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**Greek Public Enterprises:
Challenges for Reform**

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GREEK PUBLIC ENTERPRISES : CHALLENGES FOR REFORM
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by
Paul Mylonas and Isabelle Joumard

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ABSTRACT/RÉSUMÉ

A successful reform of public enterprises would improve productivity in key sectors of the Greek economy, and thus provide essential inputs at lower cost to the economy as a whole. Reforms would need to address the factors that are responsible for the poor performance of Greek public enterprises. First, labour costs are high and productivity low in international comparisons. Second, there are wide technology gaps between Greece and other OECD countries. Third, Greece's public enterprises fulfil heavy public service commitments without matching compensation. As a result, prices are often out of line with prices elsewhere. In recognition of the large drag on the economy, as well as the burden on the budget, the Government has embarked on a programme to revitalise inefficient public enterprises. The objective of this paper is to analyse the main issues concerning the public enterprise sector and assess the current policy framework, as well as planned changes to it. First, the key features of the public enterprise sector are outlined, including their impact on the public finances and product and labour markets. Second, recent changes in government policy are reviewed. Third, the economic conditions of the main sectors are examined (*e.g.* pricing policy, employment and compensation policies, investment programmes and technology lags, and the potential for enhancing competition). Fourth, an attempt is made to quantify the reduction in prices and the potential gains in output and employment for restructuring public enterprises and raising competition in their respective sectors. The paper concludes with a set of recommendations based on OECD member country experience.

Des réformes bien conçues des entreprises publiques amélioreraient la productivité dans les secteurs clés et assureraient ainsi la fourniture d'intrants essentiels à faible coût à l'ensemble de l'économie grecque. Ces réformes devraient s'attaquer aux facteurs qui sont à l'origine des piètres performances des entreprises publiques grecques. Premièrement, le niveau des coûts de main-d'oeuvre est élevé et la productivité faible. Deuxièmement, il y a des retards dans la modernisation des équipements. Troisièmement, les entreprises publiques assument de larges obligations de service public sans contrepartie financière. En conséquence, les prix sont souvent éloignés de ceux d'autres pays. Reconnaisant les effets inhibitifs sur la croissance et le poids sur le budget générés par un mauvais fonctionnement de ces secteurs clés, le gouvernement a engagé un programme de revitalisation des entreprises inefficaces. Ce document analyse les principaux problèmes que connaissent les entreprises publiques et évalue le cadre d'action actuel ainsi que les réformes envisagées. Premièrement, on rendra compte des principales caractéristiques du secteur des entreprises publiques, en s'attachant également à son impact sur les finances publiques, les marchés de produits et le marché du travail. Deuxièmement, on examinera les évolutions récentes de la politique gouvernementale dans ce domaine. Troisièmement, on analysera les conditions économiques caractérisant les principaux secteurs (par exemple la politique de prix, la politique en matière d'emploi et de rémunération, les programmes d'investissement et le retard technologique ainsi que les possibilités d'amélioration de la concurrence). Quatrièmement, on s'efforcera de quantifier la baisse des prix et les gains potentiels de production et d'emploi qui résulteraient d'une restructuration des entreprises publiques et d'une intensification de la concurrence dans les différents secteurs. Ce document se terminera par un ensemble de recommandations tirant les leçons de l'expérience des pays Membres de l'OCDE.

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GREEK PUBLIC ENTERPRISES: CHALLENGES FOR REFORM¹

Paul Mylonas and Isabelle Joumard²

I. Introduction

For at least two decades, almost all public enterprises have been poorly managed and have often been used as vehicles for implementing broader policy objectives unrelated to their primary objective of providing goods and services. As a result, their operations are often inefficient, the quality of service generally unsatisfactory with repercussions on other sectors, and they are an extensive drain on the public purse. This negative assessment is generally acknowledged, including by the Government and social partners. In contrast to policy efforts in most other OECD countries, until recently progress towards restructuring public enterprises has been sporadic and overall very slow, while only a few legislative changes have diminished public enterprises' monopoly power. However, reform of public enterprises has gained prominence as a policy priority from 1996, — spurred by the need for change, including from the advent of globalisation and improvements in technology, as well as commitments to the EU. From a short-term macroeconomic perspective, an impetus to reform is the desire to meet the Maastricht Treaty criteria, and this objective would be facilitated by a significant reduction of the financial burden the public enterprises impose on the budget. Looking further ahead, EU membership necessitates an opening to competition and a levelling of the playing field in most of the markets in which public enterprises currently operate as monopolies. The survival of public enterprises, therefore, hinges on deep restructuring. Though this will be painful for the individual enterprises, the experience of other countries suggests that liberalisation cum restructuring policies will bring forth large efficiency gains for the economy as a whole. To meet the challenge, the Government has formulated a resolute reform plan aimed at improving the performance of these enterprises. A bold implementation will be required -- and early indications of the Government's resolve are promising -- as public enterprise reform in Greece lags far behind that in other OECD countries and faces the opposition of strong domestic vested interest groups.

The objective of this paper is to analyse the main issues concerning the public enterprise sector and assess the current policy framework, as well as planned changes to it. First, the key features of the public enterprise sector are outlined, including their impact on the public finances and product and labour markets. Second, recent changes in government policy are reviewed. Third, the economic conditions of the main sectors are examined (e.g. pricing policy, employment and compensation policies, investment programmes and technology lags, and the potential for enhancing competition). Fourth, an attempt is made

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1. An earlier version of this paper formed part of the 1998 *OECD Economic Survey for Greece*.
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to quantify the reduction in prices and the potential gains in output and employment from restructuring public enterprises and raising competition in their respective sectors. The chapter concludes with a set of recommendations based on OECD member country experience, consistent with those contained in OECD sectoral reviews such as the *OECD Report on Regulatory Reform*, and the International Energy Agency's *In-depth country reviews*.³

II. Key features of the public enterprise sector

The Greek public enterprise sector comprises nearly 50 enterprises and employs about 130 000 individuals, equivalent to about 3½ per cent of total employment but, due to the large number of self-employed in Greece, 6 per cent of wage earners. The first ratio is on the low side compared to most other OECD countries, while the second is high, portending an influential role for public sector employees in the collective bargaining process. This sector is dominated by about 10 firms, which include the largest enterprises in Greece and those that are usually monopolists (and in a few cases oligopolists) in sectors which provide critical inputs to the economy, such as communications (telephony and mail), energy (electricity, lignite mining, petroleum, and natural gas), and transportation (air, rail, and urban transport) (Table 1). There are few industrial firms in this group, except for those involved in the defence sector. Outside this group of 50-odd enterprises, which has traditionally been referred to as the public enterprise sector in Greece, there have been until recently several important industrial firms -- most of whose financial viability is questionable -- which were *de facto* state controlled (e.g. shipyards, mining firms, textile plants, and until recently cement companies). These firms were either under the control of the Industrial Restructuring Organisation (IRO) -- a public holding group for non-profitable firms -- or are controlled by state-owned banks. In both cases, the control of private firms in dire financial straits passed into public hands when the State -- rather than shut them down -- converted their liabilities into equity. As a result of a nearly decade-old policy aimed at reducing the state's control of these industrial firms, there currently remain only a few, yet often important, such industrial firms still to be transferred to private-sector control. State-controlled banks are not reviewed in this paper, but an assessment of their situation is contained in Chapter III of the *1998 OECD Economic Survey of Greece*.

(Table 1. Main public enterprises by sector)

How public enterprises burden the budget

The invariably poor financial performance by public enterprises has required financial assistance from the central government, equivalent to nearly half of Greece's large debt burden (with the latter amounting to nearly 110 per cent of GDP at end-1997). From 1984 to 1997, the annual gross financing needs of the nearly 50 public enterprises have averaged about 4 per cent of GDP per year, and current and capital transfers from the state budget averaged about 2 per cent of GDP annually (debt financing and depreciation account for the remainder of the financing requirement) (Table 2). Cumulated over this period, these (mostly capital) transfers are equivalent to about 30 per cent of GDP, but have been financed to a large extent by EU structural funds. Thus, the direct impact on the general government debt is much smaller than this number suggests, though it likely reflects the opportunity cost from the loss of EU funds to other sectors of the economy. In other countries which are recipients of EU structural funds, the amount of funds directed to public enterprises appears to be much smaller than is the case in Greece. In the event, this figure greatly understates total support to public enterprises as it does not include debt write-offs and equity injections. From 1990, the Government began to clear the back-log of arrears to state-owned banks

3. OECD (1998a), *The OECD Report on Regulatory Reform*, Volume I and II, Paris and OECD (1998b), "International Energy Agency, *Energy policies of IEA countries - Greece - 1998 review*."

which were covered by government guarantees. These “called” guarantees have cumulatively amounted to 7.5 per cent of GDP by end-1997, and the outstanding stock of such guarantees on loans to public enterprises stood at approximately Dr 1.5 trillion at end-1997 (equivalent to 4.5 per cent of GDP) (Table 3). Starting in 1996, the Government has supplemented direct financial assistance to public enterprises with equity injections which have added an estimated 4 per cent of GDP to the stock of government gross debt over 1996 to 1998.

(Table 2. Public enterprise accounts)

(Table 3. Debt assumptions from public enterprises)

To the debt attributable to the public enterprises, one should add the debt taken over by the Government from the industrial firms that the Government propped up during the 1980s for reasons of maintaining jobs and protecting firms of perceived importance to the economy. The operations of the IRO umbrella will have cost the Government about 1 trillion (equivalent to about 3 per cent of 1997 GDP); overall an expensive proposition because the IRO saved only a few firms from bankruptcy (in total 16 firms employing 9 000 are likely to be sold by IRO, prior to its planned closure at end-1998, and 63 firms will have been liquidated). The cost to the state-controlled banks, especially the Hellenic Industrial Development Bank (ETBA), from the firms that they took over (and which partly overlap with firms under IRO) is more difficult to determine. One indication is that these banks have written off several percentage points of GDP in non-performing loans during the past few years, of which a good part would be attributed to the loans they were encouraged to contract with some essentially bankrupt industrial giants.⁴ The fact that the state has had to re-capitalise most of the main state-controlled banks can be partially attributed to lending policies to such industrial firms; however it should be noted that state-controlled banks also provided credits on non-commercial terms to the private sector during this period. The cost to the banks, and perhaps the budget, is not yet complete as the state-controlled banks still maintain control of some large non-financial concerns, most notably the large nickel producer, Larko, with debts of about Dr 60 billion, the remaining 51 per cent of Hellenic Shipyards, and Softex Paper Works (the largest industrial loss-maker in 1997).⁵

The total cost to the budget could be even greater if one adds several indirect costs. First, the poor management of public enterprises over most of their recent history has deprived the state of both tax revenue and the receipt of any dividend. It is striking that the National Telephone Organisation (OTE) provides virtually all of both dividend and corporate income tax revenue coming from a group of public enterprises with significant monopoly power in their respective sectors, with minor contributions from Hellenic Petroleum.⁶ Second, public enterprises have very large outstanding arrears to banks as well as to each other, the tax authorities, and the public pension funds. The arrears to banks amounted to Dr 705 billion at end-1997 (equivalent to 2 per cent of GDP). The other arrears are often kept on the books as assets (though it is rarely the case that one finds the corresponding liabilities in the other entity's accounts). A snapshot of the extent of the problem at end-1994 presented inter-enterprise arrears and arrears to the state of about Dr 900 billion (equivalent to 3 per cent of GDP).⁷ Some examples of inter-

4. The most costly operations have been related to loans for the following enterprises: Hellenic Shipyards (credits of Dr 100 billion, equivalent to 0.3 per cent of GDP), the Chalkidas cement company (credits of Dr 200 billion, equivalent to 0.6 per cent of GDP), and the Pieriki-Patraiki textile mills (credits of Dr 100 billion equivalent to 0.3 per cent of GDP).

5. Hellenic Shipyards survives on public contracts, most importantly with the Navy for the construction of frigates. In 1996, 49 per cent of the company was “sold” to the employees, however, management was contracted out to an international operator (Brown and Root). Regarding Softex, in early 1999 the Government was in the final stages of negotiating its sale.

6. An exception is the dividend from the national lottery organisation, which is considered a public enterprise.

7. KEPE (1996), *Inter-entity Arrears of the Public Sector*, Athens.

enterprise arrears include unpaid electricity bills to the Public Power Corporation (DEH) by the high energy consuming industrial firms (Larko Nickel Company, Chalkidas Cement Company, and Chalip Metal Works, which are controlled by the state-controlled banks and receive electricity at below market prices), unpaid water bills to the Water Authority of Greater Athens (EYDAP) by local authorities, and unpaid telecommunications bills by the National Radio and Television Company (ERT). Third, besides an outstanding public enterprise debt of Dr 2 trillion, all public enterprises have very large unfunded pension liabilities arising from the very generous pension benefits to their employees. The OECD in the *1997 Economic Survey for Greece* estimated these to be equivalent to about 7 per cent of GDP in 1994.

Main factors for the poor financial position of public enterprises

Pricing policy

Changes to the prices of goods and services produced by most public enterprises — with the notable exceptions of telecommunications and water supply — have lagged developments in underlying inflation, exacerbating their poor financial performance (Figure 1). Moderate price increases often have been related to the Government's social objectives, but also reflect attempts to diminish inflation expectations. Administrative prices currently comprise about 7 per cent of the CPI basket, and include most goods and services provided by public enterprises, with the exception of petroleum products, whose prices were liberalised in 1992 (Table 4). Administrative prices are often not adjusted fully for inflation for a period of several years, and then require large corrective action when the financial situation of the public enterprises have clearly been unsustainable. Prominent examples include Olympic Airways in the mid-1980s, most public enterprises in the early 1990's (though that of the water company was partly due to a drought) and the Athenian Urban Transport, OASA, in 1997 and 1998. Nevertheless, energy and telecommunication prices are high compared to prices in other countries, as there have been substantial productivity, and thus price, improvements in these sectors internationally, partly brought on by reforms and technological progress. On the other hand, prices for urban and rail transport and postal services are low compared to those elsewhere.

(Table 4. Weight of public enterprises in the CPI basket)
(Figure 1. Public enterprise prices and underlying inflation)

Inflexible labour arrangements and high labour costs

Employment policy: paying for past policies when public enterprise staffing was part of social policy

The excess employment burdening public enterprises, especially of low-skilled workers, is mostly due to their use as employers of last resort, as public enterprises have until the 1990s fallen victim to the political cycle (Figure 2).⁸ The priority placed on employment is also reflected in the creation of the Industrial Restructuring Organisation (IRO) in 1982 and the use of capital injections by state-controlled banks to sustain — at a large eventual cost to the budget — effectively bankrupt firms. These policies resulted in a 33 per cent increase in employment in public enterprises between 1978 and 1989 (66 per cent if one includes the employment sustained in the firms under the IRO umbrella). Total employment underestimates the abuse of employment policy in public enterprises since it does not capture *i*) the poor skill mix resulting from indiscriminate hirings as well as outdated skills due to a rapidly changing technology and *ii*) the fact that public sector employees have lower retirement ages (for most below the age

8. Excess personnel in public enterprises has also been the result of judicial decisions which have provided indefinite contracts to workers on temporary contract.

of 55), with the result that the ratio of retirees to employees stands at 1:1.5 compared with a comparable ratio of 1:2.2 for the economy as a whole (excluding civil servants).⁹

(Figure 2. Public enterprise employment)

During the 1990s there has been some effort to reverse the effects of these past policies, and employment in public enterprises was reduced by about 30 per cent and returned to the level existing in the late 1970s. In addition, most of the firms in the IRO were sold or liquidated in the early 1990s, and in 1994 a law was passed requiring public enterprise hirings to be based on merit (*i.e.* requiring public-sector wide entrance exams). Managers in public enterprises complained of the lack of hiring flexibility inherent in such a broad entrance exam, however, and a 1997 amendment to the law has permitted more targeted exams at the individual firm level. Moreover, managers in most firms are trying to reduce staff through attrition and in a few cases have introduced early retirement programmes (*e.g.* Olympic Airways and OTE). Early experience with these programmes (especially Olympic's) has not been satisfactory — similar to other countries' experience — in that they have often had the undesirable result that highly qualified staff has departed rather than the low-skilled staff, and that the programmes have been very expensive. The reliance on strategies of attrition and early retirement to reduce staff has been due to the unacceptability of layoffs to governments. Public enterprise employees are *de facto* treated as if they were civil servants (whose jobs are protected by the constitution), though legally they are subject to private sector law which permits layoffs (subject to certain constraints).¹⁰ Without more ambitious reductions in staffing, productivity indicators for individual enterprises have deteriorated substantially in relation to comparable companies internationally and are among the lowest in the OECD (see individual sector analysis presented below).

Compensation policy: an extraction of monopoly-power rents by public enterprise unions

Though a judgement on the appropriate level of compensation in an individual enterprise is difficult, there exist several indications that it is inappropriately high for the average public enterprise employee. An economy-wide comparison indicates that compensation received by the average public sector employee is nearly twice as high as in the private sector and 29 per cent higher than in the manufacturing sector (Table 5). Moreover compensation in the labour intensive and loss-making sectors is as high as in the capital intensive ones. For example, average compensation for employees in Athens Urban Transport (OASA) is higher than that for the telephone company and the electricity company. The conclusion that compensation is excessive is also supported by an examination of wage developments. The growth of average wages in public enterprises has nearly always exceeded that of the private sector; and for the seven year period 1990-97 compensation in real terms has increased by nearly 9 per cent compared with 2 per cent and 8 per cent, respectively for blue collar and white collar workers in the manufacturing sector, despite the manufacturing sector having attained productivity gains of 26 per cent during this period. Wage increases in the public enterprise sector have been provided irrespective of the financial condition of the enterprise and the individual sectoral analysis indicates that real wages have generally exceeded productivity, notably during 1994-97. To contain such wage pressures, the Ministry of National Economy has repeatedly attempted, since 1992, to introduce limits on wage bill growth. However, without an enforcement mechanism these have not been effective. In part, wage slippages are

9. The age limits are slowly being raised. They will remain generous for those hired prior to 1982 (*e.g.* a pension at age 55 with 25 years of contributions for men), but be less generous for those hired after 1982, for whom the retirement age is gradually raised from 60 to 65 over a 10 year period. The regulations are more relaxed for women, especially those with under-age children. For those hired after 1992, pension benefits are identical to those offered by the state to private-sector employees.

10. See the OECD (1996) *Economic Survey of Greece*.

due to management being captive to the notoriously strong and intransigent public enterprise trade unions, whose control of key services or goods enhances their bargaining power, and they have often used this advantage to hold the country hostage to their demands.

(Table 5. Average compensation per employee)

The strength of the unions has often resulted in the granting of many other non-wage advantages. Perhaps the most costly are the pension plans. Replacement rates for pensions provided to public enterprise employees are the highest in Greece (along with those in the banking sector and for doctors), with statutory replacement rates over 100 per cent of an employee's last monthly salary (excluding in many cases generous lump sum end-of-service pensions equivalent to two years' salary). Because of these high pensions, total (employer and employee) contribution payments are almost twice as high as those in the private sector (of the order of 48 per cent for both primary and supplementary pensions *versus* 26 per cent for the private sector).¹¹ Nevertheless, the implicit net rate of return on pension contributions is quite high, and future pension payments will be a major financial headache for public enterprises, especially in cases where enterprises have used part of contribution revenues for other purposes.¹²

Public enterprise unions have also succeeded in negotiating restrictive labour practices, which add considerably to labour costs. Limitations on geographic and functional mobility, as well as working time, have forced additional hirings in periods of high or shifting demand and add greatly to total compensation in the form of overtime, nightshifts, paid rest time, days-off, and other supplementary payment benefits (*e.g.* for high season service and for the purchase of meals). In the case of Olympic Airways, for example, these "extras" add 30 per cent to the basic salary. Finally, most employees receive "in kind" benefits, usually in the form of goods or services from their respective enterprise; these add about 3 per cent to the total wage bill. Some of the most notably generous examples are: *i*) free telephone time for employees of OTE; *ii*) discount electricity prices of about 75 per cent for employees and pensioners of DEH; *iii*) free (reserve-seat) tickets for employees and pensioners of Olympic Airways, and their close relatives; and *iv*) and a 40 per cent discount on water consumption for employees of EYDAP.

Investment programme

Despite substantial investment expenditure, which has averaged annually about 3½ per cent of GDP since the early 1980s (on an administrative basis), most public enterprises have not succeeded in updating to modern technologies or maintaining properly their infrastructure and/or equipment. Partly due to these modernisation delays, Greece has received a derogation from most EC directives related to the liberalisation of key sectors such as telecommunications, electricity, natural gas, and air transportation. Since the beginning of the 1990s, a more significant effort has been made to narrow the existing large investment and technology gaps. To this end, EU funds, most importantly the CSF I, but especially the CSF II, have played important roles. Regarding the 1994-99 CSF II, the main public enterprises will receive about ECU 6 billion (equivalent to almost 6 per cent of GDP) out of a total programme worth ECU 29 billion, with over half the financing in the form of EU grants. Despite some progress, examples of critical investment lags that remain are the following: OTE has one of the lowest shares of digital lines in

11. Employers' contributions are almost double those in the private sector (28 per cent *versus* 16 per cent).

12. The implicit pension liabilities are an acute problem for the Public Power Corporation (DEH), as the pension system is integrated into the operating accounts (*i.e.* it is not a separate fund) and employer contributions for many years were used to fund infrastructure projects. In 1997, DEH had to contribute Dr 50 billion to cover pension payments. In the case of OTE, its pension fund has been burdened with the payment of pensions of a large group of employees of ELTA and OSE. It suffered a deficit of Dr 28 billion in 1997 despite receiving a Dr 10 billion injection from the parent company.

the OECD (though it is currently pursuing a rapid digitalisation programme). DEH barely has a sufficient and secure supply of electricity generation, and has built many inefficient plants (especially hydroelectric plants with a view to assisting agricultural irrigation). The construction of the natural gas pipeline and the upgrading of the rail infrastructure have suffered innumerable delays and cost overruns. In all transportation sectors (air, rail, and urban transport), the fleets are old and have been purchased from diverse producers, raising maintenance costs and spare part stockage. These developments are partly to blame for public enterprises' unsatisfactory quality of service and the resulting reduced demand. Characteristic of inefficient procurement practices was the December 1997 rush — ahead of an EC directive deadline on open competitive bidding on large supply contracts (EC 9338/1994) — to distribute to domestic producers without competitive bidding contracts worth Dr 1.3 trillion (equivalent to 3½ per cent of GDP).¹³ The EC has subsequently decided to review these contracts to see if they breached competition rules.

