with a common unemployment coefficient shows that a 1 percentage point rise in a region’s unemployment rate would have elicited an additional ECU 0.58 per capita in annual ESF commitments, or about 6 percent of the EC-wide per capita average in 1988. Given that the regression excludes global ESF commitments that affect more than one region, and that the proportion of such commitments varies among countries, the rejection of the hypothesis of a common intercept is unsurprising. Moreover, the inverse relationship between the estimated country intercepts and the proportion of assistance for global aid programs is the expected one.12 Neither Portuguese regions still seem to have been allocated relatively large commitments. The observed differences in allocations among countries may reflect differences that emerge at the planning and negotiation stages of the allocation process, the interaction of the various rules guiding total allocations, or both.13 As regards the interaction of rules, for example. Portugal has comparatively low unemployment but a large proportion of regions that receive priority under objective 1.

Overall, the regression results suggest careful targeting of the pre-reform ESF. The significance of the unemployment rate is precisely in accordance with the ESF’s objectives, whereas the pattern observed in the country intercepts indicates, in part, that the presence of global aid from which a region may benefit reduces that region’s share of region-specific aid.

**European Regional Development Fund**

As noted earlier, the ERDF, established in 1975, is of more recent origin than the ESF. ERDF operations are geared toward meeting objectives 1, 2, and 5b of the Structural Funds—especially objective 1, toward which up to 80 percent of ERDF resources can be allocated. The ERDF tends to finance large-scale infrastructure investment (representing over 90 percent of total commitments in 1988) and, to a lesser degree, industrial investment projects.14 The ERDF is larger than the ESF, with total commitments in 1990 budgeted at ECU 5.4 billion (Table 32). That figure hides considerable regional variation; in 1988, for example, in per capita terms some regions received ten times the EC average. In contrast to the wide geographical spread of ESF operations, ERDF operations have a narrower focus. Of the 86 basic administrative regions for which a breakdown is available, almost a quarter received no ERDF assistance (EC Commission (1990a)) in 1988. There is a corresponding variation at the country level: commitments to Greece, Ireland, and Portugal were between ECU 30 and ECU 45 per capita in 1988, whereas commitments to Germany, Denmark, Belgium, the Netherlands.

12 This relationship was confirmed by including the proportion of global aid by country in the regression instead of the country dummies: the coefficient on this variable was negative (and significantly so). However, this restriction on the country dummies was rejected by an F-test.

13 For example, before the reform, there was a regulation that required that 44.5 percent of ESF funds be reserved for priority regions (EC Commission (1987)).

14 EC Commission (1990a). As for the ESF, 1988, the year before the reform, is the most recent year for which a regional breakdown is available.

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**Table 35. Estimates of ESF Commitments, 1988**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient Estimate</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept²</td>
<td>-3.48</td>
<td>-1.28</td>
</tr>
<tr>
<td>Belgium</td>
<td>-3.07</td>
<td>-1.15</td>
</tr>
<tr>
<td>France</td>
<td>-1.41</td>
<td>-0.64</td>
</tr>
<tr>
<td>Germany</td>
<td>5.45</td>
<td>1.61</td>
</tr>
<tr>
<td>Italy</td>
<td>-2.20</td>
<td>-0.78</td>
</tr>
<tr>
<td>Netherlands</td>
<td>9.72</td>
<td>2.38</td>
</tr>
<tr>
<td>Spain</td>
<td>1.64</td>
<td>0.42</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-0.21</td>
<td>-0.09</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>-0.01</td>
<td>-0.04</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>0.58</td>
<td>3.04</td>
</tr>
</tbody>
</table>

**Summary statistics**

- Number of observations: 151
- \( R^2: 0.49 \)

Note: Results of ordinary least-squares estimation of equation (1) with common coefficient on the unemployment variable, the dependent variable is per capita ESF commitment by region (in ECU).

²The t-statistics are based on standard errors adjusted to be robust to heteroscedasticity.