Accounting practices

Public enterprises' accounting practices obscure their financial position, and make an analysis of their performance difficult. Most importantly, many enterprises do not have separate accounts for distinct components of their operations, prohibiting an accurate cost appraisal of the different goods and services that they offer. Moreover, it is generally accepted that public enterprises' financial statements and balance sheets are non-transparent, in particular due to the above-described practice of including items presumably owed as revenues and excluding implicit liabilities. Moreover, accounts are usually not produced on a timely basis. It is, however, envisaged that separate accounts for individual operations will be established and internationally accepted accounting practices will be implemented. For example, under the new policy initiative by the Government, international auditing firms are being hired, and audits had already been completed for the OTE and Hellenic Petroleum prior to their respective initial public offerings.

III. Current policy objectives

The Government acknowledges that Greece's real convergence to the level of its EU partners requires a successful resolution of these problems and it has therefore placed a renewed emphasis on reforming the public enterprise sector. Prior to 1996, policy moved back and forth on choosing a reform strategy — the need of which has never been in doubt by successive Governments — and on the appropriate role for private sector participation, on which Governments have often held an ambiguous view. The first round of reform began in the early 1990s, with a considerable delay compared with most other OECD countries. Restructuring programmes were introduced in many enterprises and their financial position recorded a notable improvement (albeit partly due to a severe but short-lived wage compression). In addition, the Government moved to close most of the non-viable firms under the IRO umbrella by introducing a special fast-track liquidation procedure. It also privatised Athens bus transport and was prepared to sell large stakes in OTE to a strategic investor (49 per cent) and in Hellenic Petroleum (then DEP). Competition improved markedly in the domestic air transport market and the petroleum sector following the moves to liberalise the respective markets. Similar benefits emerged in the telecommunication sector following the introduction of two private operators in mobile telephony and in the media sector following the liberalisation of television and radio licensing. During the same period, the Government initiated efforts to attract foreign capital through Build-Operate-Transfer (BOT) operations;

13. To meet the end year deadline, most of the contracts were awarded prior to the signing of detailed contracts (including cost or product specifications). Ironically, despite the effort to distribute the contracts to domestic firms, with a view to job creation, it remains unclear whether the domestic firms in all cases have the required technological capabilities and may be forced to resort to imports.

notable results were the contracts for new Athens Airport at Spata and the Rio-Antirio Bridge. Despite these initiatives, public enterprises' financial performance remained far from satisfactory, and the Government policy was put on the defensive due to the public's perceived lack of transparency in these operations. The initial reform effort was largely abandoned when the bus privatisation was subsequently reversed in 1993, and the other moves delayed significantly before resurfacing on the policy agenda. The prospects for a new initiative have improved significantly since 1996 in view of an apparent shift in popular opinion favouring privatisations, in part due to the positive results from reforms experienced both in Greece and in other OECD countries.¹⁴

To prepare Greek public enterprises for the challenges posed by a competitive environment at the EU level, as well as to underpin the budget consolidation efforts, the Government has decided that it will need to improve the quality of service, raise productivity, and attract private participation to the financing of their development. The cornerstone of the Government's strategy is the 1996 legislation which aims to change public enterprise management. The aim of this legislation is to introduce a management style equivalent to that existing in the private sector. To this end, public enterprises are being transformed into *société anonyme*. New managers are being hired through public and competitive tenders. And each enterprise is preparing strategic and business plans (often with the assistance of international consulting firms). Management independence is to be strengthened through management contracts based on performance criteria consistent with the approved business plans. Almost all public enterprises have been included in this procedure (about 40), with the notable exception of the electricity monopoly (DEH) which has been granted a grace period to complete its current restructuring and to implement the new national electricity law. The new management in all public enterprises will also have to distribute consumer rights information. By mid-1998, new managers were in place in many enterprises, and completed strategic and business plans had been submitted to the Government for approval by several of the new managers. In the period August to October 1998, management contracts were approved for Greek Post (ELTA), the National Television Station (ERT), Athens Urban Transport (OASA) and its three subsidiaries, and Greek Railroads (OSE).

The Government has different strategies for the loss making compared with the financially more viable public enterprises. Regarding the former, the Government aims to harden their budget constraint, including by tightening access to credits under government guarantee. To improve their operations, these enterprises' business plans will include reductions in surplus personnel. For the most part, this will occur through attrition. However, the Government is also considering the option to transfer personnel to other entities, the central administration, or local authorities. Great emphasis has been placed on improving the flexibility of employment and thus improving productivity and reducing labour costs. To this end, the Government passed legislation in February 1998 that requires public enterprise management and the respective unions in loss-making enterprises to agree to revise the existing collective agreements so as to achieve more flexible working conditions. If no agreement has been reached within six months, the Government would then impose new conditions on the enterprise. This occurred in the case of all four of the management contracts signed so far. In some cases, especially those where performance does not improve, the Government is considering a transfer of management control to strategic investors (e.g. Olympic Airways).¹⁵

14. An often cited example in Greece is the very good economic performance of the Neorion Shipyards which have doubled employment and become an economic mainstay on the island of Syros since their privatisation in 1994. They have participated in the purchase of the Eleusis Shipyards in 1997.

15. Regarding two out of the four highly loss-making military-equipment manufactures, the Government is considering shifting their activities more towards commercial manufacturing and selling minority shares to private investors. For example, Hellenic Aviation Industry (EAB) may maintain commercial as well as

Regarding the financially more viable public enterprises, the Government intends to sell equity to private investors with the hope that their participation will improve enterprises' operations and at the same time reduce the borrowing needs. The sale of enterprises has been a contentious issue and it has only recently become politically palatable to sell even minority shares. Thus, the main operations to date have occurred only since 1996 and comprise the sale of 34 per cent of the national telephone company, OTE and 23 per cent of Hellenic Petroleum (Table 6).¹⁶ The total revenue raised from all privatisations (including banks) is equivalent to about 3½ per cent of GDP (with the bulk raised in 1998), compared with 20.6 per cent in Portugal, 4.0 per cent in Italy and 4.4 per cent in Spain, respectively, during the period 1990-97. Additional sales are expected to occur, since in mid-March 1998, the Government pledged to sell over the next two years, minority shares of another 10, albeit small, enterprises or to offer tenders for managing their operations.¹⁷ As a signal of its commitment to this process, the Government has issued privatisation certificates which will have guaranteed access to 40 per cent of future privatisations, and will receive a price discount. Nevertheless, the Government currently has no intention to sell more than half of any large public utility, and this upper limit of 49 per cent is set by law.¹⁸

(Table 6. Main privatisation of public enterprises)

The Government intends to implement several other policy moves in order to improve financial discipline. First, it will introduce a dividend policy for public enterprises which are not listed on the stock exchange. Most enterprises will henceforth need to improve their operations so as to issue a dividend to the state. Second, a process for clearing inter-enterprise arrears will be concluded quickly. Third, with a view to improving competition, the Government is planning to bring Greek legislation quickly in line with EC directives, and to state clearly the liberalisation strategy and timetable. The first beneficiaries will be the telecommunication and electricity sectors, for which important new legislation is planned for 1998 or early 1999. Fourth, the Government will make greater use of build-operate-transfer type concession agreements, most notably for the construction of motorways. Specifically, 40 per cent of new motorway construction will be reserved for such concession agreements, and a procedure has already been initiated for the Athens ring road. In addition, all major projects for the 2004 Olympic games will be built through concession agreements with the private sector. Finally, the Government intends to strictly contain administrative price increases for public enterprises and there will be few nominal increases during 1998 and 1999. This policy, however, is mostly related to reducing inflation and satisfying the Maastricht criterion for inflation, rather than public enterprise reform, *per se*.

military aircraft, and the tank manufacturer (ELBO) could focus more on vehicle construction (it already produces buses for urban transport in joint ventures).

16. OTE shares were sold in three public offerings and one market placement.

17. The other enterprises include the Greater Athens Water and Sewer Company (EYDAP), the Corinth Canal, the Thessaloniki International Fair, the Athens Port Organisation, the Thessaloniki Port Organisation, the Thessaloniki Water Organisation, the Thessaloniki Sewer Organisation, Olympic Catering, the Horse Racing Organisation, and the Athens Stock Exchange.

18. In fact, this limit stood at 25 per cent and was raised to 49 per cent prior to the November 1998 sale of a 10 per cent tranche of OTE.

IV. Reform of specific sectors

Network industries

Oil refining and distribution

The oil sector plays a critical role in the Greek economy, as it accounts for more than 70 per cent of total energy demand, a share considerably higher than in most other OECD countries, and supply is mostly imported. Though a comparatively competitive market compared with the rest of the energy sector in Greece, the oil sector faces one of the most restrictive regulatory frameworks in the OECD, with a legislated segmentation of the upstream and downstream markets. Specifically, refineries are not permitted to sell or distribute oil products directly to the inland market, but have to sell to marketing (wholesale distribution) companies. The latter compete to supply retail pump stations but, in turn, are prohibited from operating pump stations. Adding to the segmentation, pump stations cannot buy directly from refineries (Figure 3).¹⁹ In an important step in liberalising this sector, oil prices were freed from administrative control in the early 1990s and the prohibition of refined fuel imports by marketing companies was lifted.²⁰ Subsequently, competition intensified in the downstream markets because of an increase in the number of marketing companies: the Ministry of Development licences for the inland market doubled to 35 between 1991 and 1997. The retail market is even more competitive, and is characterised by a high number of pump stations per vehicle by international standards and many independent owners. As a result, there exist significant variations in the prices offered by retail dealers, at least in the main urban areas.²¹ Competition has helped contain distribution margins, after an initial increase following the 1992 liberalisation.

(Figure 3. Institutional structure of the oil sector)

However, the upstream refining sector has essentially remained a duopoly dominated by the state-owned company, Hellenic Petroleum (HP) and the privately owned Hellenic Motor Oil/Aramco, which have a 60 per cent and 20 per cent market share, respectively. There is little competition from refined fuel imports, partly reflecting regulatory constraints; imports accounted for only 3 per cent of motor gasoline and fuel oil consumption in 1996. Though marketing companies have been free to import refined oil since 1992, legislation concerning the holding of compulsory stocks impedes imports by essentially forcing marketing companies to buy exclusively from domestic refineries as part of “supply-for-storage” contracts. The linkage of purchase agreements to storage contracts arises from the fact that Greek law, unlike that of other EU countries, does not permit compulsory stock obligations (equivalent to 90 days of sales) to be met by oil holdings in other EU countries. It does however permit marketing companies to transfer their storage obligation to Greek refineries which supplied them during the previous year and with which they have a supply contract for the current year.²² At the same time, building new independent storage facilities in the key Athens area is uneconomical and, in any case, obtaining a permit is difficult due to environmental regulations. The EC has launched a proceeding against

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19. The degree of segmentation is diminished by the fact that refineries can own marketing companies and marketing companies are permitted to own or lease the land and installations of petrol stations.
 20. In addition, since 1993, marketing companies were prohibited from issuing recommended prices to retail dealers.
 21. The State retains the right to introduce price ceilings on gasoline in areas where it believes monopolistic conditions prevail. These ceilings have been usually introduced during peak demand periods of the summer tourist season in areas outside of Athens and Thessaloniki.
 22. The existing refineries’ storage capacity are not a constraint to such practices. HP’s refined product storage capacity alone is equivalent to about 100 days of total domestic sales.

the Greek State in the European Court of Justice against what it considers a violation of EU law regarding the free movement of goods. Regulations provide HP with another advantage over the other refineries as it is the sole supplier to several large consumers (Olympic Airways, the army, DEH, and Hellenic Aluminium).

The duopoly status combined with the restraint on imports appear to provide the refineries with the scope to raise their sales margins significantly in the domestic inland market. HP's ex-factory gross margin (*i.e.* before deducting refining costs) is about 50 per cent above the international market benchmark; specifically HP's ex-refinery average gross margin is estimated to be US\$4.17 per barrel compared with the gross margin based on Platt's Mediterranean FOB spot quotation of US\$2.64 per barrel. The bulk of this advantage is attained in the inland market where gross margins are three times that of the more competitive bunker market. Unsurprisingly, refining accounts for almost all of HP's profits. A competitive downstream market leaves pre-tax fuel prices near the OECD average according to International Energy Agency data.

Prior to a highly successful initial public offering in July 1998 for 23 per cent of its share capital, HP undertook a major investment programme and started a corporate re-organisation.²³ The re-organisation will focus HP's activities on the core refining and subsidiary distribution sectors, and employment will be gradually reduced by 20 per cent by 2002, especially in refining which accounts for more than 50 per cent of total HP's labour force. Additional productivity gains are envisaged from the implementation of a Dr 200 billion investment programme (of which Dr 95 billion on refinery operations) during 1998-2002. In this respect, a competitive advantage for HP is that it is expected to remain a beneficiary of public funds, while meeting environmental standards is expected to impose substantial financial cost on the other refineries in Greece.²⁴ Such funds have helped keep HP less-leveraged than its competitors, despite the recent completion of a large modernisation programme; its long-term debt was only Dr 8 billion at end-1997.

The oil market clearly suffers from a lack of competition at the refining stage. The main source for additional competition could be imports, but this requires legislative changes in line with EC directives on storage contracts. Though environmental concerns are constraining, a more lenient licensing procedure for the construction of storage facilities would also provide more room for competition from imported refined fuel products. Competition from domestic sources would be enhanced if retailers were allowed to buy fuel directly from a refinery (bypassing the marketing companies) as well as eliminating HP's exclusive right to supply large public consumers. The entry of more players in the refining stage would also provide more competition, and the Latsis Group's intention to upgrade the Petrola refinery would add a third major player.

23. Over 1995-97, HP has upgraded significantly its refinery capabilities through a Dr 60 billion investment programme, which included raising its *i)* conversion capacity, *ii)* gasoline octane possibilities, and *iii)* desulphurisation capacity. Thus, its 125 thousand barrels per day Athens refinery (Asporpyrgos) was transformed into the most modern refinery in Greece as well as one of the largest and complex refineries in Europe.

24. For example, Greece's third refinery, the simple topping Petrola refinery owned by the Latsis group would have to make large investments to cover the costs of complying with EC Directive on environmental standards which requires a reduction of sulphur in oil products in 2000.

Natural gas

Natural gas was introduced in Greece in 1997 through the recently built pipeline from Russia, and an additional source of supply is liquefied natural gas from Algeria.²⁵ Thus, demand for natural gas is in its infancy. To date, the public monopoly in natural gas, DEPA, has developed only a few sales contracts to some large industrial groups, outside a large contract with DEH. Demand from small users appears to be virtually non-existent in the near future, as the development of the low-pressure network is considerably behind schedule. The evolution of the natural gas market has been impeded by important infrastructure construction delays. Most of the high pressure pipelines have now been finally completed, but the cost overruns have been large; the total cost is currently estimated at US\$2.6-3.0 billion compared with an original cost estimate of US\$1½ billion. EU structural funds will bear about 40 per cent of the infrastructure costs.²⁶ The construction of the low-pressure system will only commence after the completion of a recent call for private sector tenders. Under the 1995 natural gas law, private sector entities are expected to contribute all of the construction cost of the low pressure system (net of EU contributions) in exchange for the right to be the exclusive suppliers for a defined region. Private sector participation is limited to 49 per cent ownership of the supply companies, which will be majority owned by DEPA's (distribution) subsidiaries (Figure 4).²⁷ After these projects reach maturity in the year 2020, 15 per cent of Greece's energy needs are projected to be met by natural gas.

(Figure 4. Institutional structure of the natural gas sector)

Since natural gas will be distributed through a state-owned monopoly and there exist many barriers to entry, the sector is unlikely to operate in a competitive environment in the medium term.²⁸ Under the EC directive on natural gas, DEPA has no obligation to grant third party access to its network up to 2006, since the directive contains an exemption for states in which commercial gas supply was first introduced after 1988, and for which liberalisation would disrupt development of the sector. Without competition to ensure efficient pricing, the design of the price formulae for natural gas increases in importance, and in this regard the pricing policy announced to date risks being discriminatory and may contain some non-transparent elements. For industrial users, prices can be negotiated from a reference

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25. The 1987 bilateral agreement with Russia was revised in 1994 due to construction delays on the gas pipeline in Greece. As compensation, the revised agreement permitted a Gazprom-Greek joint venture, to construct 5-8 branches of the network (depending on the number built) and a lignite fired plant at Florina. These contracts would be "priced competitively" but without competitive bidding procedures. In addition, Prometheus would be the sole seller for Greek demand exceeding the "take or pay" contractual limits. These reach a maximum of 3 bcm per year in 2016. Regarding the Algerian "take or pay" agreement, the contracted volume is for 0.6 to 0.7 bcm per year of LNG. No revisions have been made due to Greece's delays in taking delivery.
 26. EU assistance is made through the REGEN, INTERREGEN and trans-European Networks programmes. The REGEN Programme was launched in 1990, *inter alia*, to enable natural gas to be introduced in the so called "Objective 1 regions".
 27. Initially distribution was to have been developed jointly by the municipal authorities and the DEPA subsidiaries. However, the local authorities subsequently proved to lack the necessary expertise to participate.
 28. Under the revised bilateral agreement between Russia and Greece, natural gas supplies above the contractual limit will be supplied solely by a joint venture (Prometheus) between a private Greek company and the Russian gas supplier (Gazprom). To circumvent these terms and to diversify supply, Greece has applied to use EU funds to construct a natural gas pipeline connection with Italy. An agreement was signed in September 1998 between DEPA and Italy's ENI to construct a 180 kilometer pipeline with an annual capacity of 5 bcm.

price based directly on the cost of alternative fuels (e.g., post-tax heavy fuel prices) plus a fixed margin.²⁹ The reference price resulting from the formula appears to be in line with industrial prices of other EU countries, though it is biased upwards due to the relatively high tax on heavy fuels in Greece.³⁰ However, a few large public corporations, notably the public power corporation, DEH, have signed long-term take-or-pay contracts with prices determined on the basis of costs, *i.e.* import prices from Russia plus a large mark-up reflecting transport costs and DEPA's return on investments. The mark-up paid by DEH (US\$7 per Gcal added to the border price of US\$9 per Gcal) appears to be high compared with prices in the EU of about US\$13 per Gcal. However, DEH has been granted compensation in the form of a profit-sharing agreement with DEPA.³¹ The dual price system could hinder competition in the electricity sector, if the incumbent DEH and potential entrants in gas-fired generation are not treated on an equal footing.

Finalising the legal and administrative framework for gas distribution is key to speeding up the introduction of natural gas. Delays in building the network could result in a significantly lower than projected growth in demand. To give a boost to the use of natural gas will require a rapid involvement of the private sector in distribution. Their interest will obviously depend on an appropriate design of the supply contracts. Regulatory arrangements will also be critical to attracting private sector participation to the sector, and these remain in their infancy in Greece. In other countries, competition has been enhanced by the introduction of a regulator with independent and strong enforcement capacities, as well as the right to mandate price setting regulations and access conditions.³² Furthermore, the need to co-ordinate policies in the energy sectors whose products are close substitutes has led most countries to expand the coverage of the regulator to the electricity and oil sectors. The need for co-ordination is even stronger in Greece in view of the close inter-relationships between monopolies in the three sectors. DEPA and HP are the main suppliers of DEH, there exists a profit sharing agreement between DEH and DEPA, and DEPA's recommended gas prices are set on the basis of petroleum ex-refinery prices. Moreover, HP has an option to gradually re-purchase the 85 per cent of DEPA that belonged to it, prior to its recent restructuring.

Electricity sector

The electricity sector is dominated by a vertically-integrated public monopoly, the Public Power Corporation (DEH). The (high-voltage) transmission grid and the (low voltage) distribution network are owned by DEH, and there exist only a few limited exceptions to DEH's monopoly situation, as the legal framework that existed up to 1998 constrained the development of independent power producers.³³ Thus,

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29. DEPA assumes part of the cost of converting energy equipment for industries, through rebates on gas prices for a five-year period. In addition, households and small enterprises can deduct from taxable income 75 per cent of the expenses to switch to natural gas.
 30. Prices applying to households and commercial activities will result from the contracts negotiated by DEPA and the private investors of the gas supply companies (GSCs). The law allows for differences in prices across the 3 regions where gas distribution companies (GDCs) are present, to reflect variation in the costs of developing the network.
 31. The agreement stipulates that DEPA would reimburse DEH, if its profits (after depreciation allowance) exceed 8 per cent of total income.
 32. The 1995 natural gas law required the establishment of an independent "Board of Energy Planning and Control" by December 1997. However, as of September 1998, the Board is not operating, and in any event, its functions would be mostly of an advisory nature. Final decisions would remain with the Ministry of Development, which is also the majority owner of the main incumbents in the energy sectors.
 33. Since the mid-1980s, a series of laws have aimed at fostering private participation in power generation. However, rather than opening up the electricity market in any major way and fostering private participation in power generation, they mainly set out exceptions to DEH's exclusive rights. Most importantly, a

DEH accounted for 98 per cent of both total supply and capacity in 1997. As the main source of electricity supply, DEH has struggled to meet a rapidly growing electricity demand. Though its generating capacity was increased by 25 per cent from 1985 to 1995, current total available capacity is barely sufficient to meet peak load demand, and as a result Greece suffers numerous brown outs, and there is little security back-up.³⁴ DEH's market power is further protected by the geographic position of Greece which has no interconnection links with other OECD countries, though an interconnection project between Italy and Greece is under construction, partly financed by the EU.³⁵ Net imports, mainly from Bulgaria and the FYROM, accounted only for about 2 per cent of Greece's total electricity supply over recent years.

Electricity prices are above the average of the OECD countries, according to the data of International Energy Agency (PPP adjusted) (Figure 5).³⁶ The standard international comparison of industrial prices is distorted, however, by the fact that DEH is required to provide large amounts of electricity at about half price to the aluminium and publicly-controlled nickel firms; adjusting for this effect, the industrial price appears to be significantly above the OECD average.³⁷ The relatively high electricity price in Greece is surprising as generation benefits from a strong reliance on lignite, the primary energy source for over two thirds of total generation. The dependence on lignite occurred as a result of the international oil crises in the 1970s, when Greece purposefully diversified its energy base. DEH owns and operates most of the lignite production, and exploitation costs are low since lignite is extracted from open cast mines, for which DEH does not pay depletion costs to the state. Moreover, electricity prices would be much higher had they not formed part of the anti-inflationary policy. They have been reduced by 35 per cent in real terms since 1987 — a slightly larger fall in electricity prices than has occurred in other OECD countries over the same period (Figure 5, panel B).

(Figure 5. Electricity sector: prices and performance)

Government interference in several other aspects of electricity pricing and management policy are a financial burden on DEH. DEH has been required to comply with public service obligations without

1996 law allowed for a consortium to establish a co-generation station, with the use of the national grid to transport electricity to consortium members if they are located within 10 km of the station. In addition, a 1994 law permitted small private generators based on renewables. As a result of the restrictions to entry, the only important generating capacity not owned by DEH are a few industrial combined heat and power plants (the two main refineries and the state-controlled sugar company). It is worth mentioning that in 1990, the possibility for independent power producers to produce electricity for the grid was recognised, but was conditional upon DEH's consent. This provision was subsequently abolished.

34. Available capacity equalled peak-load demand in 1995. However, the demand for electricity has been growing rapidly, especially as the use of air conditioning is becoming more prevalent. Regarding security of supply, there are insufficient lines connecting the main consumption centre of Athens to the north of Greece where most of the generation occurs. Progress is being made on the finalization of a third line in early 1999.
35. The European Union has committed ECU 117 million for interconnecting the electricity networks of Italy and Greece, through an undersea cable linking Oporto Badisco in Italy to Aetos in Greece.
36. The comparison uses International Energy Agency price calculations, which are based on revenues rather than listed prices, and are considered better estimates of prices as they capture the effects of discounts. The price comparisons are also adjusted for the recent real appreciation of the drachma by converting to a common price through an application of PPP exchange rates. Excluding the adjustment for PPP, electricity prices are near the OECD average for households and about 15 per cent below the OECD average for industry.
37. The aluminium company consumes roughly one-quarter of total industrial demand. Adjusting for this factor alone — and ignoring the low price received by the nickel producer (Larko) — would increase the average price of the remainder of the sector by 12 per cent.

receiving commensurate compensation. For example, hydro-electric plants have been operated inefficiently in order to meet water supply and irrigation needs. Another important cross-subsidy arises from the fact that prices are kept uniform despite substantial geographic cost differentiation arising mainly from much higher supply costs in the islands not interconnected to the grid, which operate on more expensive fuel fired plants.³⁸

DEH's financial performance is also affected by high labour costs, reflecting mainly low productivity by international standards; about one third of the OECD average after excluding employees in the lignite sector (Figure 5, panel C). High labour costs also arise from a poor skill mix, including too many individuals in administrative positions. Operating costs are also inflated by the poor strategic choices regarding the construction of generation plants and procurement procedures. Examples of the latter are the entry into large non-competitive supply contracts. Examples of the former are hydro-electric plants with specifications partly aimed for water supply considerations and more recently the decision on a new lignite-fired plant at Florina, at a time when there is a general shift in emphasis to lower cost and more environmentally friendly gas-fired plants. Overall, with a large increase in volume offsetting the decline in electricity prices in real terms, DEH's operating income covers current expenses (including interest payments equivalent to nearly 15 per cent of operating revenues) but the rate of operating return on assets has been consistently low (close to 2 per cent). Thus, investment has been mostly financed through debt and, to a lesser extent, public and EU funds, leaving DEH highly leveraged (with a debt of Dr 1.2 trillion at end-1997, equivalent to 3½ per cent of GDP and 1½ times 1997 revenue).

Greece was granted a 2-year derogation for implementing the EC directive on the liberalisation of the electricity sector. Thus, the market for generation will begin opening up to competition by February 2001. To comply with the EC directive, the Greek government is preparing new legislation. The key features of are expected to be:

- i) DEH will remain a public-controlled company;
- ii) DEH will remain the owner of the transmission system, and both the high and low voltage distribution systems;
- iii) DEH will remain vertically integrated but split into four business units with unbundled accounts: generation, transmission, distribution, and lignite mining;
- iv) eligible (*i.e.* large) customers (as defined by the EC electricity directive) will be able to enter into direct contractual relationship with electricity supplier;³⁹
- v) a system operator will be responsible for dispatch and will assure the security of the network; and
- vi) an independent sector regulator will be introduced.

38. Other uncompensated public service obligations include low electricity prices for certain categories of consumers (*e.g.* agriculture and families with many children) reflecting social and development policies.

39. The adjusted timetable applying to Greece defines eligible consumers as those consuming more than 40 Gwh per year from February 2001 (covering approximately 25 per cent of the market), and increasing to those consuming more than 20 Gwh per year from 2002 (covering approximately 28 per cent of the market), and then to those consuming more than 9 Gwh per year in 2005 (covering approximately 33 per cent of the market).

Though the envisioned electricity law and the associated restructuring of DEH are a first step to open the electricity market, effective competition is likely to remain limited. The envisaged unbundling of DEH's accounts (especially for mining) will certainly improve transparency, but the plan leaves DEH with significant monopoly power. Given the proposed market structure, DEH will remain the exclusive supplier of the "captive" market of small consumers for some time to come. As this is the most profitable segment of the market, it could provide the potential advantage to the enterprise to cross subsidise operations in the competitive segment of the market from its monopoly position in the non-competitive market. Another potentially unfair advantage for the incumbent firm, DEH, appears to be the differentiated access conditions among generators to primary energy sources, which may deter potential competition, especially from the more efficient generators based on combined cycle gas turbine technology. Specifically, DEH will maintain its effectively exclusive right over low cost lignite, while the price of natural gas could be excessively high.⁴⁰

A well functioning electricity market will become even more critical as there is an urgent need for increasing generation capacity, including through the improved functioning of existing plants; DEH's planned construction projects are barely sufficient to match a conservative projection for the increase in demand, and will in part replace inefficient plants (especially hydro-electric plants). Although, DEH intends to build 5 large new power plants — partly financed by public and EU funds — which would increase generation capacity by 15 per cent from its 1997 level, demand is projected to grow by at least 3 per cent annually. To attract more entrants will require fostering a more competitive environment and a level playing field. As a first step, the interest of new entrants and the functioning of the new design for the electricity sector could be gauged by an early offer of licences to new entrants. Thus, new entrants who wish to enter can have their generation capacity in place by the time the market is opened up; otherwise competition to DEH will be delayed by 2 to 3 years. If there is little interest shown by new entrants, a more radical reform of the sector may be required. As in many other countries, a healthy competitive environment could be created by splitting DEH into several independent and competing distribution and generation companies. Regarding generation, somewhat smaller operating units would not be costly in terms of sector efficiency, as most economy of scale benefits can be captured by individual plants. These producers would compete to sell electricity to one or more distribution companies while the high-voltage distribution should be in the hands of a third party. However, this option has to overcome several difficulties, including a fair distribution of existing plants based on the efficiency of their generation.

In any event, the creation of a level playing field requires re-examining the obligations imposed on DEH and the liabilities it inherited from the past. These comprise *i*) the large investment programmes since the 1980s, which have left DEH with a heavy debt and some inefficient plants, *ii*) the cost of providing cheap electricity to certain energy-intensive industrial plants, and *iii*) the implicit liabilities stemming from the firm's unfunded pension system.⁴¹ To these, one could add the costs incurred in the construction of the natural gas pipeline, which should be borne equally by all gas consumers (i.e., this is precluded by the profit sharing agreement between the two public enterprises DEH and DEPA). The Government would need to recognise these "stranded costs" and design a transparent and equitable funding mechanism for their recovery.⁴² One strategy to cover these stranded costs, adopted in the United States

40. Lignite-fired plants will remain inexpensive as all but one unit of DEH's lignite-fired plants are exempted from reducing sulphur emissions under the EC Directive for large combustion plants, as they were built before the 1978 cut off date contained in the directive.

41. Pension contributions have been used to fund DEH's past investment, and implicit pension liabilities are reported to amount to Dr 1.5 trillion, and would roughly double the liabilities reported in DEH's balance sheet.

42. Stranded costs are those unamortised costs of prior investments and other decisions which were scheduled for recovery through previous state-owned monopoly rules but would not be recovered under competition.

and in Spain, has been to recover them through the electricity tariff. In these cases, the tariff has been set so as to recover costs but to provide a sufficient margin for innovation and entry. In view of uncertainties surrounding the accuracy of the cost estimates, the price cap has been set for a period of about 3 to 5 years and reviewed periodically. Here again, the sector regulator would need to play a critical role and the perspective legislation provides only advisory powers to the proposed new regulator. Moreover, its relationship with the Board of Energy Planning proposed in the 1995 natural gas legislation has to be clarified.

Telecommunications

The Greek telecommunications market is one of the economy's most dynamic sectors, and the publicly-owned monopoly provider of basic voice telephony services (OTE) is the most profitable enterprise in the country (in absolute terms). Nevertheless, the Greek authorities requested a 5 year derogation from the EC regarding the date of the opening of the basic telephony market. The request was based on the need to complete a large capital investment programme which would digitalise the network, and in general modernise OTE's infrastructure and commercial structure. In the event, Greece obtained a two-year derogation to 31 December 2000 in October 1997.⁴³ However, the EC did not delay liberalisation due to the existence of an underdeveloped network structure, but rather to provide OTE sufficient time to rebalance its tariff structure. In fact, network development is not a central issue. First, telephone penetration as measured by main lines per inhabitant is close to the EU average (though many are for second, summer homes). Second, the universal service obligation is not in fact rendered substantially more difficult in Greece by its more complex topography as this can be dealt with through modern technology (*e.g.* wireless in the local loop). Third, the degree of digitalisation (at close to 50 per cent at end-1997 compared with 35 per cent in 1995) was below the EU average, but not far below that of other EU countries that have already liberalised their markets (*e.g.* Germany and Spain). (Table 7). In the event, the EC froze financing to a large investment programme by OTE in September 1998 due to the slow process in reforming regulations to conform with EC directives.

(Table 7. An international comparison of telecommunications sector indicators)

Though OTE is the monopoly provider of basic telephony services, it faces stiff competition from the two private mobile telephone operators (Panafon which is partly owned by the British Vodafone, and TeleStet, which is partly owned by the Italian Stet). Greece was the last country in the EU to grant licences to mobile phone operators (1992 compared with the mid-1980s for most other EU countries), but mobile phones have already achieved an 8.5 per cent market penetration, compared to 14 per cent for OECD countries on average.⁴⁴ Both companies are achieving high profit rates (a return on total assets of the order of 50 per cent in 1997), and recently made stock market flotations. These high profits in part reflect low interconnection costs but also mobile phone charges which are high compared to operators in

43. At the same time, the EC granted a small additional implementation period to October 1997, compared with the original date of July 1996, with respect to the lifting of restrictions on the provision of the so-called "already liberalised telecommunication services" (*i.e.* leasing access to OTE's network for services such as data transmission through high capacity bandwidth lines (ISDN) and other value added services). The Greek Government has passed the conforming legislation in 1998.

44. The two GSM (digital) licences each cost Dr 30 billion (US\$150 million) and provided exclusivity in the market for mobile phones for 8 years. In return for the high licence fee, the two operators received favourable interconnection charges; for mobile to fixed domestic connections, the charge is 5 per cent of airtime revenues and for fixed to mobile domestic connections, the charge is 96 per cent of the OTE tariffs. As a result, the mobile operators pay about 7 per cent of revenues to OTE which is about one-third the comparable share for other mobile telephone companies.

other countries. The latter may reflect both a relatively inelastic demand at low market penetration as well as dissatisfaction with the service provided by OTE. Mobile phone charges have been falling but their decline has been limited in the long-distance segment by a clause in the license agreement which requires mobile tariffs to be above the comparable OTE tariffs in this segment. A third operator, CosmOTE, which is a joint operation between OTE and the Norwegian Telenor, received a licence in 1995, but it had difficulty getting its operations off the ground.⁴⁵

The short period prior to the advent of a fully liberalised market in basic voice telephony requires OTE to achieve a substantial restructuring and capital investment programme. OTE's profitable operations are due to an overall high but very unbalanced tariff structure, which leaves it vulnerable to new entrants, especially those aiming at the domestic long-distance market (Table 8). Fixed fees and local calls are low, while long distance (especially domestic) are high compared to other OECD countries. During 1995-99, OTE has made some progress in rebalancing its tariffs and it aims to complete the process by 2000 (Figure 6). There exist three important obstacles to eliminating this cross-subsidisation. First, OTE's profitability is critical to the financing of the budget, both through its contribution of about 20 per cent of the annual corporate income tax revenue, and through dividend payments of a broadly equivalent size. Moreover, OTE's profitability enhances the amount of the potential privatisation receipts, which will help the budget indirectly, either by reducing the debt or by reducing the financing needs of other entities via transfers from the publically-owned holding company, DEKA. Second, the Government intends that public enterprise tariffs be used to reduce inflation expectations, thereby possibly delaying the needed rise in local call rates.⁴⁶ Third, OTE lacks an accounting system capable of costing the different calls, though a new accounting system is scheduled to be in place in 1999. Analytical cost accounting is also necessary to price interconnection charges, where there is much debate in the mobile phone market.⁴⁷

(Table 8. A comparison of telephone charges)
(Figure 6. Tariff rebalancing in telecommunications)

A faster pace of digitalisation could offset some of the revenue loss, since it would permit time-based charging on local calls (which cannot be done on analogue lines and leads to revenue losses of about 40 per cent per line); the current low level of digitalisation partly explains OTE's very low revenue per main line compared with most other countries. OTE's process of digitalisation has suffered long delays. It was started only in the 1990s due to poor management decisions and a general situation of under-investment.⁴⁸ The factors behind the subsequent slow progress, despite the financial assistance from the EU's CRASH programme until 1993, are the decision not to outsource the installation process, legal

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45. The CosmOTE PCN-1 800 licence (for Dr 14.2 billion) has resulted in a law-suit by the other mobile operators citing a breach of the exclusivity clause in their licensing agreement. The authorities' response has been that CosmOTE received a different type of licence than the GSM licenses awarded to the other two operators.
46. The weights in the CPI basket are based on a household expenditure survey. Since revenues from trunk and international calls exceed that of local calls, the rebalancing should have a dampening effect on average telephone prices. Obviously, a reduction of only the more expensive calls would have an even larger downward influence on the CPI.
47. OTE has requested the regulatory authorities to increase interconnection charges for mobile phones, which are very low compared to other mobile operators (and based on a share of mobile company call revenues). However, OTE is having difficulties substantiating its claim due to the lack of a detailed accounting system to determine the cost of supplying fixed-line interconnections. In the event, the EC is pushing for cost-based interconnection charges for the EU. These would bring currently prevailing interconnection charges in the EU down towards the levels existing in Greece.
48. Lack of funds for infrastructure investment could be partly attributed to the use of part of OTE's profits prior to 1992 to finance the operating deficit of the Greek Post (ELTA).

disputes with suppliers of digital switches, and other managerial issues.⁴⁹ In the event, the new management has made speeding up this process a high priority and the current timetable is to digitalise 70 per cent of the network by end-1998, and complete the process by 2000. The cost will be partly financed by EU funds, and forms part of a Dr 800 billion investment and modernisation programme (equivalent to over 2 per cent of GDP) covering the period 1998-2002. The modernisation programme also aims to improve the quality of service to international standards by the year 2000.⁵⁰

Besides revenue enhancement, OTE needs to reduce its operating expenditures. Following the pattern of all Greek public enterprises, OTE's personnel costs are too high. The wage bill represents nearly 40 per cent of total operating costs compared with an OECD average of 30 per cent, and the share of telecommunications employment in total employment is about 20 per cent higher than in other OECD countries. Moreover, about one-half the staff are employed in the construction of the network for whom there will soon be reduced demand. Nevertheless, OTE has reduced its labour force substantially over the past decade: a work force of over 30 000 in 1988 has been reduced to 22 500 in 1997. A large part of the resulting productivity gains, however, was absorbed by substantial increases in compensation; compensation rose by 30 per cent in real terms during the past decade. Management intends to reduce staff by another 20 per cent by 2002, through the continued use of attrition and an early retirement programme.⁵¹ The plan also calls for an improved skill mix, including hiring personnel trained in telecommunications technologies.

Since OTE is among the most profitable (based on a return on assets), and least indebted, telecommunications operators in the OECD, the necessity of rebalancing its tariffs at the same time as it finances a substantial modernisation of its infrastructure does not seem problematic. However, it will need to avoid certain pitfalls. For instance, too ambitious an expansion into operations outside of its core business of providing adequate basic telephony services could distract management and require expending operating profits committed to the investment programme. Such problems could arise from OTE's investment in eastern European and central Asian countries.⁵² In addition, OTE's entry into the mobile telephone market has so far resulted in losses, from both the initial investments and the offering of discount

49. The EU's contribution to the Crash programme was originally envisaged to be about 50 per cent of the programme's ECU 260 billion cost, but it was subsequently reduced to ECU 71 billion due to the authorities' inability to implement the planned measures on schedule.

50. Based on three indicators of service quality, OTE's performance has made great strides since 1990. The time required to obtain a phone has fallen from 47 months in 1990 to two weeks in 1997 and is targeted to fall to three days by 2000. The failures to connect per 1 000 calls has fallen from 55 in 1990 to 31 in 1997, and is targeted to decline to 20 by the year 2000. Finally, repair service response time within 24 hours has risen from 60 per cent in 1990 to 70 per cent in 1997, and is targeted to rise to 95 per cent in 2000.

51. The early retirement programme will be quite expensive. It is expected that staff will be reduced by 5 000 at a cost of Dr 81 billion. However, after taking into account salary savings, the retirement programme will be financially beneficial for OTE.

52. OTE has made the following foreign direct investments during the past two years: the purchase of 20 per cent of the Serbian telecommunications operator Telekom Srbija for \$400 million; the purchase of 90 per cent of the Armenian operator (ArmentTel) for \$142 million and the purchase of 35 per cent of the Romanian telecommunications operator (RomTelecom) for \$675 million. In addition, OTE or its subsidiary Hellascom, have undertaken much smaller operations in Jordan, the Ukraine, Lithuania, and Georgia. Finally, OTE is currently negotiating the purchase of a large share of the Moldavian telecommunications operator.

offers to attract clients. Similar problems could emerge from an aggressive entry into new generation services such as satellite TV and cable television.⁵³

In view of OTE's current dominant position and its earning of sizeable monopoly rents, an earlier-than-required opening of competition to a second operator, similar to the strategy of other OECD countries, could result in substantial and rapid reductions in telephone tariffs and a higher demand for a multitude of related productivity-enhancing services. The floor on mobile phone tariffs should also be removed as it deters competition to OTE. In the event, with the advent of several operators in mobile and fixed telephony, the responsibilities of the regulator established in 1994 for this sector (the National Telecommunications Committee, EET) will be increasingly more important (*e.g.* transparent access and pricing to the network). To date, however, these responsibilities appear to be quite limited and the committee remains understaffed. Its role is solely to monitor the telecommunications market so as to assure competition, give an expert opinion to the Government on licence approvals, and propose measures to the Government. The 1999 telecommunications law plans to increase the EET's responsibilities to be able to award licences. A promising sign was EET's fining OTE Dr 80 million for non-competitive practices in early October 1998.

Water and sewerage

In view of the concentration of the population in two large urban centres and the natural catchment areas surrounding these cities, there is no national water grid and the bulk of water and sewerage services are provided by public enterprises in Athens and in Thessaloniki. In Athens, the Company for Water and Sewerage of the Capital (EYDAP) serves 40 per cent of the total Greek population. In Thessaloniki, there are two separate companies, the Water Organisation of Thessaloniki (OYTh) and the Sewerage Organisation of Thessaloniki (OATH), which serve another 12 per cent of the population. Public entities run by local governments are responsible for these two services in their respective districts.

Regarding Athens, current water supply capacity is sufficient to meet demand until 2017, except under drought conditions, while distribution could become a constraint as early as 2001.⁵⁴ These projections envisage demand rising towards the level in other EU countries, but its growth can be slowed by price increases, as has occurred in the past. Specifically, water prices had been maintained very low until 1990, when a drought forced an increase in prices of the order of 200 per cent in real terms over the period 1990-92 and the introduction of a sharply more progressive pricing system to deter large consumers. These changes resulted in a 33 per cent contraction in demand (Figure 7, panel A). Subsequently, however, prices have not been increased.⁵⁵ The price of residential water would now need to be raised by

53. The EC has ruled that the monopoly provided to OTE and ERT for cable television is a constraint on the development of auxiliary markets, and the Greek authorities envisage appropriate legislative changes in 1999, at the time of passage of a telecommunications law which harmonises Greek law fully with the requirements of the EC and unifies current legislation under one framework.

54. Even with conveyance loss of about 10 per cent, the system provides a safe yield of 530-580 million cubic meters per year; 460 million cubic meters by the low cost gravity system of Mornos, and another 140 million cubic meters by the Ylikis system. Current consumption is 285 million cubic meters per year and demand is forecast (under the assumption of constant real prices) to be between 400-535 million cubic meters per year by 2010. Peak demand could be equivalent to 657 million cubic meters on an annualised basis, but for short periods that could be met through storage facilities.

55. Since 1992, EYDAP basic water prices have not been raised, excluding adjustments for the introduction of VAT, the inclusion of a long-standing surcharge for the financing of the Mornos projects into the tariff in 1995, and the introduction of a minimum consumption level so as to raise the payments from offices.

23 per cent in real terms (for the critical 5-20 cubic meter monthly consumption) to cover a large part of long-run marginal cost, while industrial prices are considered to be at a broadly satisfactory level as they had initially been raised by more.⁵⁶ The price of water to local authorities would need to be raised much further. EYDAP has been obliged to provide water to local authorities in the greater Athens vicinity at highly subsidised rates equal to about one-third that charged to other consumers; and the water is supplied in bulk without an escalation in price corresponding to usage. The result is that local authorities are inefficient consumers -- with water often used for agricultural purposes -- and use water re-sales as a source of revenue.⁵⁷

(Figure 7. Water: prices and performance)

Despite the price increases attained at the beginning of the decade, EYDAP's financial position continues to be unsatisfactory. Though EYDAP does not have separate accounts for water and sewerage operations, the latter is considered to be the biggest loss maker. Sewerage fees are low in international comparison. Specifically, sewerage fees in Athens are equal to 40 per cent of the water bill for residential consumers and 28 per cent for industrial consumers, compared to an international standard of above 60 per cent for both types of consumers. Moreover, local authorities and the public sector receive large discounts. EYDAP's revenue also suffers from poorly functioning meters, which are estimated to lead to a 15 per cent loss in revenue. Finally, the financial impact of subsidies provided to local authorities is compounded by the fact that they are constantly in arrears.⁵⁸

EYDAP's financial position is also burdened by excess labour costs. These represent over 60 per cent of operating costs, in what is considered to be a capital intensive sector. A comparison with an average of UK companies indicates that EYDAP's productivity in 1995 was about 25 per cent lower (3.2 employees per thousand connections versus 2.5 employees per thousand connections), in part due to a 20 per cent increase in employment during 1992-95 (Figure 7, panel B). EYDAP's labour force also suffers from a poor skill mix, with one-half the employees in administration and finance. Wages per head also appear high as they are about 30 per cent higher than in the manufacturing sector. The low revenues and high labour costs have resulted in a operating deficit equal to 10 per cent of operating costs, and an outstanding debt of Dr 42 billion.⁵⁹ The financial situation is better in the Thessaloniki companies, partly because their labour costs are lower.