³Denmark, Greece, Ireland, and Luxembourg were excluded because of lack of regional data.
and Luxembourg were less than ECU 3 per capita (Table 34). In contrast to the ESF, almost all ERDF commitments are region specific, so that in a regression of ERDF commitments on indicators of regional need there is no reason to expect country effects of the type observed when estimating equation (1) for the ESF. Nevertheless, country effects are still likely. ERDF allocations are bound by a system of ranges within which assistance to each country must lie, and it is possible that these ranges are determined by factors other than each country's regional needs.

As with the ESF, a linear explanation of commitments in 1988 was estimated:

\[ r_i = \sum b_{ij} y_j + b_i u_i + \sum b_{ij} y_j + \varepsilon_i, \]

(2)

where, in addition to the terms defined for equation (1), \( r_i \) is the per capita ERDF commitment and \( \varepsilon_i \) is the error term. The specification of equation (2) indicates that the emphasis in explaining ERDF commitments is expected to be on GDP per capita rather than on the unemployment rate (for equation (1) it was the other way round).

As a result of the large number of zero values for \( r_i \), Tobit analysis was used. The hypothesis of common slopes but country-specific intercepts was accepted by a likelihood ratio test. The results of re-estimation with a common GDP coefficient are reported in Table 36. As expected, GDP per capita is now significant; the results indicate that a 1 point fall in a region's GDP per capita index would have led to an ECU 1.25 rise in its per capita ERDF entitlement. Independent of per capita GDP, however, regional assistance also appears to have depended on country of location.

Dividing the estimated country intercepts in Table 36 by the coefficient on GDP yields country-specific cutoffs of the GDP index (the value of the index above which a region has less than a 50 percent chance of receiving ERDF assistance): Germany, 109.3; France, 100.4; Italy, 116.0; Portugal, 89.4; Spain, 92.4; and the United Kingdom, 109.7. This variation suggests that some of the constraints imposed by the ranges for assistance to each country must have been binding in 1988; in particular, Portugal and Spain appear to have been up against the upper limits of their ranges, whereas Italian and German regions appear to have benefited from the lower limits.

Thus, the following picture emerges of the process whereby the pre-reform ERDF was allocated. Within each country, ERDF assistance went to regions that were most deserving in terms of GDP per capita, whereas the total going to each country was determined by considerations (the ranges) other than vertical equity. Nonetheless, the amount of aid channeled to regions with below-average need, which conceivably could have been reallocated if the horizontal inequities had been rectified.
was small; for example, in 1988 assistance to regions with GDP per capita above the EC average was only about 7 percent of the total.

**Guidance Component of the European Agricultural Guidance and Guarantee Fund**

Structural measures funded by the EAGGF are tiny in comparison with the Guarantee expenditures that constitute the CAP; in 1990 commitments under the Guidance component were budgeted as ECU 1.7 billion (Table 32) as against a Guarantee component of ECU 29.6 billion (EC Commission (1989d)). As a Structural Fund, the Guidance component of the EAGGF is therefore small compared with the ERDF and the ESF, although it should be noted that only about 8 percent of EC employment is in agriculture. The EAGGF Guidance component finances structural adjustment on individual farms, investment in agricultural infrastructure, and measures to improve farming and marketing in poorer regions. There has been an increasing orientation in recent years toward helping small farmers and those regions that suffer a natural handicap (EC Commission (1987k)). In per capita terms, the principal beneficiaries from EAGGF structural assistance are Greece, Ireland, Luxembourg, and Portugal: the rest of the EC receives minimal assistance.

**An Assessment**

Although the analysis above indicates that Structural Fund transfers are in general targeted quite accurately toward the stated objectives, two factors suggest that they may be inadequate in their present form to solve the EC's regional problems, particularly if these worsen after 1992.