Looking forward, EYDAP and the water and sewerage companies of Thessaloniki have been included in the Government's list of enterprises to be partially privatised by end-1999.⁶⁰ The companies

56. These estimates were made by the consultant group, Knight Piésold, in *EYDAP Master Plan: Water Division*, December 1996.

57. The consultant's reports suggest only a 75 per cent increase in the price of water charged to local authorities. This would not result in any significant price increase to the final consumer, assuming the mark-up is commensurately reduced.

58. Another source of revenue loss was the Government's suppression of a special contribution (two-thirds of a 3 per cent tax on construction sites), which provided about 10 per cent of EYDAP's revenue. As EYDAP expects to receive an equivalent sum as a transfer from the Budget, it includes this amount in its accounts.

59. This debt has been accumulated since 1992, when EYDAP received a capital increase and the Government took over its outstanding debt (both operations totalling Dr 130 billion).

60. The Government is also reconsidering the appropriate industry structure, and whether the sewerage and water functions should be separated. Economies of scope on pipeline operations and co-ordination of the placement of infrastructure investment — so as to avoid externalities regarding effluent control — suggest a preference for a joint company, and the Government announced in September 1998 that it would merge the Thessaloniki water and sewerage companies.

will be split into an operation management firm and an owner of the infrastructure, and the operations will be sold in the form of a concession agreement in the second half of 1999. For the sale to take place on schedule, the new management teams will need to complete, and then begin to implement, their respective business/restructuring plans. To generate sufficient profitability to attract private investors, these will certainly need to reduce labour costs and contain an agreement with the Government regarding the financing of the future infrastructure works. Water price increases would also need to form part of the reform package. Together with an indexation of future tariff increases to inflation, these have been projected to make EYDAP capable of self-financing its Dr 72 billion water investment programme albeit with a debt build-up over the medium term (replacement of one water treatment plant at Galatsi, improved security of conveyance, introduction of sludge treatment facilities).⁶¹ However, the financing of flood control projects would not be covered and the Government would henceforth need to take over this public service obligation. A study similar to that undertaken for Athens water supply would need to be undertaken regarding the viability of the Athens sewerage operations, especially as the current infrastructure does not achieve the desirable waste treatment processing prior to its ejection into the depths of the Saronic Gulf (40 per cent compared to an end-target of 95 per cent). The upgrading of the Psytalia treatment plant of Athens is estimated to cost around Dr 30 billion. In the event, sewerage charges would likely need to be raised towards international levels, similar to those of UK firms, which include substantial infrastructure amortisation charges. An extension of this strategy would be for EYDAP to be split into two companies -- if the network permits -- each providing water and sewerage services to approximately one-half the greater Athens area. Creating this possibility for benchmarking has enhanced competition in other countries (*e.g.* the city of Paris). Moreover, with three large players (two in Athens and one in Thessaloniki), there would also exist a sufficient mass of know-how and economies of scale which could provide services or operate the local water and sewerage entities, which are for the most part managed poorly.

Potentially competitive sectors

Air transport and Olympic Airways

Similar to developments in many other EU countries, competition has intensified on international flights over the past 15 years, but it remains more limited in domestic air transport. In the context of a rapidly growing international market, foreign carriers with unscheduled flights (charters) have gained sizeable market shares. As a result, the publicly-owned Greek flag carrier, Olympic Airways Group (OA), accounted for about 16 per cent of international passengers to Greece in 1997, compared with over 20 per cent in the early 1980s (Figure 8; panel A).⁶² On domestic flights, several domestic private carriers have entered a few key routes following the market liberalisation in 1992, and their market share has increased notably to about 25 to 30 per cent of the domestic market.⁶³ On these routes, price competition has forced down OA's prices, with the fare on the high-volume Athens to Thessaloniki route declining by 25 per cent in real terms between 1992 and 1997 (Figure 8; Panel B), yet it remains about 30 per cent above that of its competitors. Largely as a result of price competition, which has also been extended to some key international flights, almost all of these new airlines initially faced serious financial difficulties, and remain heavily indebted.

61. In view of the long life of the infrastructure projects in this sector (75-100 years), two-tier pricing, comprising a fixed and usage related charge is not considered appropriate.

62. The Olympic Group comprises Olympic Airways, Olympic Aviation, Olympic Tourism, and Olympic Catering.

63. The domestic market was opened in 1992, just prior to the timetable contained in the EC directives on air transport liberalisation (EC/2408/92).

(Figure 8. Air transport: prices and performance)

Olympic Airways' monopoly control of handling services at all Greek airports has been a major hindrance to the development of competition in air transport. Ground handling costs represent a significant element of an airline's overall costs, and these are high at Greek airports.⁶⁴ Handling operations provide a critical source of revenue for OA, as they are the only major profit earner in the company, bringing in about 15 per cent of total operating revenues (Figure 8, panel C). Following an EC infringement procedure in 1994, the Greek authorities have improved the international terminal in Athens and OA also committed itself to establish a tariff structure which is better related to the actual costs of the services. Moreover, a licence for a second passenger handling operator (Goldair Handling) has been provided by tender for the international airport of Athens in February 1998. Following these actions, the EC closed the procedure. However, EU airlines have also complained about the preferential treatment of the incumbent carrier in the allocation of slots at Greek airports and opening hours of certain Greek airports geared exclusively to OA's needs.⁶⁵

Following the approval of an EC-approved restructuring programme and a massive debt write-off in 1994 (following one in 1990), the airline turned only briefly into profit, and the programme is now far off-track. The restructuring plan included a reduction in labour costs (through a wage freeze and an early retirement programme)⁶⁶, the reformulation of the route network to reduce loss-making flights, and a further opening of the Greek air traffic market to competition, including the removal of any constraints on charter services (*e.g.* seat-only sales) and full access to the Greek islands from June 1998. The agreement also comprised a cancellation of Dr 500 billion of debts (equivalent to 2 per cent of 1995 GDP). Due to the slippages in the programme's implementation, the EU has delayed disbursing the second tranche of the agreed Dr 54 billion capital injection until August 1998, when it approved an additional Dr 14 billion in state aid.

The deterioration in OA's financial performance mainly reflects a dramatic slippage in wage and fringe benefits, which have put the company back into the red in 1997 despite the large relief from financial costs stemming from the reduction of OA's debt. Specifically, wages increased by 34 per cent between 1995 and 1997, and both off-day entitlements and overtime payments increased three-fold, so that total compensation rose by 50 per cent during 1996-97. The timing of these increases was especially unfortunate as OA was already in a poor position *vis-à-vis* its international competitors prior to these recent wage slippages; its labour costs accounted for 40 per cent of total operating costs, compared to an average of 26 per cent for companies reporting to IATA. Excess ground personnel and low productivity are the main culprit for OA's high labour costs (Table 9). However, social benefits are also generous, in particular for pensions where eligibility conditions are looser than in most other EU carrier (*e.g.* stewardesses are entitled to receive a full pension after 17 years of work from the age of 42). A lack of technical and working time flexibility and an inadequate skill mix of OA's labour force requires excess staffing and overtime payments, and non-basic salary payments account for 30 per cent of total earnings. Regarding other operational costs, the age and disparity of the fleet and the stockage of diverse spare parts raise maintenance costs significantly.⁶⁷ An improvement of OA's cost control is hindered by the poor

64. Handling charges amount to 10 to 20 per cent of total operating costs on a typical two hour intra-European flight (see OECD 1997c). Self-handling is permitted, but is not an economically efficient alternative.

65. See the Official Journal of the European Communities (1994).

66. The early retirement programme has been problematic. Its cost has been considered by the EC as unauthorised public assistance to the carrier (Dr 20 billion) and it has resulted in the loss of many qualified personnel (1 500).

67. On the other hand, operating costs are decreased by low depreciation costs arising from the old age of the fleet (an average age of 16 years compared with an IATA average of 11 years).

accounting practices, with little accounting separation of activities, thus making it difficult to identify inefficiencies or to spin-off and sell non-core services.

(Table 9. An international comparison of airline performance indicators)

On the income side, OA's low revenue is due to weak demand, increased price competition on domestic and international flights, and a poor marketing strategy. Revenues are also hurt by the obligation to provide some services at prices which do not reflect cost, even though OA's monopoly in ground handling and maintenance were intended to compensate for the various public service obligations. These include the provision of a national service, in particular to the islands, links to the main Greek communities around the world, and free tickets for certain groups (public servants, students, armed forces personnel and the clergy). In addition, the airline is burdened by the requirement to fly the daily press delivery (at prices far below cost and with larger than otherwise-required planes) and by arrears of political parties for services rendered. Revenue losses also arise from OA's commercial strategy which is considered to be poor, with insufficient efforts on marketing and a reliance on a simple strategy of commissions with ticket agents. Indicative are the expenses on marketing and distribution; they account only for 10 per cent of OA's operating costs compared with an average of 18 per cent for other airlines. These factors are reflected in OA's load factor, which is one of the lowest in the world.

To restore OA to financial viability, the Government hired a new board of directors and charged it with drawing up a new business plan. The plan that was finally approved by Parliament in early 1998 aims at achieving a one-off Dr 43 billion improvement in OA's results — albeit relative to a pessimistic baseline scenario — mainly by controlling labour cost developments and reducing maintenance and other costs.⁶⁸ The proposed strategy is a step in the right direction but is not sufficiently ambitious when account is taken of Olympic's starting position and the expected strengthening of competitive pressures in the near future. OA lost its monopoly in air services to the islands starting in July 1998 and ground handling, currently a major source of OA's income, will gradually be opened to competition in the larger airports starting from 1 January 1999.⁶⁹ Moreover, work stoppages in 1998 — in protest at the latest restructuring plan — have led to a drastic decline in passenger demand of about 12 per cent compared to a year earlier, and have thus put the integrity of the plan further into doubt.

To be able to resist tougher competitive pressures, and survive an eventual downturn in the world market, OA should follow some of the general trends in the OECD. First, it will need to focus more on its core activities (which entails terminating the loss-making long haul flights), and an outsourcing of peripheral activities (*e.g.* handling, which in any case will become less profitable, and catering) would allow OA to increase its cost efficiency. A substantial further reduction in labour costs is the other main area where OA has to align with other airlines' practices, in particular, to compete with new airlines where working conditions are more flexible and wages are significantly lower. In this context, if renegotiating the existing contracts with the employees cannot succeed, OA could examine the establishment of a two-

68. The Dr 43 billion improvement in OA's net result is calculated from a "no-action" scenario. Controlling labour cost developments is the main element (expected to contribute for 60 per cent of the improvement). It includes a three-year wage freeze from the end-1997 level (*i.e.* after a 50 per cent increase over the previous 2 years), the introduction of more flexible working hours (with a maximum of 10 working hours per day and 48 per week), the re-examination of certain non-wage costs (in particular the food allowance). An increase in revenues in drachma, mainly arising from the March 1998 devaluation, is projected to contribute for 20 per cent of net result improvement (most handling and international flights are invoiced in foreign currencies). The renewal of the fleet, the redesigning of the route network and the change in OA's marketing policy, would contribute the remainder.

69. However, a consortium containing Olympic has received the tender to operate the (monopoly) hydrant fuelling system at the new Spata airport.

tier scale system (as did Air France, Austrian Airlines, or Alitalia). Adapting the labour supply to the seasonality of traffic may require a more flexible assessment of working time and an increased use of fixed-term contracts. In line with other carriers, social benefits should also be curtailed. In particular, for pensions, the retirement age in some airlines has been increased substantially. Forging strategic alliances with other international carriers (*e.g.* through code-sharing agreements, technical co-operation, providing feeder flights, and the pooling of aircraft) has been another general trend in the air transport service industry. Such a move would also permit OA to focus on regional middle distance routes.⁷⁰ In this regard, the brand new Spata airport could be in a position to act as the main hub for eastern Mediterranean countries.⁷¹ With the view of identifying a strategic partner for Olympic Airways, the Government hired an international investment firm in October 1998. Regarding the air transport market in general, the more competitive domestic market needs a more active and independent role from the Civil Aviation Service, both in the area of regulation (licensing, equitable access to infrastructure and transparent pricing of support services) as well as airport operation, maintenance and construction.

Television and radio

The public operator, National Broadcasting Corporation (ERT), lost its monopoly when the market was liberalised in end-1989. Its market share fell rapidly, to below 50 per cent in 1990 and subsequently to 6 per cent in 1995 before rising to 10 per cent in 1997. Advertising revenue suffered more, as the increased competition from 9 other TV stations and a plethora of radio stations reduced the per unit price of advertising substantially in real terms. Though ERT's revenues are enhanced by a Dr 1 000 monthly charge on all electricity bills, it nevertheless remains a substantial loss maker, with an annual deficit of the order of Dr 10 billion on operating revenues of Dr 45 billion. As a result, ERT's debts currently stand at Dr 35 billion and it is Dr 15 billion in arrears to DEH and OTE. In contrast, the main private stations are earning profits. Part of ERT's financial difficulties arise from an inability to downsize in line with its decline in market share; *i.e.* it still operates three TV stations, and 5 radio stations. Moreover, despite a three year hiring freeze, total employment of 3 480 has not adjusted substantially from the level at the start of the decade. As a result, its productivity is estimated to be about a third of the private channels. The five-year restructuring programme that was agreed between management and the Government in September 1998 contains a 15 per cent reduction in the work force through early retirements, a transfer of local stations to regional authorities, as well as productivity gains of 40 per cent over the 5 years, so that profitability is restored by 2000.

Enterprises implementing public policy

Rail transport

The lack of a clear strategy for rail services over many decades has reduced the national railroad company, OSE, to a lamentable state as regards both its financial position as well as its infrastructure development. With emphasis focused on developing the road network, investment in infrastructure had been minimal until the 1990s, when a large scale upgrading of the system began under the CSF I and was continued under CSF II. As a result, modernisation has commenced on the main route of Athens to

70. In addition, many airlines have preferred the flexibility offered by leasing compared to purchasing new planes. Since OA is about to embark on a large new aircraft acquisition programme (Dr 1.2 trillion) it may wish to consider switching to a leasing programme instead.

71. The new airport is being constructed under a BOT operation, and fee setting will be the responsibility of the private-sector operator (rather than the Civil Aviation Service). Thus, its airport charges are likely to be more expensive than the current one since it has to recover the cost of the investment.

Thessaloniki, and then on to the international network, with a view to the construction of a dual track network, and the introduction of electrification and automatic signalling. Travel time, however, remains disadvantageous for rail passengers compared to car or plane travel. The other parts of the network are in worse shape. There exist lines with different gauge track relative to the main line (requiring cargo transfers), the geometric characteristics of the rail layout and many level crossings slow train speeds, and wagons have not been modernised.

Pricing policy has partly offset the deterioration in the quality of service and the increased competition from substitute sources of transport. The Government — for social and anti-inflationary reasons — has increased passenger and cargo fares by far less than inflation. As a result, both prices fell by 25 per cent in real terms between 1980 and 1997. Despite the decrease in price, total (cargo and passenger) demand has fallen substantially during this period, though it has recovered somewhat in 1996 and 1997 (Figure 9, panel A).⁷² Nevertheless, the volume of demand relative to the size of the network remains far below comparable indicators of other EU countries, and revenue per volume (passenger and cargo kilometres) and the revenue per employee indicators are among the lowest in Europe (Table 10).⁷³

(Table 10. An international comparison of the rail transport sector)
(Figure 9. Rail transport: prices and performance)

By 1997, operating revenues covered only 20 per cent of operating costs compared with 55 per cent in 1980 (and compared with about 55 per cent on average currently in most EU countries) and the operating deficit was equal to Dr 120 billion (Figure 9, panel B). Despite large operating and capital transfers (about Dr 120 billion in 1997), the accumulated debt was Dr 650 billion at end-1997 (equivalent to 2 per cent of GDP).⁷⁴ The poor financial condition is also due to inflated operating costs. The ratio of personnel costs to operating costs is far above the comparable ratio in the EU, and nearly double that in the United States (75 per cent compared with about 55 per cent in the EU and about 40 per cent in private carriers in the United States). A comparison of international productivity indicators has OSE operating at one-half the efficiency of the EU (despite a nearly 20 per cent decrease in staff during the last decade). There are too many employees in maintenance compared to operations (accounting for nearly two-thirds of the wage bill), and too many employees in the underused southern part of the network in the Peloponnese (30 per cent of the employees *versus* 10 per cent of the demand). Compensation per employee also seems to be high, as wage gains in real terms have exceeded productivity gains, and the average wage exceeds that in manufacturing by 15 per cent (Figure 9, panel C).⁷⁵ Finally, operating costs are inflated by a diverse rolling stock (the new management plans to reduce the 18 types of engines to 4 and thus the requisite types of spare parts from 185 000 to 70 000).

72. Passenger and cargo were both near historical highs in 1987. Since then, passenger demand fell, but then almost returned to its 1987 level (1 930 million kilometre passengers in 1997 *versus* 1 973 million in 1987). However, cargo demand in 1997 has fallen to about one-half the 1987 level (331 million kilometre tonnes in 1997 *versus* 599 million in 1987).

73. Passenger rates are the lowest in the EU (about Dr 7 per kilometre passenger *versus* Dr 40 in the United Kingdom for British Rail, Dr 26 in Germany for DB, Dr 33 in Sweden for SJ, and Dr 13 for Renfe in Spain). Cargo rates are closer to rates in other countries.

74. Under the 1972 legislation, the State is responsible for all operating losses of OSE.

75. Labour costs are also pushed up by a plethora of bonuses and overtime payments, which appear to form a disproportionate share of compensation, and by generous pensions, for which the average retirement age is 56.

The new OSE management put forth a five year restructuring plan in early 1998, which was approved in October 1998.⁷⁶ The plan will be supported by an ambitious 10-year investment programme of Dr 1.7 trillion equivalent to 5 per cent of 1997 GDP, whose main objective will be to *i*) eventually improve the Athens — Thessaloniki main line so that the time of travel falls to 4 hours 20 minutes for the 520 kilometres, *ii*) complete the north-south link of the network, and *iii*) renew the rolling stock.⁷⁷ However, construction is behind schedule and is suffering from massive cost overruns (of the order of 100 per cent), both jeopardising the plan and implying the need to find additional sources of funding.⁷⁸ The plan focuses on reforms to cut costs and raise demand. Significant cost savings could come from the closure of non-viable lines and a focus on mainline operations and cargo transport from Greek ports towards the Balkans. However, the Government is not currently considering to downsize operations, and thus the plan expects OSE to operate these lines as a public service obligation and receive payments to cover the cost of these operations.⁷⁹ Labour costs are expected to fall due to a reduction in employment from 12 000 to 8 000 and the introduction of a more flexible labour agreement. Equipment standardisation and competitive bidding are expected to reduce maintenance costs, while private-sector participation in the construction of stations and the inner city rail network would provide needed capital for OSE to further develop its services. With a view to encouraging an increase in demand of 60 per cent, price increases will be contained over the five year programme; an increase of 2½ per cent per year in real terms for passengers and a decrease of 9 per cent per year in real terms for cargo. Nevertheless, operating subsidies (albeit reduced) will remain high: near Dr 90 billion per year, equivalent to 200 per cent of operating revenues (and amounting cumulatively to nearly Dr 500 billion, equivalent to 1.5 per cent of 1997 GDP). The plan acknowledges that due to large investment lags, only the Athens to Thessaloniki line will be profitable by 2000 and OSE will need until 2007 to cover its operating costs, excluding public service obligations. OSE's financial situation will obviously remain precarious even if the ambitious and expensive programme meets its objectives. Moreover, the Government will need to have a contingency plan for the eventuality that the programme goes off-track, including options for more drastic cost cutting measures and a more significant downsizing.

Urban transport

The urban transport sector is dominated by the large, publicly-owned and heavily loss-making Athens Urban Transport Authority (OASA), which provides bus, trolley and rail services to the nearly 4 million inhabitants of greater Athens.⁸⁰ The much smaller urban bus company of Thessaloniki is

76. The new management also envisages complying fully with all EC directives for rail transportation in 1998, including the separation of the accounts for operating and infrastructure and the creation of a special account for past losses (91/440), and the specification of conditions and terms for third party access (95/18 and 95/19).

77. Until 1999, funding will be from the CSF II and the Cohesion Fund (with 60 per cent and 85 per cent participation, respectively, of EU funds). This investment programme will add 100 km of double lines to the 300 currently existing (raising them to 25 per cent of the network with ordinary width), reduce metric gauge lines by 10 per cent (887 km to 807 km), increase the electrification of the network to 400 km of double rail from zero and from 76 km to 196 km on single rail, double high speed track capacity (above 200 km per hour) to 200 km of track, and almost double automatic signalling to 840 km of track.

78. A subsidiary of OSE was recently created (ERGOSE) and made responsible for the infrastructure construction.

79. Of OSE's 18 lines, the business plan considers 9 not to be viable, three to have the potential to be profitable, and another 6 to be questionable. On some of the non-viable lines, capacity utilisation is in single digits.

80. In fact, the OASA has three subsidiaries, ETHEL (buses), HSAP (the one rail subway line from Athens to Piraeus), and HLPAP (trolley buses).

privately operated through a franchise agreement.⁸¹ Demand for urban transport services in Athens has declined by over 20 per cent since the late 1980's (Figure 10, panel A), and its market share of urban transport has fallen to 30 per cent — reflecting the increased usage of private vehicles. As a result of increased road congestion, and an ageing fleet (average age is 15 years), service quality has declined, which has reinforced the fall in demand.

(Figure 10. Urban transport: prices and performance)

The decline in demand is even more striking in view of the dramatic fall in the cost of a ticket adjusted for the effect of inflation. From 1980 to 1997, fares have fallen by over 40 per cent in real terms from an already subsidised price. As a result, fare revenues only cover 33 per cent of operating expenditures compared with 62 per cent in 1980 (Figure 10, Panel B), and OASA had a deficit of Dr 90 billion in 1996 and outstanding debt of nearly Dr 900 billion (equivalent to 2.5 per cent of GDP), the bulk of which was in arrears.⁸² OASA's financing needs are met by subsidies from the central government budget (Dr 40 billion in 1996) and bank credits with a government guarantee (Dr 45 billion in 1996). Despite the fare increase from Dr 75 per ticket in 1997 to Dr 125 per ticket in 1998, OASA estimates that an additional increase to about Dr 250 would be needed to cover operating costs.⁸³

The fare increase should be less severe since operating costs need to be brought down. International comparisons suggest that labour costs are high; they account for 82 per cent of operating costs. Despite labour shedding and a 20 per cent increase in productivity during the past 10 years (passengers per employee and vehicle kilometres per employee), the new management envisages a further improvement in productivity. For the most part, a reduction is required in the number of maintenance personnel.⁸⁴ While salaries have not experienced the sustained large gains in purchasing power observed in many of the other public enterprises, wage growth has been rapid during the last 4 years (about 3 per cent per annum above inflation) and the average wage of an OASA employee is double the national average and significantly higher than the level in the manufacturing sector. Wage costs are burdened by large expenditure on overtime due to inflexibilities in labour regulation combined with the uncertainty of timing shifts in the face of unpredictable traffic congestion.

The new business programme was approved in October 1998 and includes both fare increases and the negotiation of more flexible labour regulations. The plan expects fares to remain below cost as part of environmental and social policies. This strategy would also serve to raise demand. Higher demand would also come from a better service quality. In this regard, the fleet will be upgraded through a Dr 130 billion investment plan which will provide for the purchase of about 1 000 new vehicles and 120 wagons, to be financed from public funds. Improving quality would also require co-ordination with

81. Inter-city bus service is offered by private operators under the loose control of an umbrella organisation (KTEL).

82. The government guarantees to banks which have fallen due have been paid and the claims converted to those of the Government on OASA. However, it is a debt that can never be repaid. About half the debt is due to the cost of re-nationalising the bus company in 1993 following its privatisation in 1992.

83. Losses also arose from the fact that during most of the 1980's, urban travel was free of charge between 5.00 and 8.00 am. This practice was discontinued in the 1990s. Another source of revenue loss is ticket payment evasion, which has reportedly become more acute as the frequency of ticket checks has declined. In Thessaloniki, where ticket prices were also Dr 75 in 1996, revenue per passenger was Dr 63 *versus* Dr 47 in Athens.

84. Additional savings in personnel and vehicles could be made if the number of kilometres and length of time it took buses and trolleys to go to and from their respective routes were reduced through a more efficient allocation of depots and design of routes.

traffic control to improve route speeds and reduce the uncertainty of travel time. The source of the residual financing requirement is under debate but a tax or charge on cars or fuel, though initially considered, was not finally accepted. The Government is not contemplating more radical changes in the management of OASA, either through a switch of control to the municipal government (the international norm) or by introducing a role for the private sector, as is the case for inter-city buses or in Thessaloniki, though these have been operating more or less satisfactorily.⁸⁵

Postal service

The public monopoly, Greek Post (ELTA) is being forced by EC directives and competition from overnight mail and other new services to reform its operations so as to prevent a further deterioration in its already poor financial position. Currently, ELTA dominates the postal sector and faces competition only from international couriers, the private inter-city bus service (KTEL), and small (underground economy) inner-city operators. EC Directive 97/67 delays full liberalisation of the sector until 2003, when the currently protected market for items weighing less than 350 grammes will also be deregulated.

The sources of ELTA's current poor financial position are manifold. On the revenue side, postal tariffs have been adjusted by less than inflation — declining by over 10 per cent in real terms during 1987-97. Thus, the domestic tariff for the standard 20 grammes letter is the lowest in the EU (except for Spain), and 33 per cent below the EU average (Table 11). Despite these low prices, demand is exceedingly low compared with the rest of the EU, in part due to a service quality which is considered unsatisfactory. For example, the timeliness record of mail delivery and the population per postal office are the lowest in the EU. The poor "on time" record reflects both lack of automation in distribution as well as the more difficult geographic characteristics of Greece, with its many mountains and islands. Regarding postal offices, their distribution is also problematic, as far too many are in the rural areas compared to the densely populated urban centres, and are especially sparse in the newer urban suburbs (such as the north of Athens).

(Table 11. An international comparison of postal service indicators)

On the cost side, labour costs are high in a highly labour intensive sector. Productivity indicators are by far the lowest in the EU, and rigid labour regulations constrain an improved distribution of personnel and thus the closure of the many loss-making postal offices. Moreover, 75 per cent of rural outlets are offices owned by ELTA rather than agencies through which postal services are provided as a secondary operation (*e.g.* in small stores or gas stations). In other EU countries, the comparable average is 25 per cent. Wages also appear to be high, as gains in real terms have exceeded productivity for at least the last decade (Figure 11), and compensation in 1997 exceeded that in manufacturing by 15 per cent. Though ELTA has received resources from other sources, deficits equal to over 25 per cent of revenues resulted in a debt of Dr 70 billion by end-1997.⁸⁶

(Figure 11. Postal services: prices and performance)

85. Data for the private company operating the buses in Thessaloniki are sparse. However, its operating costs per passenger are higher than for the bus subsidiary of OASA. This fact may reflect that the franchise contract is based on a guaranteed rate of return of about 15 per cent, which may not be providing appropriate cost efficiency incentives.

86. Though ELTA does not receive a specific payment for providing a public service obligation, its financing needs were covered by a transfer from OTE until 1994, when this practice was terminated. ELTA also receives transfers from the Postal Bank.

The restructuring plan put forth by the new management and accepted in July 1998 by the Government, sets forth several important measures which would bring ELTA to profitability by 2000, excluding payment for a public service obligation.⁸⁷ Perhaps most importantly, it introduces more flexible labour regulations, which should improve the geographic and functional mobility of staff and permit more elastic timetables and the use of part-time work. However, it does not anticipate any sizeable reduction in its workforce. It also envisages the re-design of the network to fit the changed distribution of the population; *i.e.* closure of loss-making offices, especially in rural areas and their replacement with agencies. Revenue enhancement is expected from a 10 per cent per year average nominal increase in fees during the five year period and an increase in demand of 3 per cent per year arising from an improved quality of service. The Dr 41 billion investment programme for the period 1998-2000 (of which 60 per cent will be EU financed) will focus on automation of the central offices. The programme also reduces operating costs significantly since it entails a Government take-over of ELTA's liabilities and a capital injection (Dr 60-80 billion).⁸⁸ Nonetheless, if ELTA fails to hold its own in a more competitive environment, management would need to consider concentrating on basic services and leaving the remainder of the market to private sector operators. A leaner operation would also require fewer personnel. In the event, increased private sector participation may be attracted by the implementation of currently existing draft legislation which sets out the institutional framework and creates a market regulator by expanding the role of the telecommunications regulator to cover the postal sector too.

V. Quantification of the effects of liberalisation

This section provides estimates of the potential long-run effects at the macroeconomic level of restructuring the main public enterprises and introducing competition into the sectors they currently dominate; the analysis covers eight sectors (petroleum, electricity, telecommunications, air transport, urban transport, rail transport, water services, and postal services). The analysis consists of three stages and is based on the methodology developed by the OECD for its regulatory reform project.⁸⁹ It is a static analysis, based on the situation existing in 1996 so the timing neither of the changes nor of their eventual impact form part of the analysis; one-off reforms are assumed for each sector.

In the first stage, an assessment is made of the potential reform's effects on prices. The quantification of these effects is partly based on benchmarking (*i.e.* the observed effects of the introduction of reforms in other countries) and partly on an assessment of the conditions currently existing in these sectors in Greece, as they have been described in the sections above. Reviewing the main components of price performance, the following observations can be made (Table 12). First, it is clear that large savings can be made from reduced labour costs — both from improved productivity and lower wages. The average reduction in labour costs is about 50 per cent — with wages assumed to fall to the average of the manufacturing sector. Second, the cost of intermediate inputs, which depend heavily on energy, and thus, reflect the effects of reforms, would provide a further downward impetus to prices. Third, the reforms would result in substantial changes in relative prices, with prices of some goods and services falling and others rising. Specifically, a downward stimulus to prices comes mainly from the telecommunications and petroleum sectors, while in the case of enterprises with public service obligations, even the assumption of

87. The EC Directive requires the elimination of all subsidies, as well as recourse to cross-subsidies. In the event the network is considered to be expensive, it permits the introduction of a fee to be placed on all market participants in order to finance public service obligation.

88. ELTA's non-bank liabilities include social security contributions to OAED (Organisation for Manpower Development), and arrears to DEH.

89. OECD (1998a), *The OECD Report on Regulatory Reform*.

negative profit margins of 30 per cent implies large price increases.⁹⁰ Fourth, the need by all public enterprises for extensive infrastructure programmes will raise their capital costs. Fifth, innovation in the most technologically dynamic sectors is assumed to provide further room for price reductions (mainly in telecommunications but also in the electricity sector due to the arrival of natural gas). The results of the analysis indicate that, on balance, a more efficient public enterprise performance could have a downward impact on the aggregate price level (1 percentage point off the CPI price level). Economy wide wages are expected to remain broadly unchanged in real terms, though they could be significantly lower for employees in public enterprises and 1 per cent higher in the rest of the economy.

(Table 12. Assumptions and effects of sectoral deregulation)

In the second stage, demand elasticities are used to derive the increase in each sector's output arising from the potential price gains described above. These are aggregated across sectors to produce the direct effect of public enterprise reform on output and employment; a 1½ per cent increase in output and a ½ per cent decrease in employment. Overall, unit labour costs would fall by about 2 per cent. The impact on output could be underestimated and that on employment overestimated due to the fact that some of the more important sectors (energy and telecommunications) are still maturing in Greece and their weight in the economy is below that of other industrial countries.

This static approximation of the effects of reform, however, underestimates the full impact on the economy since it does not take into account the multiplier effects arising from the lower prices of these critical inputs on other sectors of the economy. In a third stage, these second-round effects are estimated using the OECD Secretariat's INTERLINK model, and result in a cumulative increase in total output (direct and second-round) of the order of 5-7 per cent of GDP; in simulations for other OECD countries which did not include the loss making public service enterprises (water, train, bus and post), output gains ranged from 5 to 6 per cent for France and Germany to 1 per cent for the United States.⁹¹ This estimate understates the impact on Greece since it does not capture either the impact from the provision of higher quality products due to the large investment programme that will be undertaken, or the improvement in the budget balance. Rough estimates of these factors would push up the total one-off income gain to at least 9-11 per cent. This potentially large increase in output could lead to substantial increases in employment if labour market flexibility permits the gains in productivity to be shared between real wages and employment.

VI. Assessment

The Government has embarked on a programme to revitalise an inefficient public enterprise sector, which has been costly to sustain, has provided less than satisfactory services, and is now struggling to make up a large investment gap relative to comparable OECD enterprises. The cost to the economy consists not only of an annual drain on the budget of about 3½ per cent of GDP, but a sizeable brake on activity as the economy is often deprived of essential inputs at low cost. To a large extent, budget transfers to public enterprises are financed by EU funds but they nevertheless represent a diversion of these funds from other uses. If accumulated over the past decade and half, and added to other government liabilities due to public enterprises, they represent a burden equivalent to about 50 per cent of GDP. The force pushing for policy change is Greece's quest to satisfy the Maastricht criteria, and then to perform satisfactorily within EMU and achieve real economic convergence to the level of the EU countries. In

90. Some enterprises are assumed to continue to receive subsidies to finance their public service obligations. Their profit margins are negative before they receive these subsidies.

91. The second-round multiplier effects are based on the results of similar exercises undertaken for the larger OECD countries. This assumption is not expected to greatly influence the estimated outcome.

order to catch up with other OECD countries, a reform strategy must be bold and decisive, since further reversals would risk leaving Greece at the economic periphery of the EU. But an advantage for Greece is that it can benefit from the experience of other countries which have preceded it in their reform efforts. Their experience suggests that much emphasis must be placed on designing the pertinent regulatory framework. An appropriate design would generate sufficient competition so as to attain the full potential of the reform for the economy, which as noted above, is estimated by the OECD Secretariat's simulation to amount to an eventual one-off increase of at least 10 per cent of GDP. In view of the large overmanning in public enterprises, appropriate social safety net procedures need to be developed in parallel to the reform effort, though the output gains should generate many new jobs for the economy as a whole.

The Government's strategy rightly places much emphasis on the need for improved management and operating efficiency in public enterprises. The decision to hire new experienced managers through competitive tenders should certainly benefit those enterprises for which the process is completed quickly, and in this regard the exclusion of the Public Power Corporation (DEH) from this process is a missed opportunity. However, new managers by themselves are not sufficient if their independence from the Government and the respective line ministries is not assured. In this regard, managers will need to be responsible for hiring and remuneration policy, since high labour costs and low productivity are an overriding factor for the poor financial performance of public enterprises. Productivity indicators in almost all public enterprises are very low in international comparison. The issue of how to deal with current excess staffing and the inappropriate skill mix has to be placed high on the agenda, as a quick reduction of personnel is necessary to hasten the enterprises' resurgence. The adjustment process will otherwise be more costly, in terms both of resources as well as operational efficiency. In view of the obvious social issues at stake, the option under consideration by the Government to transfer a portion of surplus public employees to other public entities or local government could be a workable solution — though caution is required not to transfer employees where there is no need. Perhaps the development of the new regional governments is an opportunity in this regard. Concerns about moral hazard, nevertheless, dictate that public enterprise employees need to be treated *de facto*, as well as *de jure*, similarly to their brethren in the private sector and not feel the complacency which comes from a guaranteed job security. A normal degree of job security would also temper unreasonable demands for compensation and other benefits. Management independence is also needed for procurement decisions. Managers should be free to choose supplies based on criteria relevant to the well-functioning of the firm, without pressures based on other considerations, such as domestic production and employment. Prices should be set with a view to enhancing firms' efficiency while providing an adequate revenue performance, and not be based on short-term macroeconomic considerations. Therefore, price decisions should be best left to the discretion of an independent sector regulator responsible for setting price-cap regulation. Eventually, prices should be allowed to be set by market forces once sufficient competition has been generated in a sector.

International experience has been disappointing regarding the success of management contracts in providing adequate firewalls and preventing conflict of interests between management and short-term Government considerations. In many cases, government intervention led to breaches in initial financial targets, and left tax payers the bill, as these contracts are essentially unenforceable. In others, the lack of a credible hard budget constraint was the source of similar outcomes. In essence, corporate governance suffers because the shareholder function is not separated from the regulatory function within the state. One option for overcoming this shortcoming is the introduction of independent boards (including adequate remuneration of its members). Nevertheless, dissatisfaction with this model has led many countries to use more competitive environments to ensure the efficient operation of public enterprises. This solution obviously requires more participants and thus Governments have liberalised the relevant markets so as to attract new participants and also turned to the private sector for the management and/or ownership of their public enterprises. This tendency has been facilitated by technological innovations which have reduced the sectors which previously were considered to be natural monopolies as well as by successful experiments in auctioning the rights to operate public services and to construct infrastructure. A necessary complement to

this approach has been the introduction of independent and powerful sector regulators for the large sectors so as to ensure fair and competitive practices, which also serve to attract more participants. The creation of an overall competition watch-dog would ensure the well-functioning of individual markets as well as permit arbitration of cross-sector issues and provide a venue for the private sector to address its complaints regarding non-competitive behaviour of public enterprises. The Greek Government recognises the shortcomings inherent in management contracts and considers them to be a first step in the reform process. After undertaking the appropriate due diligence procedures, which clarify the financial position of the firm, and preliminary restructurings, the Government intends to divest from more public enterprises, especially as their markets are opened to competition.

In the case of Greece, the timetable for opening up markets to competition is in line with EC directives (and their derogations), but Greece could follow the example of some other countries and liberalise at a faster pace. Regarding auction tender techniques, these have already been used in Greece. The construction of the Athens metro is a prime example, and the agreements for the new Athens Airport and Rio-Antirio bridge combine both operations and construction in Build-Operate-Transfer (BOT) agreements. The same philosophy can be applied to the existing public enterprises in Greece and the Government's decision to proceed with partial sales in profitable enterprises (either equity or operations for pre-determined periods) is a step in this direction. They should provide the double benefit of injecting more exacting and dynamic minority owners to spur operational efficiency while attracting new capital to support needed investment. Of course, this form of corporate governance would be enhanced the larger the ownership share held by investors as well as the diversity of ownership. The Government's decision to seek strategic investors, which would also operate the firm, as well as risk their own capital would also work towards this objective. However, leaving majority ownership in the hands of what the private sector could consider a whimsical public owner weakens investors interest. Larger privatisations would also increase revenues accruing to the Government. However, these should be a secondary objective and should not delay the timing of sales in view of the opportunity costs. On the contrary, the process should be accelerated. International experience suggests that the biggest gains come from higher future tax revenues rather than the upfront privatisation receipts. Moreover, clawback clauses in the sales contracts, based on an expected profit stream, can protect the Government from accusations of underpricing the sales.

Nevertheless, international experience indicates that it is not easy to introduce a suitably contestable environment, with easy entry and exit for potential competitors. Such pervasive institutional changes are difficult to design and even more difficult to implement. And if this aspect of the reform fails, private or public enterprises which retain monopoly power will have few incentives to operate efficiently. Most mistakes have been made in designing contestable markets in sectors containing elements of natural monopoly (*i.e.* electricity, natural gas, water, and to a lesser degree telecommunications), where Greece is facing important institutional changes.

The reform of the electricity sector is probably the most critical area of reform. It is an essential input for the rest of the economy, and the incumbent monopolist has not been successful in providing sufficient and secure supply, while its prices could be significantly lower in view of its free access to lignite and public resources to finance its investments. The general direction of the proposed reform is in line with the 1996 EC Directive for the sector. However, several factors make it apparent that only a bolder reform will result in a contestable market. Greece lacks potential competition from imports from other EU countries and its Balkan neighbours due to geographic and economic/infrastructure reasons, respectively. This isolation places a larger onus on stimulating the potential for domestic competition. However, non-transparent and distorted access and pricing for key inputs (natural gas and lignite) as well as recourse to public resources appear to be highly advantageous to the incumbent and thus provide barriers to entry. Competition between energy sources also seems to be jeopardised by cross-sector financial interests between the incumbent public sector enterprises; *e.g.* the public power corporation's (DEH) control of lignite mines, Hellenic Petroleum's call option to re-purchase the natural gas company

(DEPA), and the profit sharing agreement between DEH and DEPA on natural gas operations. Moreover, the long transition period contained in the EC directive permits the vertically integrated incumbent in electricity to price discriminate between the captive and competitive markets. Leaving all these impediments to competition at the initiation of the reform will likely leave the energy sector as an effective monopoly for the foreseeable future.

A bolder reform would sever the financial links between the natural gas, lignite, petroleum, and electricity sectors. Such separation could enhance competition between these sectors and especially within the downstream electricity sector which uses the others as key inputs. Fair access to inputs and customers would attract new private-sector players to generation. However, the long lags until the entry of full competition under the EC electricity directive and the above described advantages of the incumbent are not encouraging. If there is no immediate interest by private sector participants to the new legislation, two additional steps to encourage entry into generation would be to legally separate DEH's generation and distribution operations (including a shift of the high-voltage grid to an independent operator), which would permit competition for the supply of the cheapest source of electricity, and to separate the generation capacity of DEH into several competing firms. This second step would obviously require a fair distribution of DEH's stranded costs so as to ensure a level playing field; and the example of other countries can be followed to this end (*e.g.* cost compensation could be achieved through the price cap regulation in combination with a redistribution mechanism). This strategy would permit the electricity sector to follow the example of the petroleum sector. Though the latter is showing the benefits of previous liberalisation, eliminating barriers to imports arising from storage requirements would reduce high refining margins. Similarly, entry into the natural gas sector would be encouraged by setting clear and uniform rules on access prices and providing private participants a majority ownership in distribution companies. With the advent of new players and many complex issues likely to arise, an impartial referee in the form of a truly independent regulator with broad decision making powers will be needed. Its powers should extend to all three energy sectors.

In the sectors more susceptible to competition, a Government strategy of opening up the market to new entrants should provide sufficient impetus to the creation of an environment which efficiently provides low-cost goods and services to the economy. Two prime examples in Greece are air transport and telecommunications. Soon after the respective partial liberalisation of these sectors (mobile telephones and domestic flights), new entrants have provided alternatives to the public monopolist and provided the impetus for improved services and/or forced a decline in prices for the respective public enterprises. With EC derogations soon ending in both sectors, the incumbent public enterprises, especially Olympic, will need to restructure quickly, and compete with dynamic new entrants or face bankruptcy. International experience indicates that there exist few viable options other than to focus on niche markets, rather than attempting to maintain (or attain) extended markets. Reaching out to larger markets through international alliances could be used to establish feeder links to other operators. The Government's intention to turn to a strategic investor with broad decision making power may improve operations and import know-how. If this fails, sale to another private carrier should also be considered. In the case of telephony, OTE's healthy financial position and rapidly changing technology provide the opportunity for the Government to move faster than required by the EC directive and issue a second license for basic telephony and additional licenses for mobile telephony (if legal obligations are not constraining the latter). In the case of Spain, a second licence issued to domestic interests for basic telephony during the derogation period has produced surprisingly quick results in the form of domestic price competition. Price competition would also be enhanced if the floor on mobile phone prices was eliminated. Such relative price changes would also assist in the attainment of the macroeconomic objective for inflation and offset necessary increases in the tariffs of other public enterprises (especially in urban and rail transport). In the event, the powers of the existing regulators in both these sectors — the National Telecommunications Committee and the Civil Aviation Service — appear to be grossly insufficient compared to other countries. In view of the prospective competition and the need for co-operation in the use of network infrastructure (basic telephony and airport

infrastructure and services, respectively), here again, an impartial referee is needed to arbitrate between the public sector monopoly and new private sector entrants, as the government faces a conflict of interest.

Almost all public enterprises have been burdened with uncompensated and ill-designed public service obligations. These are partly to blame for the poor financial situation of some of the largest loss makers; *e.g.* rail service, urban transport, air transport, water and sewerage services, and postal services. When restructuring these firms, the Government must decide the extent of the public service obligation and base this decision on a full cost evaluation of the provision of such services. In many cases, the current budgetary constraints (combined with commitments to other social objectives) or simple need-based targeting considerations could suggest a more limited public service obligation. For example, the highly under-used trains in the southern Peloponnese region appear to be a luxury (especially given the parallel development of road networks), as do the under-utilised postal offices in the rural areas, the long-distance flights to countries with Greek emigrants, and extensive public television which serves less than 10 per cent of the viewing audience. In all cases, significant downsizing appears necessary.