**Additionality**

When grants are made to lower levels of government within a federal system, an important issue arises about whether the expenditure financed is truly "additional" (that is, in the sense that the recipient would not have made the expenditure in the absence of the grant). Although additinality is a declared objective of the post-reform Structural Funds (EC Commission (1989e)), doubts have been raised about the past success achieved in this regard. Steinele (1988) has argued, for example, that programs financed by the ESF would have been carried out anyway. Croxford, Wise, and Chalkley (1987) have expressed similar reservations about the additionality of ERDF-financed expenditure. That Structural Fund assistance has historically been fungible is supported by the dispute in the 1970s about the United Kingdom's contribution to the EC budget, when the United Kingdom's willingness to contribute appeared to be conditional on the amount of Structural Fund transfers it would receive in return (Begg (1989a) and Wildasin (1990)). If these concerns about fungibility are well founded and continue to be so after the reform, the Structural Funds do no more than provide budgetary and balance of payments assistance.\(^{19}\)

Additionality is an issue that is very difficult to resolve empirically because it rests on a counterfactual scenario. There are, however, theoretical grounds for doubting whether the Structural Funds achieve much additionality. In the language of consumer theory, federal grants can have both an income effect and a substitution effect on local expenditure, but the substitution effect depends on a reduction in the marginal tax price (the proportion of a marginal dollar of expenditure borne by the lower level of government). An ERDF grant to a region that covers, say, 30 percent of the cost of a highway project reduces the tax price of the highway in question to 70 percent, but it only reduces the *marginal* tax price of highway building if that was the *marginal* highway planned for the region. If more highways had been planned, then the ERDF grant would reduce the tax price on an inframarginal unit of expenditure, would be equivalent to a lump-sum transfer, and would only have an income effect.\(^{20}\) Expenditure on the preferred activity (highway building) would be expected to rise because of the income effect, but only by the marginal propensity to spend on highways: although budgetary pressure (or "flypaper effects") may make this propensity quite large, it will nevertheless be significantly less than unity. In this sense, the targeting of Structural Fund assistance is open to question, since a proportion of the grant equal to one minus the marginal propensity to spend on the preferred activity may be used by the country to increase other expenditures (in other regions), to cut taxes, or even to reduce the national budget deficit. This is not to say, however, that (1) Structural Fund assistance is insubstantial, (2) it is not progressive in its impact at the country level, or

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\(^{19}\) With regard to the Guidance component of the EAGGF, Sutherland (1986) has argued that it is simply too small to counter the increases in regional inequality caused by the CAP.

\(^{20}\) A substitution effect would require a matching categorical grant, whereby the ERDF stood ready to finance 30 percent of every highway the region built. Even this might not be sufficient, however, if member countries anticipate that such a scheme would inevitably lead to increases in national contributions to the EC budget (see Boadway, Pestieau, and Wildasin (1989)).
(3) the EC Commission is unaware that ensuring additionality is a problem.\(^{21}\)

The suspicion that the Structural Funds are in general quite fungible would imply that they tend to be misallocated using criteria of regional need. For example, to the extent that transfers to the Mezzogiorno are fungible, they benefit all of Italy; therefore Italy’s national need, rather than that of the Mezzogiorno region, should be the basis for determining the magnitude of the transfers. From this perspective, the extent of the possible misallocation of the ESF and the ERDF are reflected in Charts 3 and 4, which compare the actual country allocations of per capita commitments in 1988 with what would have been the case if allocations had been based on national rather than regional need. Chart 3 illustrates the earlier suggestion that Portugal does better under the ESF than its unemployment rate would warrant.\(^{22}\) Note also that Greece and Ireland (which also have a high number of objective-1 regions but were not included in the regression) appear to be similarly favored. As regards Chart 4, it is not possible to distinguish which part of the difference between actual ERDF

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\(^{21}\)To illustrate (1), note that the ERDF is committed to provide about half of the almost ECU 1 billion the Irish government proposes to invest in national road improvement over the period 1989-93 (Ireland (1989)). With regard to point 2, Table 34 shows a strong inverse relationship between per capita ERDF commitments and national GDP per capita. As regards point 3, it remains to be seen what steps will be taken to attempt to ensure the additionality of expenditure financed by post-reform Structural Funds. One possibility being explored by the Commission is that real national spending by objective and by region will be required to remain constant over the period during which Fund transfers are received.