Regarding pricing, raising ticket prices for urban transport, rail or postal service from the current extremely low level should not be considered as regressive, even if externalities or social considerations suggest that a degree of subsidisation should be maintained. Use of urban transport can be increased through taxation of the competing, socially more expensive, car transport, as has been done in other countries. This tax could serve to raise the cost of operating cars towards their social cost to the economy. More generally, direct means-tested assistance from the budget would probably be a more efficient and cost effective method of providing subsidies to the truly needy. In the event, clear contractual agreements with the enterprise stating the service provided (quality, distribution, etc.) and the compensation to be received, must replace the current policies of residual deficit financing (*i.e.* soft budget constraints) and the other non-transparent arrangements. Once such clear agreements are reached, the rationale for public operation of the service lessens, and further efficiency gains have been achieved by countries experimenting with tenders to private operators for a pre-determined duration period. The finite period of the arrangement provides the operator the incentive to perform well so that the contract will be renewed. In the case of Greece, water and sewerage service, urban transport, and rail service, and postal services could all be candidates for tenders, and the Government intends to proceed along these lines in the case of water and sewerage services. In several sectors, splitting the public monopoly into several competing firms provides the option for benchmarking, which would be another means for judging performance.

Though the infrastructure could probably remain in the hands of the public sector, over the longer run such a division of responsibilities skew the incentive for the operator regarding the maintenance of the infrastructure. If sales are linked to infrastructure ownership, then private sector capital could provide significant relief to the budget, and supplement EU funds. Moreover, competition by private sector applicants to use EU funds, and the infrastructure to which they apply, could improve the efficient utilisation of these resources, deter cost overruns and completion delays. Such incentives appear to have made the completion of the new Athens airport at Spata the only large project to be ahead of schedule. Similar structures are possible for the construction of the low pressure natural gas distribution system and can be extended to electricity distribution as well. Nevertheless, for existing public enterprises, raising additional resources from the private sector will require share capital increases (as equity sales accrue to the State), and for the new ownership to risk the additional investment will necessitate the implementation of ambitious restructuring plans for these enterprises.

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GLOSSARY OF ACRONYMS

BOT	Built-Operate-Transfer
CSF II	Community Support Framework II
DEH	Public Power Corporation
DEKA	Public Enterprise for Liquid Assets
DEPA	Public monopoly in natural gas
EAB	Hellenic Aviation Industry
ELDA	Tank manufacturer
ELTA	Greek Post
ERGOSE	Infrastructure subsidiary of Greek Rail
ERT	National Radio and Television Company
ETBA	Hellenic Bank for Industrial Development
EThEL	Athens bus corporation
EYDAP	Greater Athens water and sewerage company
FYROM	Former Yugoslav Republic Of Macedonia
GDCs	Gas Distribution Companies
GSCs	Gas Supply Companies
GSM	Global system for mobile communication
HLPAP	Athens Trolleys
HP	Hellenic Petroleum
HSAP	Old Athens subway
IATA	International Air Transport Association
IRO	Industrial Restructuring Organisation
KTEL	Private inter-city bus service
OA	Olympic Airways
OAED	Organisation for the manpower development
OASA	Group of public enterprises involved in urban transport in Athens area
OATH	Thessalonik Sewerage Organization
OSE	Greek Rail
OTE	National Telephone Company
OYTh	Thessalonik Water Organization
PPP	Purchasing power parity

Table 1. Main public enterprises by sector
1997

	Employment (Persons)	Revenue (Billion Drs)	Compensation ¹ (Percentage)	Operating balance ² (Percentage)	Investment ³ (Billion Drs)	Long term debt (Billion Drs)
Transportation						
OASA (Athens urban transport)	9 586	38.1	74.6	-193.7	3.1	166.7
OSE (Rail)	11 758	25.4	68.9	-376.0	88.3	338.7
OA Group (Air transport) ⁴	10 177	278.0	43.5	-2.5	19.9	7.7
Energy						
DEH (Electricity)	33 999	830.6	34.4	13.3	277.7	1227.4
Hellenic Petroleum ⁵	3 350	596.9	7.5	-4.2	93.4	8.0
DEPA (Natural gas) ⁶	221	..	..	..	113.8	75.6
Communication						
OTE (Telecommunications)	23 387	840.0	35.9	37.4	268.9	128.0
ELTA (Post)	11 581	83.2	83.6	-18.3	0.2	..
ERT (Television and radio)	3 453	41.3	50.0	-15.7	2.3	29.0
Water and sewerage						
EYDAP (Athens water and sewerage) ⁷	4 745	69.7	54.2	-3.2	13.4	12.4
Thessaloniki water and sewerage companies	635	17.0	47.2	37.6	5.2	12.1
Industry						
EAB (Military equipment)	2 886	33.1	67.4	-7.6	8.2	66.0
EBO (Military equipment)	1 731	15.1	47.6	-26.5	3.5	3.8
Subtotal	117 509	2868.4	35.7	6.6	897.9	2075.4
Per cent of total public enterprises	91.2	79.5			68.2	106.1
Total public enterprises ⁸	128 797	3609.8	35.4	18.1	1316.7	1956.9 ⁹
<i>Memorandum item</i>						
Per cent of GDP, except employment and wage bill which are shares of corresponding economy-wide variable	3.3	11.0	9.3	2.0	4.0	6.0 ⁹

1. As a share of operating cost (excluding interest payments).
2. Operating revenue minus operating cost (excluding interest payments) as a share of operating revenue.
3. Administrative basis.
4. Comprises Olympic Airways, Olympic Catering, Olympic Aviation and Olympic Tourist Organisation.
5. Consolidated balance sheet excluding DEPA.
6. Until 1998, DEPA formed part of Hellenic Petroleum.
7. Excludes from revenue a subsidy from a fee on construction activity.
8. Comprising approximately 50 enterprises.
9. Excludes overdue liabilities to banks of Dr 705 billion at end-1997.

Source: Ministry of National Economy.

Table 2. **Public enterprise accounts**
Billion drachmas, 1984-99

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998 estimates	1999 budget
Financing needs	196.8	283.0	295.2	329.3	357.3	517.8	565.3	567.0	656.5	838.8	1 018.2	1 018.0	1 032.0	1 548.2	1 921.8	2 176.8
(Per cent of GDP)	4.3	5.1	4.4	4.3	3.9	4.8	4.3	3.5	3.5	4.0	4.2	3.8	3.5	4.7	5.5	5.8
Operating deficit ¹	37.1	71.9	76.8	107.3	112.9	168.6	209.4	153.6	48.1	51.8	298.1	162.3	-20.1	231.5	229.2	97.5
Investment	159.7	211.1	218.4	222.0	244.4	349.2	355.9	413.4	608.4	787.0	720.1	855.7	1 052.1	1 316.7	1 692.6	2 079.3
(Per cent of GDP)	3.5	3.8	3.3	2.9	2.7	3.2	2.7	2.5	3.2	3.7	3.0	3.2	3.5	4.0	4.8	5.5
Sources of financing	141.1	190.2	208.4	272.9	348.5	421.3	466.5	510.9	608.2	767.2	1 003.4	914.9	1 153.8	1 512.1	1 707.2	1 648.4
(Per cent of GDP)	3.1	3.4	3.1	3.6	3.8	3.9	3.6	3.1	3.2	3.6	4.2	3.4	3.9	4.6	4.8	4.4
Transfers	94.8	114.5	114.8	132.0	184.2	229.2	227.7	272.6	284.1	374.9	421.7	482.2	591.3	467.2	492.6	580.6
(Per cent of GDP)	2.1	2.0	1.7	1.7	2.0	2.1	1.7	1.7	1.5	1.8	1.8	1.8	2.0	1.4	1.4	1.5
Operating budget	31.0	35.1	25.8	33.8	67.2	69.3	77.7	51.3	50.9	86.7	111.2	122.0	120.8	83.8	84.6	109.6
Capital budget	63.8	79.4	89.0	98.2	117.0	159.9	150.0	221.3	233.2	288.2	310.5	360.2	470.5	383.4	408.0	471.0
Depreciation	29.8	37.6	56.0	95.1	116.9	127.0	149.4	176.0	208.8	294.6	303.5	271.1	304.4	374.6	467.4	487.9
Other sources of financing <i>of which: equity acquisitions</i>	16.5 ..	38.1 ..	37.6 ..	45.8 ..	47.4 ..	65.1 ..	89.4 ..	62.3 ..	115.3 ..	97.7 ..	278.2 ..	161.6 ..	258.1 200.0	670.3 420.0	747.2 525.0	579.9 620.0
Net financing requirement (administrative basis) ²	55.7	92.8	86.8	56.4	8.8	96.5	108.7	58.8	52.9	137.0	155.9	104.6	-37.2	83.9	389.0	553.5
(Per cent of GDP)	1.2	1.7	1.3	0.7	0.1	0.9	0.8	0.4	0.3	0.6	0.7	0.4	-0.1	0.3	1.1	1.5
Net financing requirement (Bank of Greece, cash basis)	103.9	127.2	122.1	88.3	47.2	82.5	115.5	31.0	-35.1	-6.4	204.8	-0.7	83.5	-75.0	..	..

Table 2. **Public enterprise accounts** (cont'd)
Billion drachmas, 1984-99

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998 estimates	1999 budget
Financing needs of individual enterprises																
1. DEH (electricity)	69.9	94.6	65.9	70.8	80.7	155.5	119.1	100.1	124.6	209.9	182.2	153.2	230.7	284.2	295.1	287.0
2. Hellenic Petroleum ³	-1.6	7.8	41.2	31.6	14.5	18.9	10.9	6.6	-0.7	-5.9	45.6	33.8	28.5	92.7	23.7	26.1
3. DEPA (natural gas)	0.0	0.0	0.0	0.0	0.0	-2.4	2.5	7.1	34.3	47.4	43.0	42.6	85.9	123.1	125.8	106.8
4. EAB and EBO (military equipment)	10.8	13.7	15.1	17.8	29.4	32.1	55.8	42.5	33.1	15.7	20.0	19.8	9.7	19.3	16.9	10.2
5. ELTA (post)	3.8	7.9	7.8	10.8	11.0	7.9	9.6	-5.8	18.1	11.9	18.0	45.7	59.2	80.3	73.0	88.8
6. ERT (television and radio)	0.4	-0.6	1.1	0.4	-1.3	11.7	13.3	8.0	7.7	22.2	15.0	4.9	12.7	6.8	8.4	4.8
7. EYDAP (Athens water and sewerage)	7.8	8.9	7.1	8.9	15.6	15.8	16.5	11.6	31.1	5.6	7.3	9.9	1.5	4.3	8.8	38.5
8. OASA (Athens urban transport) ⁴	27.1	33.2	43.0	61.1	57.9	76.2	85.6	97.0	30.1	36.1	94.6	70.3	89.7	98.4	134.9	131.9
9. Olympic Airways ⁵	16.7	30.1	30.1	14.9	22.5	48.8	67.3	35.4	45.5	44.3	64.7	-5.8	-8.1	23.1	125.3	71.4
10. OSE (rail)	14.7	21.9	27.1	41.1	43.7	57.2	75.2	77.2	88.2	138.5	125.0	184.7	193.2	241.2	353.6	401.5
11. OTE (telecommunication)	17.5	19.3	7.0	25.2	19.4	30.9	30.7	64.0	60.6	95.5	186.3	157.7	-7.3	152.1	270.4	428.4
Per cent of total	84.9	83.7	83.1	85.8	82.1	87.4	86.1	78.3	72.0	74.1	78.7	70.4	67.4	72.7	74.7	73.3

1. Including item "other expenditure requirements".

2. Including working capital borrowing from 1990 and excluding transfers to the budget.

3. Previously called DEP, it comprises several subsidiaries of which the main ones are two retail supply subsidiaries (ELDA and EKO) and an exploration subsidiary (DEP-EKY).

4. The company is an umbrella for 3 subsidiaries; buses (EThEL), trolleys (HLPAP) and the old Athens subway (HSAP).

5. The Group comprises Olympic Airways, Olympic Aviation, Olympic catering and Olympic Tourism.

Source: Ministry of Finance.

Table 3. **Debt assumptions from public enterprises**
Billion drachmas

	1990	1991	1992	1993	1994	1995	1996	1997	Outstanding stock of government guaranteed debt, end-1997
Total	385.4	255.9	303.8	157.4	120.3	120.5	101.0	147.1	1 574.9
(Per cent of GDP)	(2.9)	(1.6)	(1.6)	(0.7)	(0.5)	(0.4)	(0.3)	(0.4)	(4.8)
Restructuring bonds	347.5	222.4	272.1	94.8	86.0	83.8	60.2	40.7	..
Cash payments	37.9	33.4	31.6	62.6	34.3	36.7	40.8	57.3	..
Transportation	126.7	121.9	62.8	55.9	50.4	66.3	59.1	65.4	564.3
OA	35.6	43.8	19.3	17.4	21.9	22.6	17.7	11.0	88.5
OSE	19.4	15.8	6.5	3.6	9.2	29.8	22.0	39.1	277.7
OASA	71.7	62.3	37.0	35.0	19.4	13.9	19.4	15.3	198.1
IRO	85.0	15.3	132.0	8.5	32.1	24.5	8.4	12.5	37.2
Military companies	82.7	58.7	34.0	63.4	28.0	15.2	24.3	9.2	81.5
EAB	69.7	52.3	16.2	57.4	18.5	10.6	7.4	5.8	73.3
EBO	0.0	5.6	16.2	6.1	0.4	0.2	6.7	0.0	2.2
Pirkal	13.0	0.8	1.6	0.0	9.1	4.5	10.2	3.5	6.0
EYDAP	69.7	8.2	6.6	4.5	0.0	0.0	0.0	0.0	14.9
ELTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.0	..
ERT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0	..
Other	21.3	51.7	68.3	11.9	9.4	14.4	9.3	11.0	877.0 ¹
<i>Memorandum items</i>									
Capitalisation of State-controlled banks									
ETBA	0.0	0.0	50.0	255.0	0.0	152.0	110.0	85.0	
Agricultural Bank	0.0	0.0	110.5	537.8	7.5	0.0	0.0	150.0	
National Bank	0.0	114.0	0.0	0.0	0.0	0.0	14.0 ²	0.0	
Bank of Crete	0.0	0.0	0.0	0.0	0.0	3.0	38.0	0.0	
National Mortgage Bank	0.0	0.0	0.0	30.3	15.7	0.0	0.0	0.0	
Total	0.0	114.0	160.5	823.1	23.2	155.0	162.0	235.0	
(Per cent of GDP)	0.0	0.7	0.9	3.9	0.1	0.6	0.5	0.7	

1. Includes Dr 451 billion for DEH, Dr 75 billion for DEPA, Dr 66 billion for the Athens metro, Dr 28 billion for the Spata Airport and Dr 198 billion for the organisation for school building construction.

2. Re-issue of 1991 issue, augmented by capitalised interest.

Source: Ministry of Finance.

Table 4. **Weight of public enterprises in the CPI basket**

Sector	Main public enterprise	Weight in CPI basket (per 1 000) ¹
Energy		93.82
Electricity	DEH	22.96
Water and sewerage	Athens and Thessaloniki companies	7.04
Heating oil	Hellenic Petroleum	22.30 ²
Gasoline	Hellenic Petroleum	41.52
Transportation		8.49
Air travel	Olympic Airways	3.29
Urban transportation	Athens and Thessaloniki companies	4.91
Train transportation	OSE	0.29
Communications		19.87
Telecommunications	OTE	17.77
Postal services	ELTA	0.33
Television	ERT	1.77
Total		122.18
<i>Memorandum item:</i>		
Administered prices ²	- -	69.39

1. Based on the 1992 household survey.

2. The Bank of Greece index covering administratively controlled prices includes hospital services (1.84), road tolls (1.04), vehicle "circulation" fees (2.68) and local government fees (5.47), but not heating oil and gasoline as these latter prices are not administratively set.

Source: OECD Secretariat.

Table 5. **Average compensation per employee**
1997

	Monthly compensation (Thousand Drs)	Ratio to compensation of private sector	Share of employees
Total economy ¹	379	122.9	100.0
Public enterprises	573	185.7	6.1
DEH (electricity)	520	168.5	1.6
Hellenic Petroleum (fuels)	991	320.9	0.1
OTE (telecommunication)	576	186.6	1.1
OASA (urban transport)	622	201.5	0.5
Olympic Airways Group	870	281.7	0.5
OSE (rail)	506	163.9	0.6
EYDAP (water and sewerage)	587	190.1	0.2
ELTA (post)	508	164.4	0.5
Private sector ²	309	100.0	68.6
Manufacturing ³	444	143.0	26.5
General government	486 ⁴	157.0	23.2

1. Based on national accounts data.

2. Excluding public enterprises and state-controlled banks.

3. Average of blue and white collar workers in manufacturing.

4. Assumes employer social security contribution rates equal to that in the private sector (28 per cent).

Source: Ministry of National Economy.

Table 6. **Main privatisations of public enterprises¹**
1990-98

Company	Date	Share of capital sold	Receipts (Billion drachma)
AGET - Heracles Cement	1992	49	129
Fix (beer)	1993	100	2
Neorion Shipyards	1994	100	2
Peraïki - Patraïki (textiles)	1994-96	100	3
Cassandra Goldmines	1994	100	11 ²
Chalkis Cement Company	1995	100	36
Hellenic Shipyards	1995	49 ³	8
Skalistiris Mining	1995	100	2
OTE (telecommunication)	1996	8	128
Chalipis Metal Works	1996	100	4
OTE	1997	12	298
Eleusis Shipyards ⁴	1997	100	30
Duty-free shops	1998	20	24
MEL (paper)	1998	100	2
Athens stock market	1998	35	22
OTE	1998	4	126
Hellenic Petroleum	1998	23	90
OTE	1998	10	302

1. This list contains sales that raised more than Dr 1.5 billion; there were many sales for smaller amounts, especially of companies under the IRO umbrella.
2. The company was sold along with gold valued at US\$ 204 million.
3. The remaining 51 per cent is owned by the Greek Bank for Industrial Development (ETBA).
4. The company had been privatised in 1992 but reverted back to the IRO in August 1995 following bankruptcy.

Source: OECD Secretariat.

Table 7. An international comparison of telecommunications sector indicators
1995

	Mainlines per 100 inhabitants	Degree of digitalisation ¹	Revenue as a per cent of GDP	Wages as a per cent of operating expenses	Employees / total employment	Taxes as a per cent of total revenues	Net interest paid as a per cent of operating expenses ²	Investment/ revenue	Return on capital ³
Belgium	45.6	66.0	1.6	36.7	0.7	2.9	6.2	20.7	4.9
Finland ⁴	55.0	89.8	2.0	67.0	0.7	2.0	1.6	18.9	2.7
France	56.3	100.0	1.7	47.3	0.7	13.0	9.3	21.4	2.5
Germany	49.5	56.0	2.0	24.9	0.6	5.4	15.5	25.4	3.6
Greece	49.4	35.3⁵	2.4	36.7	0.7	12.6	5.1	25.5	18.0
Ireland	36.7	79.0	2.9	46.7	1.0	4.6	11.0	16.4	4.0
Italy ⁶	43.4	75.6	1.8	24.8	0.5	11.1	5.0	18.7	3.5
Japan	48.8	90.4	2.1	31.3 ⁷	0.3	4.9 ⁷	3.9 ⁷	32.9	1.8
Mexico	9.7	87.2	2.6	26.8	0.2	2.0	0.0	19.9	9.2
Netherlands	51.8	100.0	2.1	46.2	0.5	8.8	0.0	19.3	7.2
New Zealand	46.4	97.0	3.5	29.6	0.6	11.8	6.9	14.0	15.6
Norway	55.8	81.8	2.2	28.3	0.9	3.0	2.8	21.6	5.4
Portugal	36.1	70.0	3.1	28.1	0.5	9.8	8.6	24.2	4.1
Spain	38.5	56.0	2.0	24.8	0.6	1.1	15.4	33.4	3.8
Sweden	68.1	91.0	2.6	28.7	0.9	2.3	5.7	27.5	3.3
Switzerland	62.3	66.2	2.7	19.1	0.5	0.0	0.0	24.7	9.4
Turkey	23.0	77.0	1.1	26.9	0.4	29.0	0.0	24.4	1.4
United Kingdom	50.2	87.7	2.6	37.3 ⁸	0.7	5.4 ⁸	1.7 ⁸	14.4	8.5
United States	62.7	89.8	2.6	27.9	0.7	7.0	5.6	17.1	5.0
OECD ⁹	47.2	82.8	2.3	29.9	0.6	5.7	6.2	22.6	4.3

1. Per cent of digital mainlines on the fixed network.
2. Interest expenses include only public telephone operators with revenues higher than one billion dollars in each country.
3. Net income as a per cent of total assets.
4. For taxes, Telecom Finland only.
5. Raised to 47 per cent by 1997 and estimated to be close to 70 per cent by end-1998.
6. Taxes include income taxes and concession fees.
7. NTT only.
8. BT only.
9. Weighted average based on GDP.

Source: Ministry of Finance and OECD, *Communications Outlook*.

Table 8. **A comparison of telephone charges**
January 1996, expressed in PPPs

	Business charges ¹	Residential charges ²	International business charges ³	International residential charges ³
Belgium	824.5	443.9	90.3	103.8
Finland (HTC)	391.4	308.3	52.8	63.7
France	747.8	345.3	86.1	93.5
Germany	862.6	385.4	56.3	62.2
Greece	1 159.0	605.6	110.8	107.0
Ireland	1 176.7	601.0	87.2	94.1
Italy	1 241.2	479.6	94.0	97.2
Japan (NTT)	958.7	377.5	83.7	77.3
Mexico	3 011.2	1 062.5	362.1	331.6
Netherlands	488.0	299.5	75.3	78.4
New Zealand (TCNZ)	924.0	395.3	117.0	103.9
Norway	412.3	287.9	49.8	58.0
Portugal	1 661.3	714.0	147.4	153.8
Spain	1 207.7	538.0	134.3	135.6
Sweden (Telia)	438.2	257.3	59.7	67.1
Switzerland	989.3	440.6	50.0	49.9
Turkey	952.2	374.6	167.0	164.4
United Kingdom (BT)	826.2	381.4	71.4	77.9
United States (Nynex)	1 026.3	404.7	110.5	91.2
OECD average	893.8	408.5	100.0	100.0

1. Average annual spending by a business user, based on a common basket of calls, in 1995 US dollars excluding tax.
2. Average annual spending by a residential user, based on a common basket of calls, in 1995 US dollars including tax.
3. Zone Distribution Method in US dollars. OECD countries are divided into three regions (Europe, North America, Pacific) and international call destinations are assumed to be distributed equally to each area. The output is expressed in the form of an index with the OECD average equal to 100.

Source: OECD, *Communications Outlook*.

Table 9. An international comparison of airline performance indicators
1996

	Transported passenger- km / employee	Revenue tonne-km / employee	Flight and cabin crew / total personnel	Passenger load factor ¹	Total load factor ²
Lufthansa	1 856	369	0.39	0.69	0.70
Air France	1 492	280	0.26	0.76	0.73
British Airways	1 869	245	0.30	0.73	0.69
Olympic Airways	850	93	0.17	0.65	0.52
Alitalia	2 083	295	0.33	0.69	0.69
TAP (Portugal)	1 157	135	0.21	0.67	0.57
Iberia	1 155	138	0.20	0.70	0.61
Delta Airlines	2 566	267	0.38	0.70	0.58

1. Passengers-km transported / Passengers-km offered.
2. Total tonnes-km transported / Total tonnes-km offered.

Source: Institut du Transport Aérien.

Table 10. **An international comparison of the rail transport sector**
1994

	Volume/Network ¹ (Millions)	Productivity ² (Thousands)	Revenue per employee (Thousands ECU)	Revenue per volume (ECU / thousand)
Austria	4.1	355.9	20.2	55.3
Belgium	4.1	379.4	17.4	52.9
Denmark	2.9	380.5	35.3	104.0
Finland	2.2	752.2	29.5	40.2
France	3.2	578.5	33.7	60.7
Germany	3.1	403.0	37.8	95.1
Greece	0.8	160.2	6.1	39.4
Ireland	1.0	163.0	35.0	206.3
Italy	4.5	490.4	26.4	51.5
Luxembourg	1.9	296.4	36.5	226.9
Netherlands	6.2	648.0	37.4	58.2
Portugal	2.5	486.0	12.2	25.5
Spain	2.0	569.7	21.3	35.1
Sweden	2.6	1143.6	43.9	38.8
United Kingdom	2.6	351.2	29.9	81.0

1. (Passengers-km plus tons-km) / Length of the network.

2. Traffic unit per employee *i.e.* (passengers-km plus tons-km)/employees.

Source: Union Internationale des Chemins de Fer.

Table 11. An international comparison of postal service indicators

	Domestic prices ¹	International prices ¹	Number of postal objects / population	Population / number of postal offices	Percentage of packages within 3 days	Number of postal objects / employee
Austria	..	175	321.6	3 128	64.8	75 374
Belgium	173	136	328.9	6 206	69.8	75 457
Denmark	171	180	317.1	4 218	83.3	65 467
Finland	147	160	379.3	..	67.1	83 631
France	155	156	416.5	3 420	68.5	84 761
Germany	191	191	245.7	5 065	74.1	70 614
Greece	100	140	44.4	8 173	11.9	42 936
Ireland	149	140	149.7	1 832	56.1	65 360
Italy	143	144	..	..	14.0	..
Luxembourg	135	128	314.5	3 962	71.8	77 797
Netherlands	123	..	..	..	78.6	..
Portugal	137	136	107.1	3 792	52.1	65 498
Spain	66	140	108.0	..	48.1	65 369
Sweden	179	280	502.9	5 140	73.1	95 420
United Kingdom	132	140	312.3	3 040	68.2	86 853
GDP weighted EU average	149	157	240.4	3 107	60.7	62 367

1. Prices for a letter weighting 0-20 g in drachmas in April 1998.

Source: ELTA and Universal Postal Union.

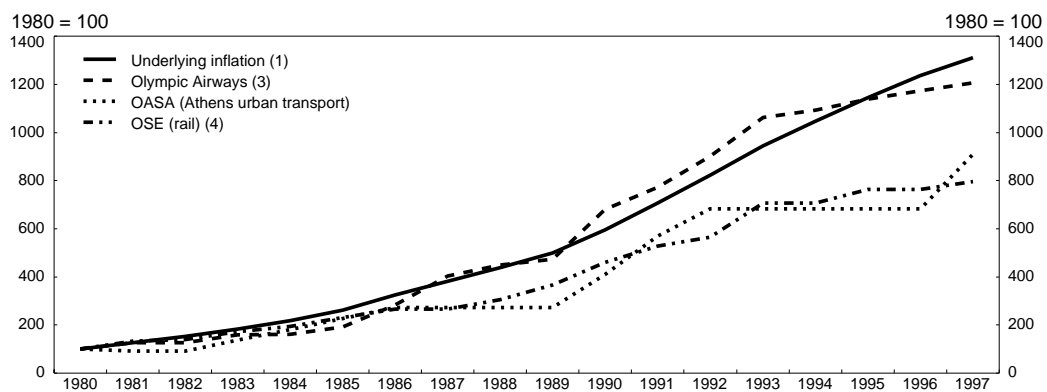
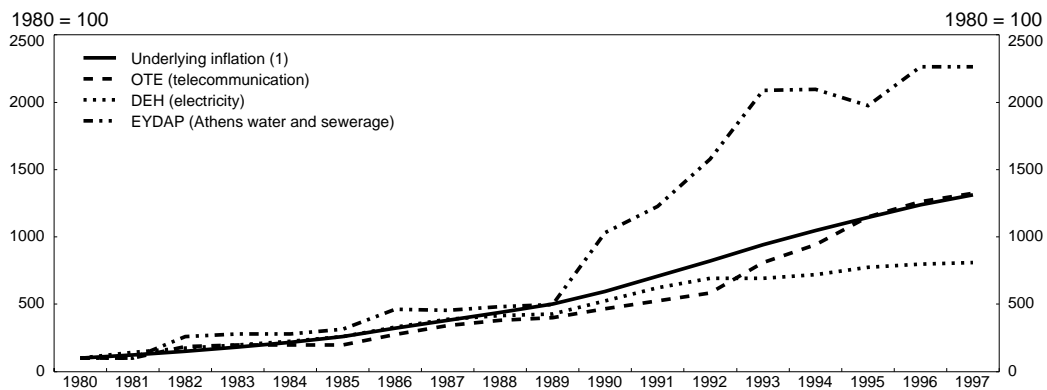
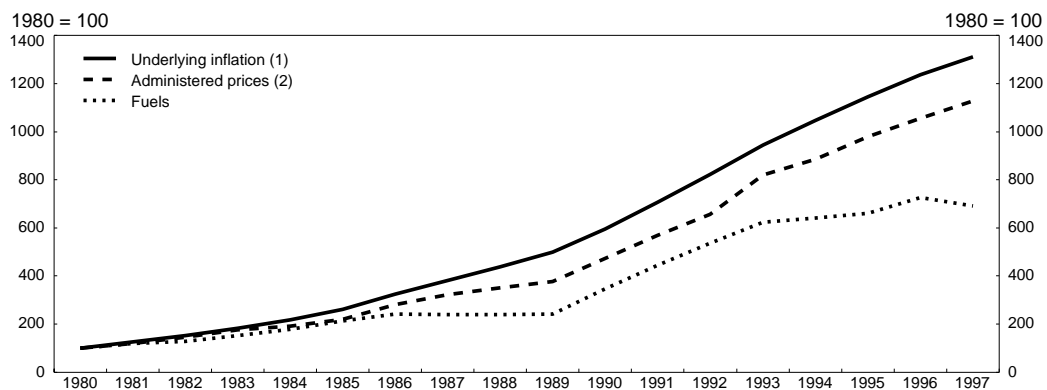
Table 12. Assumptions and effects of sectoral deregulation
1996 base

	Petroleum	Electricity	Water	Train	Bus	Air transport	Post	Telecom - munica- tions	Total
Assumptions (% change):									
Cost of intermediate inputs	0	-1	-3	-1	-2	-1	-7	-4	-0.1
Fuel inputs (petrol)	0	-1	-1	-1	-1	-1	-1	-1	0.0
Coal and mining inputs	0	0	0	0	0	0	0	0	0.0
Electricity	-14	0	-14	-14	-14	-14	-14	-14	-0.4
Water	-22	-22	0	-22	-22	-22	-22	-22	-1.0
Train	161	161	161	0	161	161	161	161	7.8
Bus	47	47	47	47	0	47	47	47	2.2
Air transport	-20	-20	-20	-20	-20	0	-20	-20	-0.9
Post	-13	-13	-13	-13	-13	-13	0	-13	-0.6
Telecommunications	-36	-36	-36	-36	-36	-36	-36	0	-1.1
Labour costs									
Labour productivity	20	50	25	35	25	25	25	30	1.7
Wages	-35	-15	-25	-20	-30	-30	-15	-15	-0.9
Capital costs	10	25	10	25	25	20	15	20	1.0
Price mark-up, current ¹	3	12	8	-98	-82	6	-16	51	1.2
Price mark-up, assumption ¹	5	5	5	-30	-30	5	5	5	0.2
Innovation: effect on output	0	20	0	0	0	0	0	30	0.9
Price elasticity of demand	-50	-50	-50	-25	-25	-150	-50	-50	-2.9
Sectoral effects (in per cent):									
Direct price effect	-1	-14	-22	161	47	-20	-13	-36	-1.0 ²
Price-induced output effect	1	7	11	-40	-12	31	7	18	0.6
(including innovation effect)	1	28	11	-40	-12	31	7	53	1.7
Employment effect ³	-16	-14	-11	-56	-29	4	-15	18	-0.3
(excluding innovation effect)	-16	-29	-11	-56	-29	4	-15	-9	-0.6
<i>Memorandum items:</i>									
Baseline									
Wage share ⁴	6	27	46	303	221	43	96	24	30
Capital share ⁵	3	38	26	-300	-179	9	-12	52	23
Intermediate inputs share ⁶	91	35	28	96	59	49	16	24	48
Reform scenario									
Wage share ⁴	3	18	35	69	84	30	75	24	21
Capital share ⁵	5	42	30	-5	-23	9	8	39	24
Intermediate inputs share ⁶	91	40	34	36	39	61	17	37	56
Sectoral value added as a share of total GDP ⁷	0.2	1.8	0.2	0.0	0.1	0.5	0.2	1.9	4.8
Sectoral employment as a share of total employment	0.1	0.9	0.1	0.3	0.3	0.3	0.3	0.6	2.9

1. Price mark-up is defined as gross operating balance, minus depreciation and interest, divided by the sum of the cost of intermediate inputs, labour costs and depreciation.
2. The total is the sum of the sectors using their weights in the CPI.
3. Sectoral employment effects include impacts of productivity growth, price-induced output growth and the assumed effect of innovation-induced output growth, but ignores the possible impact of lower wage premia.
4. Labour costs as a percentage of the sum of labour costs, gross operating surplus and intermediate consumption.
5. Gross operating surplus as a percentage of the sum of labour costs, gross operating surplus and intermediate consumption.
6. Cost of intermediate inputs as a percentage of the sum of labour costs, gross operating surplus and intermediate consumption.
7. Value added as a percentage of total GDP.

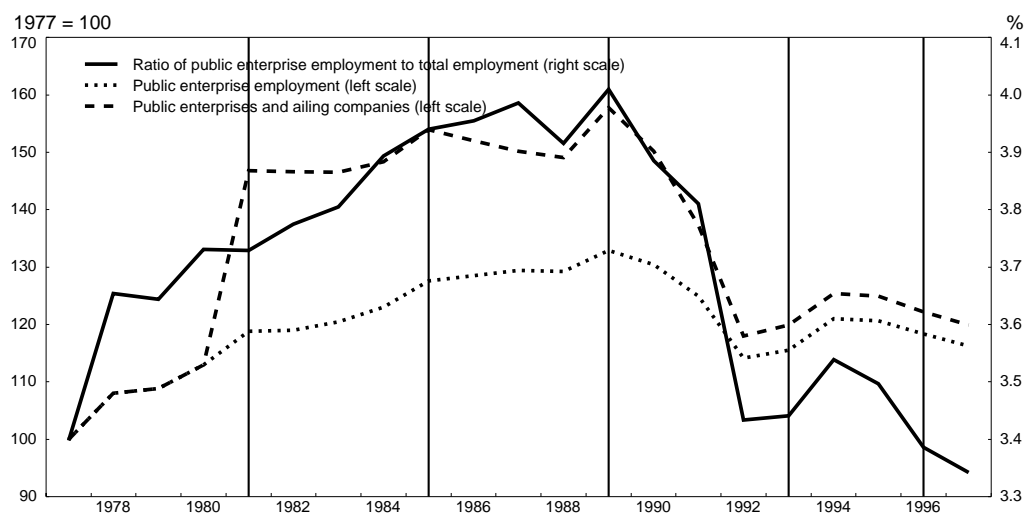
Source: OECD calculations based on 1990 Input-Output Table of Greece.

Figure 1. PUBLIC ENTERPRISE PRICES AND UNDERLYING INFLATION
1980 = 100



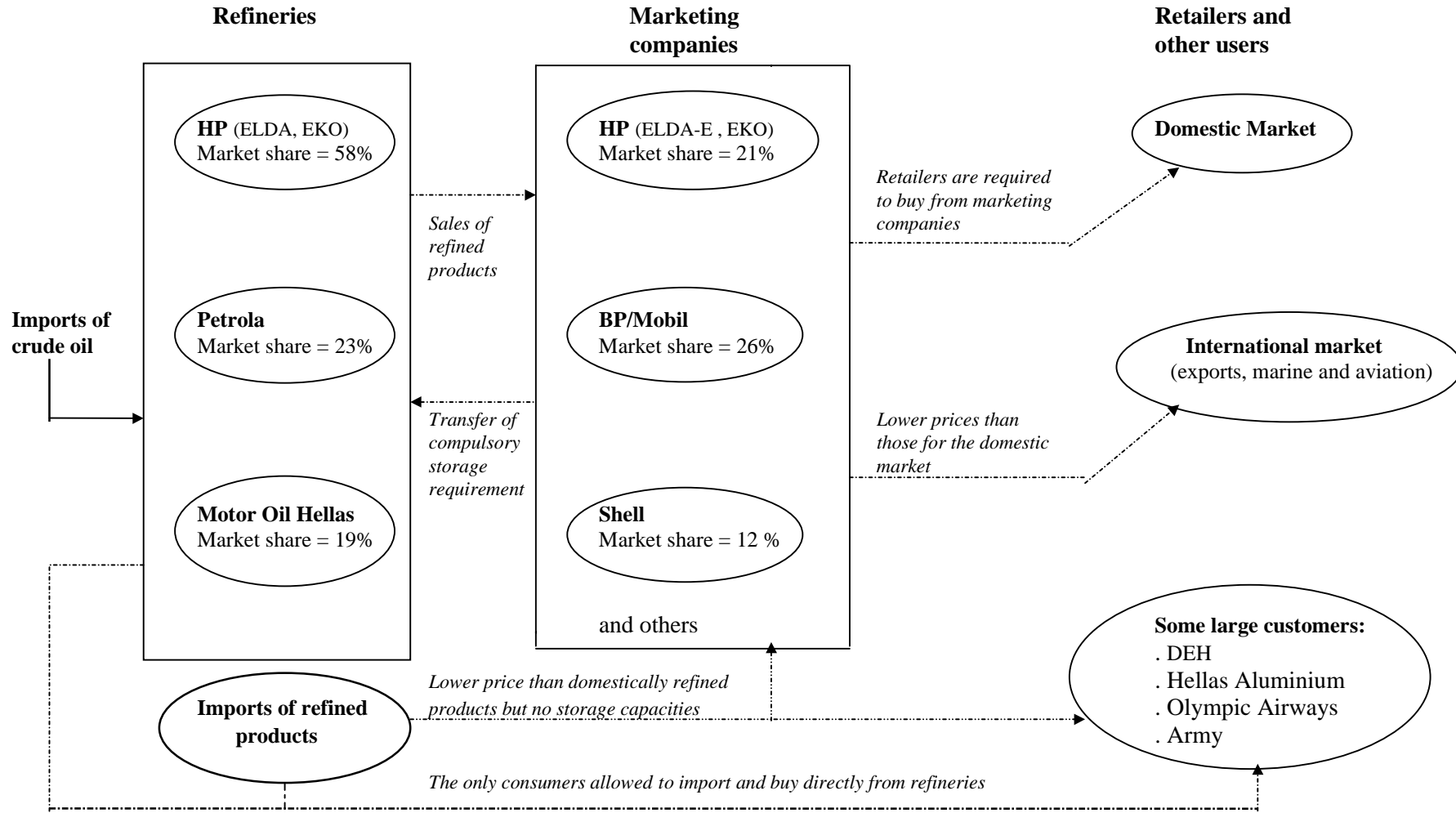
1. Consumer price index, excluding energy and fresh food products.
 2. Includes most public enterprises (see table 4).
 3. Domestic flights.
 4. Passenger tariff.
- Source: Bank of Greece and OECD Secretariat.

Figure 2. PUBLIC ENTERPRISE EMPLOYMENT (1)

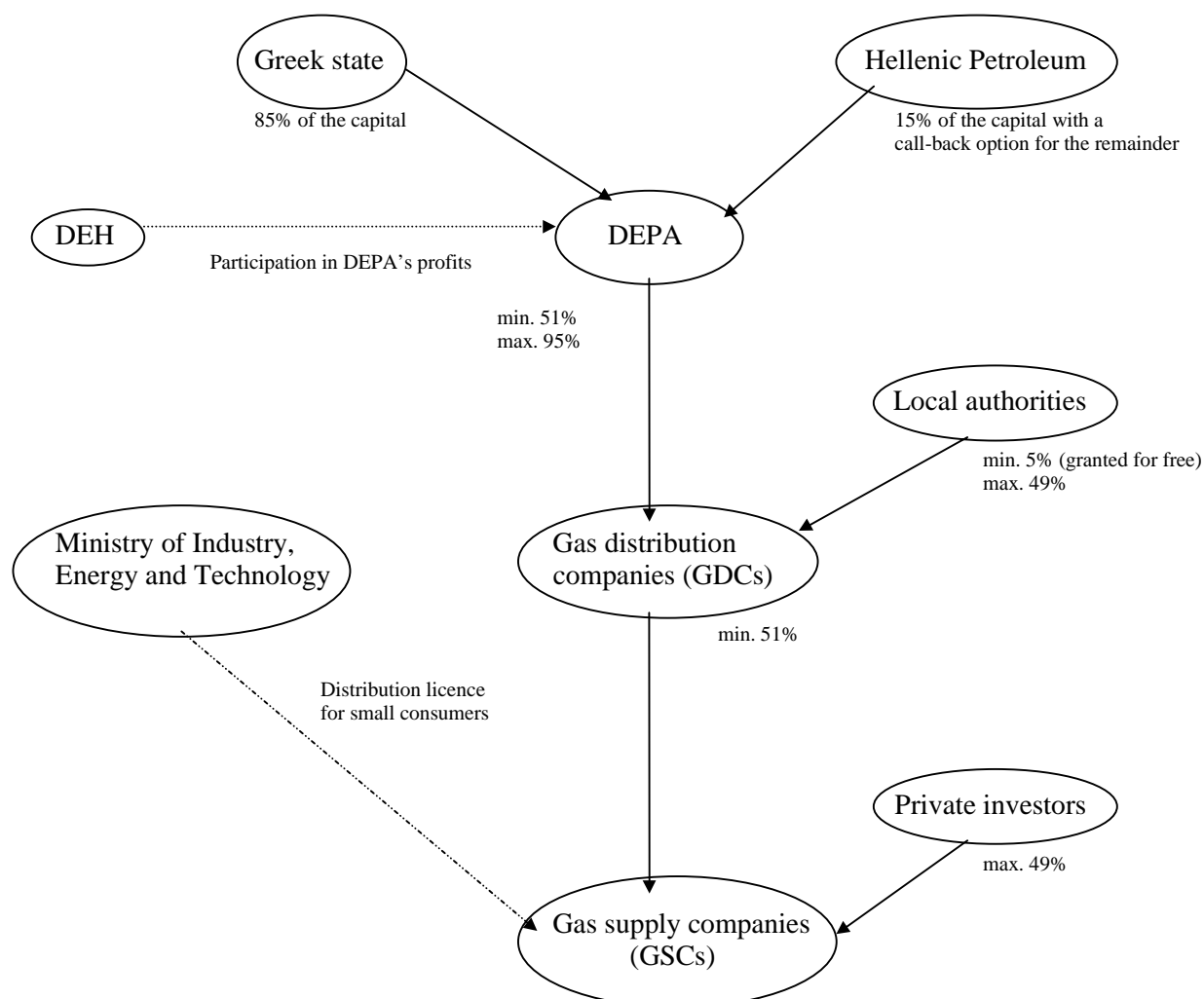


1. The vertical lines represent election years.
Source: Ministry of National Economy.

Figure 3. Institutional structure of the oil sector



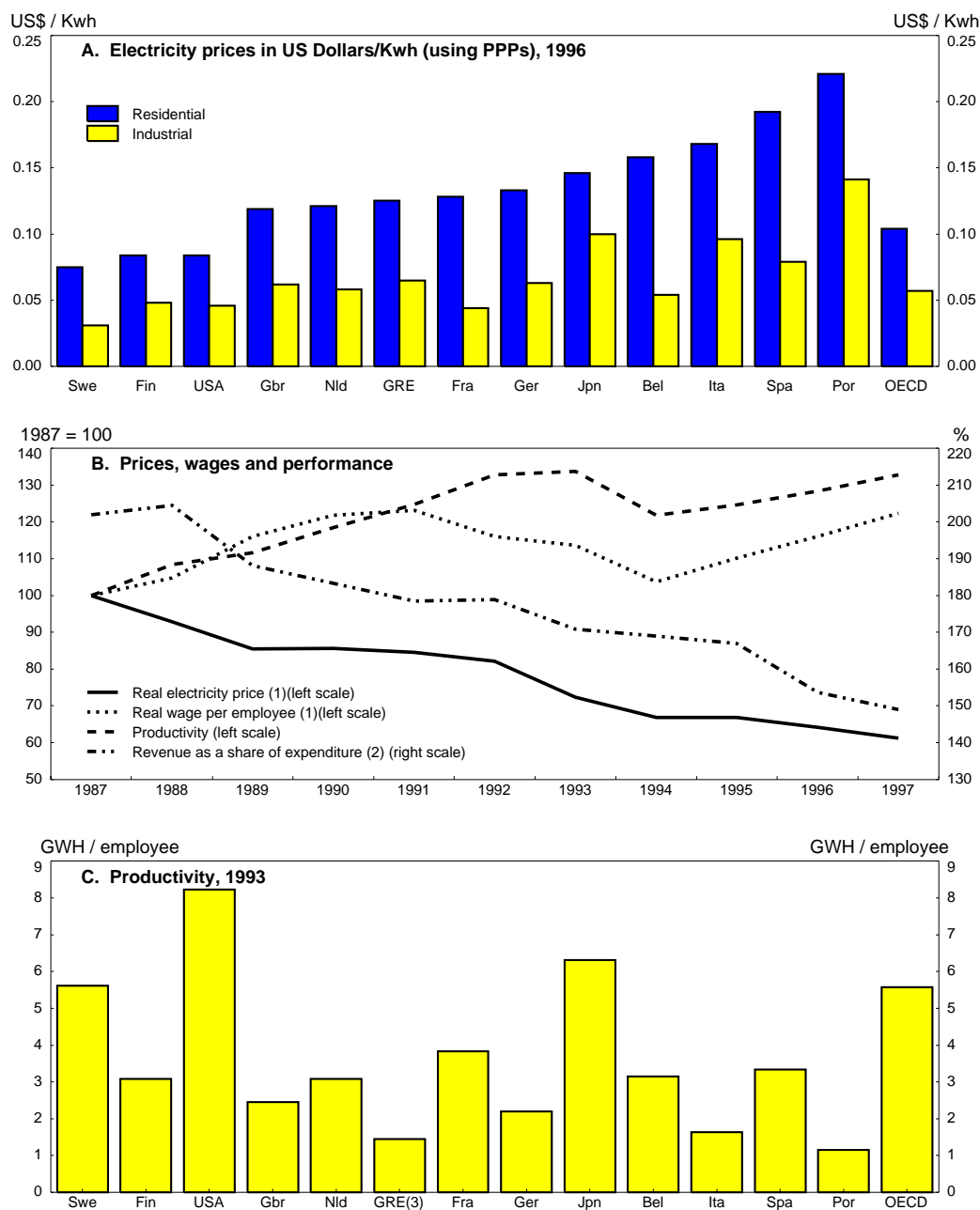
Source: OECD Secretariat.