\(^{22}\)The entitlement line in Chart 3 shows what each country would get from the ESF if allocations depended on the national unemployment rate. It is derived by using the estimated coefficient on the regional unemployment rate shown in Table 35 with the intercept adjusted to go through the sample means (an ESF commitment of ECU 10 per capita and an unemployment rate of 10.8 percent).
commitment and the country's entitlement based on national need is due to the extent of regional inequality within each country and which part is due to constraints imposed by the ERDF country ranges. Nevertheless, under the fungibility hypothesis it seems, for example, that Italy has benefited from its high degree of regional inequality whereas Spain has lost from its more equitable regional distribution.

**Adequacy as a Social Safety Net**

Given that little is known about the distributional consequences of the single market and tax harmonization, the potential adequacy of the Structural Funds as a means of compensating any regions that lose under this program is difficult to judge. Begg (1989b) has argued that the losses experienced by adversely affected regions may be many times larger than the support available from the Structural Funds. Nevertheless, a total allocation of almost ECU 60 billion (1.5 percent of Community GDP) for 1989–93 (Table 33) does not compare unfavorably with the figure of ECU 175–255 billion estimated in Cecchini, Catinat, and Jacquemin (1988) as total gains from the program.

Although the increase in the Structural Funds as part of the 1989 reform seems significant compared with the expected post-1992 gains in Community GDP, the present orientation of the Structural Funds is toward manpower programs and infrastructure, which yield benefits in the long term. In the aftermath of the single market, however, there may well also be a need for short-term income support (Bean and others (1990)). Moreover, the Structural Funds lack the flexibility to react to regional problems as they occur. This can be illustrated by calculating the compensation that adversely affected regions would receive automatically from the Funds—without deliberate action by the EC to change the rules guiding allocation.

It is useful to contrast this automatic compensation with Sachs and Sala-i-Martin's (1989) estimate of the net repercussions of regional shocks in the United States. Eichengreen (1990) has estimated that a US$1.00 decline in an EC member country's national income reduces its contribution to the EC budget by less than US$0.01, compared with Sachs and Sala-i-Martin's estimate of a reduction in federal taxes of US$0.30 for a region in the United States under similar circumstances. The results reported in the preceding section of this chapter allow estimation of the increase in Structural Fund transfers that would follow automatically from such an income loss under the assumption that, except for a scale change, the allocation rules operating in 1988 will continue to apply to the post-reform Funds. Consider an objective–I region already receiving ERDF assistance. A US$1.00 fall in its per capita income (equivalent to a 0.0063 fall in its GDP index; the index is 100 at the EC's 1988 GDP per capita of ECU 15,828) would, according to the results presented in Table 36, lead to an increase in ERDF transfers of at most US$0.0095 per capita. By Okun's Law, the fall in income would lead to a 0.0025 point rise in unemployment, which, according to the estimates presented in Table 35, would result in increased ESF transfers of US$0.0018 per capita. The estimate for the total increase in Structural Fund transfers to the region (excluding the Guidance component of the EAGGF) is therefore US$0.0113 per capita, which should be doubled because the analysis uses pre-reform data. A US$1.00 fall in the region's income is thus estimated to lead to less than US$0.01 in lower EC taxes and a little over US$0.02 in additional transfers. In contrast to the U.S. region that is shown in Sachs and Sala-i-Martin (1989) to bear no more than two thirds of an income shock, an EC region under analogous circumstances must bear about 97 percent. This comparison illustrates the far looser nature of fiscal federalism in the EC than in the United States.

The above example demonstrates that the Structural Funds in their present form cannot be considered to provide an automatic safety net for regions within the EC. To be sure, regions that experience income losses as a result of the completion of the single market will qualify for added Structural Fund assistance, but for most of them it will be on too small a scale to be of much significance.

**Conclusions**

This analysis has examined the rationale and operations of the EC Structural Funds. There are well-established theoretical arguments for transfers

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23The entitlement line in Chart 4 is derived by using the coefficient on GDP per capita shown in Table 36 with the intercept adjusted so as to exhaust the total 1988 ERDF commitment.

24Note also that the ECU 3 billion allocated for 1991–93 to the regions constituting what was formerly East Germany is additional to the amounts shown in Table 33.

25The EC's major revenue source is 1.28 percent of each member's VAT base (capped at 55 percent of GDP). Other sources are customs duties and agricultural levies.

26The correct regression coefficient for regions already receiving ERDF assistance is the Tobit slope coefficient multiplied by the fraction specified in McDonald and Mollitt (1979). The effect implied by the Tobit coefficient can thus be treated as an upper bound on the true effect.
among countries within a federation. Compared with most federations, however, the EC's fiscal powers at the federal level remain quite limited; its budget is tiny in comparison with national budgets, and member countries retain a high degree of fiscal sovereignty. As a result, some of the arguments for intergovernmental transfers based on fiscal federalism, such as equalization of taxable capacity (fiscal equity) and macroeconomic stabilization, may not be entirely relevant. Nevertheless, both (vertical) equity and efficiency arguments can be made for Structural Fund transfers, since the EC's commitment to promoting convergence and social cohesion among its members requires an active regional policy. Moreover, given the possibility that some regions stand to lose from the completion of the single market, including tax harmonization, the Structural Funds can be seen as a potential means of making compensation, particularly since they have doubled in size.

Upon completion of the single market, member countries will have to recognize the constraints that full factor mobility in an internally frontier-free Europe will impose on their ability to pursue independent redistributive policies, which will be mitigated to the extent that taxes and benefits are harmonized or that differences in fiscal residuals are capitalized in immobile factor prices (for example, real estate). As a corollary, a greater redistributive role may have to be assigned to intergovernmental transfers within the EC. By implication, member countries may need to cede to EC central authorities a greater fiscal role than they so far have been politically willing to do.

A review of the actual regional allocation of the Structural Funds in 1988 reveals that transfers were carefully targeted toward meeting the objectives that have since been codified as part of the 1989 reform (that is, assisting less developed and declining regions and removing structural rigidities from labor markets). Nonetheless, particularly with regard to the ERDF, it was found that otherwise identical regions were treated differently depending on the country to which they belong, and it was
argued that this may have reflected binding constraints on allocations resulting from the ranges within which ERDF assistance to each country must lie. The extent to which the reform has put an end to such horizontal inequities is a subject for future research.

There are doubts about the extent to which Structural Fund expenditure is additional to, rather than a substitute for, national expenditure. Although this is a difficult issue to resolve empirically, there is suspicion that Structural Funds have historically done little more than provide budgetary support. If Structural Fund assistance displaces regional assistance that member countries would otherwise provide, then Structural Fund assistance benefits the entire population of those countries, rather than that of the deserving regions, and would tend to be misallocated by being tied to regional indicators. Until it is demonstrated that the post-reform Funds will be better able to ensure addi tionality, the complex process of drawing up EC support programs and targeting disbursements toward economically depressed regions remains open to question.

An assessment of the adequacy of the EC Structural Funds as a means of redressing any adverse distributional effects of economic integration has suggested that the doubling in size of the Funds, as part of the reform, makes them better able to assist regions that suffer such adverse effects. In their present form, however, the Funds appear to lack the flexibility necessary to address regional problems as they emerge in the wake of further integration: the automatic increase in Structural Fund transfers to a region experiencing a negative shock under the existing allocation formula, as calculated in this study, is very small. Compensation of regions that stand to lose from the single market and tax harmonization would therefore require a departure from the current system of allocating the Structural Funds, if not a further increase in their scale. In the final analysis, however, any future overhaul of the Structural Funds must be undertaken in the context of the desired extent of fiscal federalism in the EC, which is likely to remain much looser than in other federations such as Canada and the United States.
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