Figure 4. Institutional structure of the natural gas sector

DEPA's main rights	GSC's main rights
Imports Construction and operation of high-pressure networks Gas sales to GDCs/GSCs Gas sales to large consumers (annual consumption > 10 million m ³)	Gas sales to small consumers Construction and operation of low pressure networks under concession for 25-35 years. Note: DEPA subsidiaries (GDCs) own the low-pressure networks

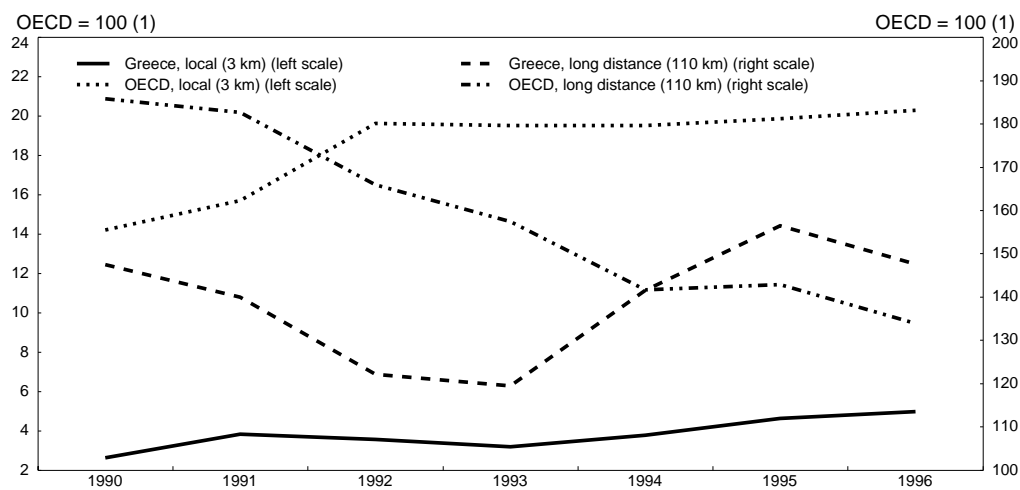
Source: OECD Secretariat

Figure 5. ELECTRICITY SECTOR: PRICES AND PERFORMANCE



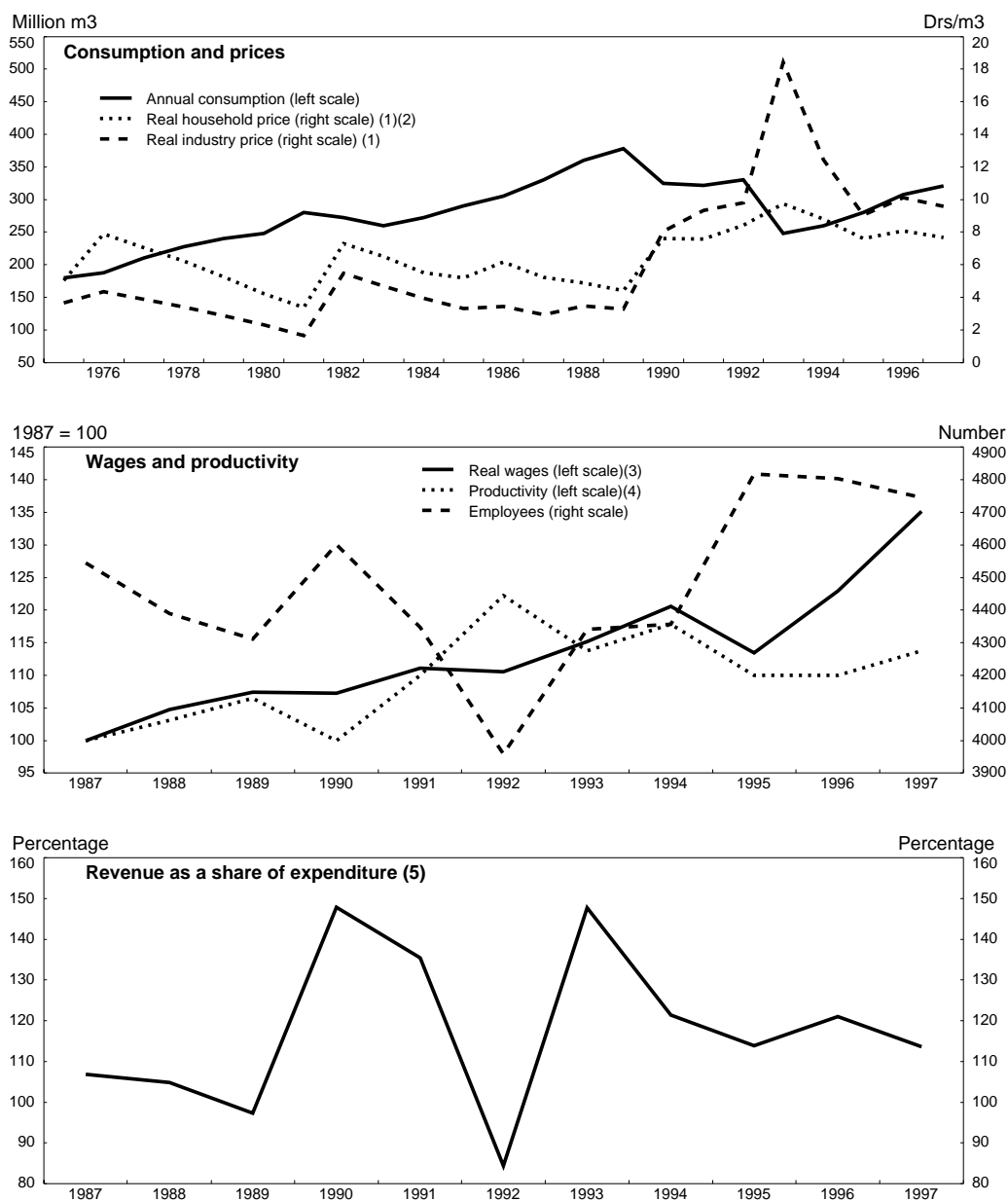
1. Deflated by the CPI.
 2. Operating revenue as a share of operating expenditure, excluding interest payments and depreciation.
 3. 1997 figure. Productivity calculation excludes employees in mining.
 Source: DEH and The OECD Report on Regulatory Reform.

Figure 6. TARIFF REBALANCING IN TELECOMMUNICATIONS



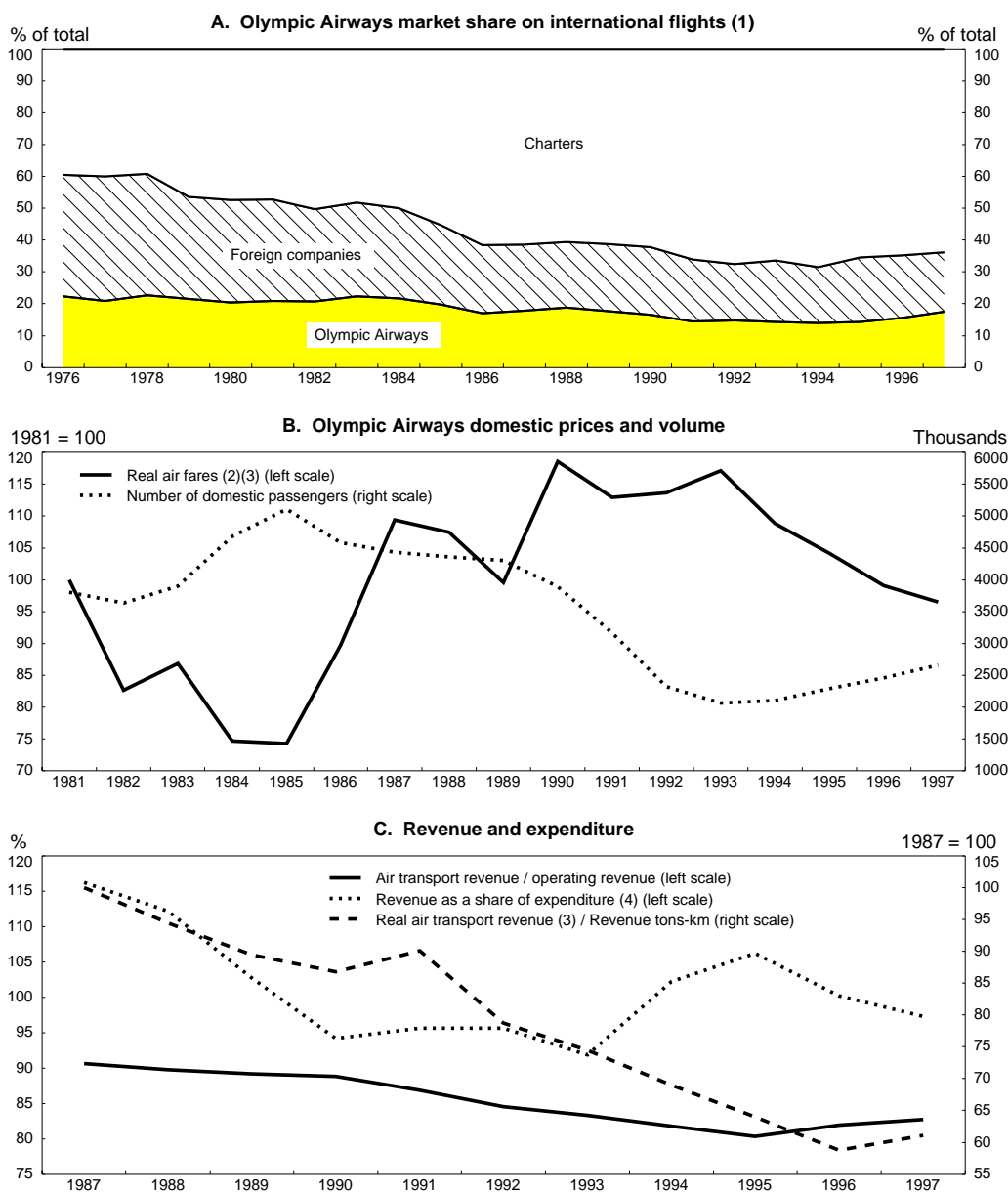
1. Indices based on the average price for the OECD long and short distance telephone calls in 1990.
Source: OECD, Communications Outlook 1997.

Figure 7. WATER: PRICES AND PERFORMANCE



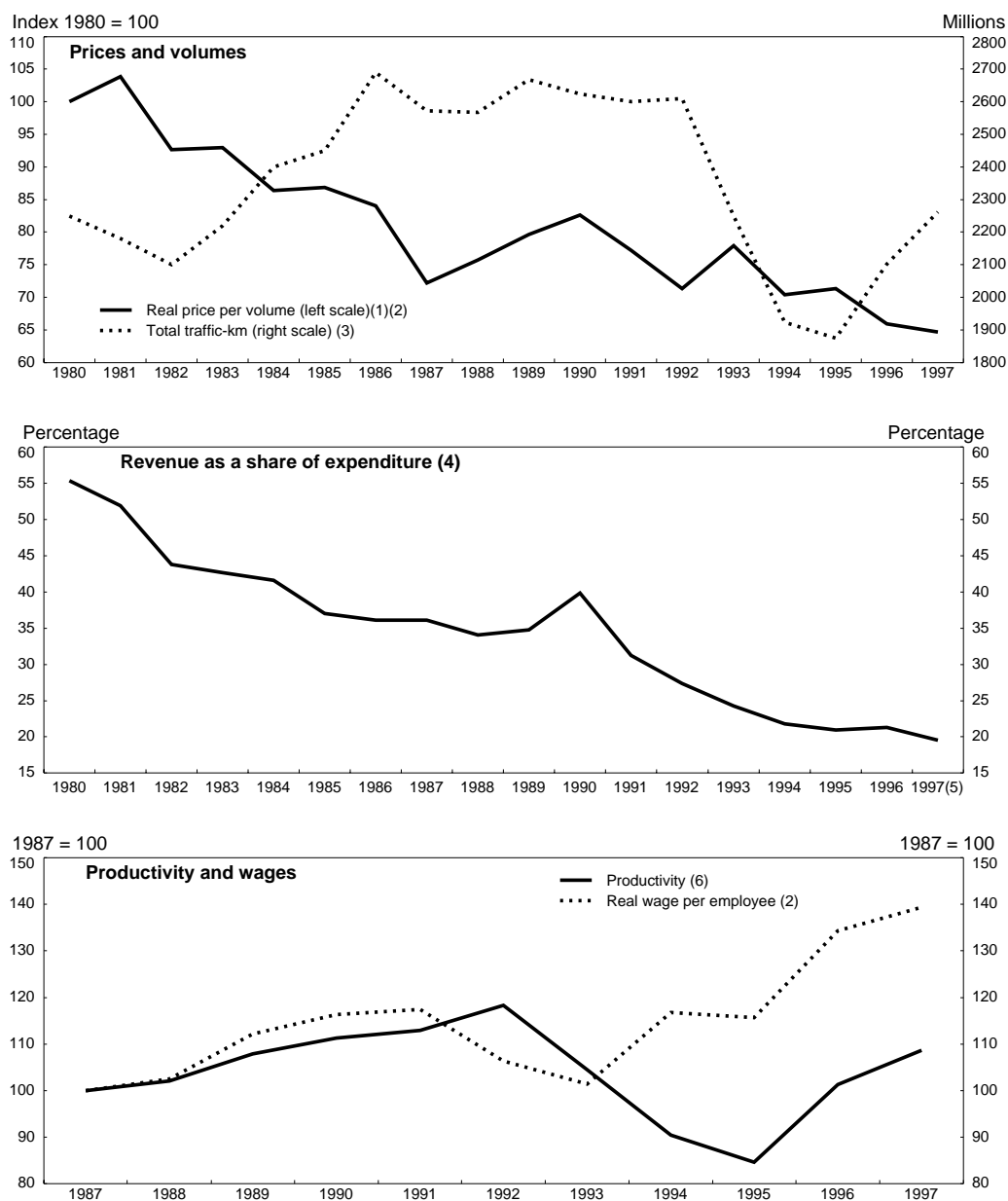
1. The increase in the price of water in 1996 was due to the inclusion of the special tax to finance the construction of the Mornos aqueduct into the tariff.
 2. Prices were not increased after 1992, however various charges and indirect taxes were included into the price.
 3. Deflated by the CPI.
 4. Number of connexions per employee.
 5. Operating revenue as a share of operating expenditure, excluding interest payments and depreciation.
 Source: EYDAP.

Figure 8. AIR TRANSPORT: PRICES AND PERFORMANCE



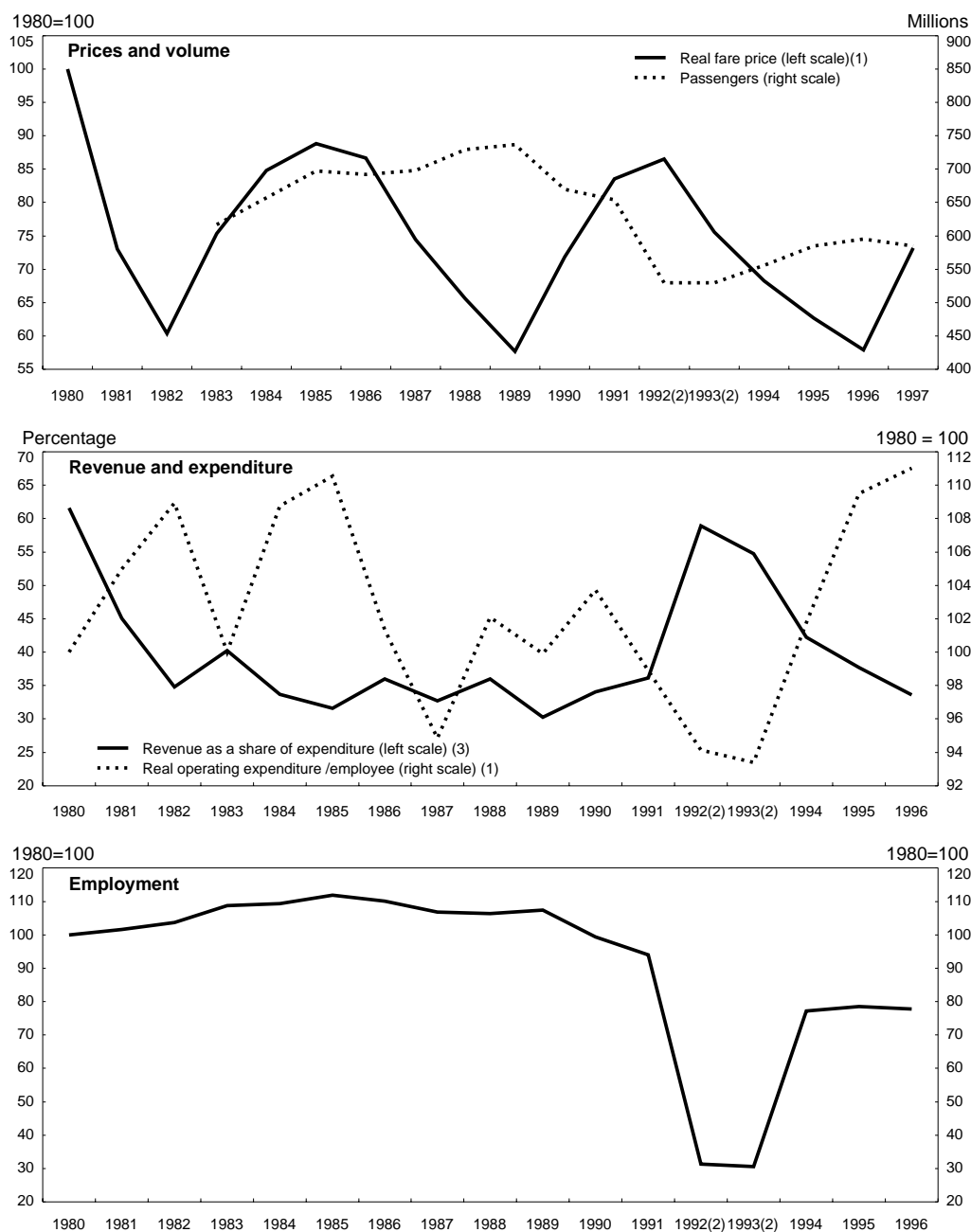
1. Share of total international passengers to and from Greece.
 2. On the Athens-Thessaloniki route.
 3. Deflated by the CPI.
 4. Operating revenue as a share of operating expenditure, excluding interest payments.
 Source: Olympic Airways.

Figure 9. RAIL TRANSPORT: PRICES AND PERFORMANCE



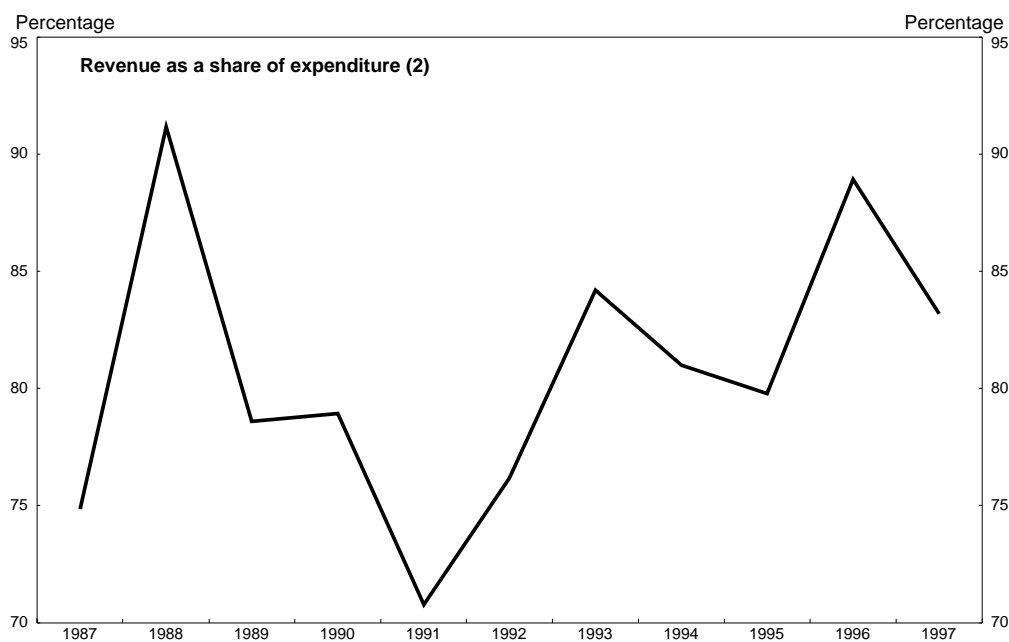
1. Weighted average of revenue per passenger-km and revenue per tonne-km. Weights are the average volume shares of the period 1987-97.
 2. Deflated by the CPI.
 3. Passengers-km + tons-km.
 4. Operating revenue as a share of expenditure, excluding interest payments and depreciation.
 5. OSE estimates. OECD estimates for maintenance cost borne by the government as per law 1300/1972.
 6. (Passengers-km + tons-km)/employees.
- Source: OSE and OECD Secretariat.

Figure 10. URBAN TRANSPORT: PRICES AND PERFORMANCE



1. Deflated by the CPI.
 2. Figures for 1992 and 1993 have been affected by the privatisation of the Athens bus company.
 3. Revenue as a share of operating expenditure, excluding interest payments.
 Source: Athens Urban Transport Organisation.

Figure 11. POSTAL SERVICES: PRICES AND PERFORMANCE



1. Deflated by the CPI.

2. Operating revenue as a share of operating expenditure, excluding interest payments and depreciation.

Source: ELTA.

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