

**Economic Aspects of the Annan Plan
for the Solution of the Cyprus Problem**

Report

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Executive Summary

This report provides an analysis of the economic aspects of the Annan Plan by a committee of independent experts. The report has been commissioned by the Government of the Republic of Cyprus under the understanding that the experts are free to express their own views. The experts' concern is that the economic agreements included in the Annan Plan do not adversely affect the UCR and its constituent states, that they provide a sound and sustainable basis for the unification process and that they reduce the risks of adverse economic and financial developments at the federal and state levels. The analysis is intended to serve the common economic interests of both Cypriot communities.

The report generally takes as given the political constraints built into the Annan Plan. This includes the intention of limiting the size and authority of the federal government, a commitment to compensate dispossessed property owners, a commitment to provide loss-of-use compensation, the imposition of limits to migration of G/C citizens to the T/C constituent state, and sensitivity to the use of the Cyprus Pound in the T/C constituent state. This is not to say that these provisions are necessarily desirable; in fact, in many cases we strongly feel that many of these constraints will adversely affect the economic development of the United Cyprus Republic. Nonetheless, we take them as dictated by the political realities.

General assessment

The Annan Plan provides a useful basis for addressing the economic issues arising in connection with a settlement of the Cyprus question. In a number of important respects, however, the plan falls short of a complete blueprint and requires revision and additions.

The Annan Plan is in conformity with generally accepted principles of fiscal federalism when it assigns tasks to the federal government of the United Cyprus Republic (UCR) and the two constituent states. It correctly identifies the need for the smooth functioning of markets. It also recognizes the need for the UCR to adopt EU rules in all concerned areas, including trade, regulation and budgetary matters. Finally, the Plan rightly emphasizes that a single central bank with the authority to issue a single currency must exist during the interim period before the UCR joins the European Monetary Union.

We believe that, suitably adjusted and supported by sound economic policies in each constituent state, the economic aspects of the Annan Plan provide the basis for a sustained rise of living standards throughout the island, including accelerated growth in the T/C constituent state leading to the eventual convergence of living standards in the two constituent states.

However, some economic policy issues are inadequately treated or overlooked. The most problematic aspects, and our suggested amendments, are presented below.¹ The

¹ The report considers in detail a large number of additional issues.

following table distinguishes the issues that must absolutely be addressed to make the Plan economically viable from those that would lead to serious yet not fatal difficulties.

Essential issues	Very important issues	Important issues
Property Fund	Agreements on pensions and health benefits	Federal regulation to limit harmful tax competition
T/C bank restructuring	Central bank governance	Federal competences vis-à-vis the constituent states
Taxation of commuting workers	Clarification of term “federal economic policy”	Time limit to European Union’s exemptions from the Single Market
Unemployment benefits for commuting workers	Eliminate the goal of “eradication of economic inequalities”	Limit the federal government’s assumption of external debts to past commitments
Strengthening of the financial position of the federal government	Restrictions to labor mobility limited in time	Establish procedures to achieve fiscal discipline at the federal and constituent states levels
Establish rules and procedures for the implementation of federal policies in the constituent states	Apply personnel quotas to the overall federal administration	Measures to prevent harmful tax competition

Property restitution

In general, property restitution and compensation raise delicate political and economic issues. The process can lead to important economic inefficiencies if it impedes the establishment of well-defined property rights and the development of property markets. The process as currently set in the Annan Plan is deeply flawed in these dimensions, and it threatens the financial viability of the federal government. It must be thoroughly redesigned. We present a proposal that minimizes the economic inefficiencies and safeguards the federal budget.

The Annan Plan envisages partial restitution – all dispossessed T/C and a minority of G/C property owners will likely have their previous claims on specific properties reinstated – and aims at fair compensation for the remainder. However, the basis for assessing compensation is uncertain. And, crucially, the financing exposes the new federal government to potentially disastrous open-ended financial liabilities.

We propose that the Property Board be established instead as a closed-ended real estate fund, created for a limited period, at the end of which it will be liquidated.

The central difference between our proposal and the Annan Plan concerns the treatment of risk. In both cases, the Property Board will sell all non-restituted properties and pay

compensation to dispossessed owners.² But this entails substantial risk insofar as the price at which properties will be sold is not known *ex ante*. The question is who bears this risk. By fully guaranteeing the amounts to be paid to dispossessed property owners, the Annan Plan shifts the entire burden of this risk onto the federal government.³

Our alternative would link overall compensation to proceeds from property sales. This would effectively shield the federal government from a very real risk of bankruptcy and shift some of the risk onto dispossessed property owners.⁴ Importantly, our proposal does not imply that total compensation will be lower than those envisaged in the Annan Plan; it may in fact be significantly higher (which should help to make our proposal politically attractive).

In practice, instead of issuing government-guaranteed bonds, the Property Board would issue shares to be distributed to dispossessed property owners. The Board will manage and sell all properties before a set date and will then pay out the shares. This ensures that the Property Board will transfer payments from buyers to dispossessed owners rather than from taxpayers to dispossessed owners. Shares will be tradable, allowing their holders to cash them in as they wish.

Labor mobility: taxes, unemployment, pensions and health

Restrictions on the mobility of workers from the G/C constituent state to the T/C constituent state are economically inefficient; fortunately from this point of view, they will most likely be irrelevant. We expect a large movement of workers in the opposite direction, from the T/C to the G/C constituent state. This movement, which will lead to a rapid rise in standards of living in the T/C constituent state and also benefit the G/C constituent state, will mostly take the form of commuting.

Strikingly, the Annan Plan makes no provision for what may be its most visible and direct benefit for most of the population. Specifically, commuting will require not only infrastructure but also agreements on taxation and unemployment, pension and health benefits.

The risk is that the infrastructure needed for efficient commuting will be under-supplied and that resources potentially available for its development from the EU will be inadequately utilized. We therefore recommend that the Federal government establish adequate infrastructure standards for the two constituent states.

In line with international best practice, we propose that income tax be withheld at a commonly agreed statutory rate in the constituent state where income is earned by residents from the other constituent state. The Annan Plan should also establish the

² Because all dispossessed T/C property owners will be reinstated, the compensation arrangements in effect mainly provide for transfers from G/C taxpayers to G/C dispossessed owners.

³ The Federal government will have to cover any difference between sales proceeds and *ex ante* defined compensation. It can make a profit but it can also face an insurmountable debt.

⁴ The exact linkage, which determines how risk is allocated between taxpayers and property-owners, can be set in different ways described in the report.

principle that the two constituent states agree on the sharing of withholding tax revenues.

Each constituent state should operate its own unemployment, pension and health systems and subscribe to agreements allowing for labor mobility:

- Unemployment benefits should be provided by the constituent state where a person has been last employed, irrespective of state of residence.
- Pensions should be made as portable as possible.
- Each constituent state's health system should cover its residents' use of the other system in cases of emergencies and where explicitly requested for medical reasons.

In each of these areas, the federal government should have the competence to establish minimum standards that each constituent state is free to improve upon.

Money, central banking and bank restructuring

The Annan Plan correctly emphasizes the principle of one central bank, one money, and one financial supervisor. However, there is a substantial danger that implementation of this principle will be undermined by ambiguities and omissions in the current draft. The importance of proper central banking institutions cannot be overstated since the UCR, as a EU member state, is obliged to maintain price stability and free capital mobility. Once the UCR joins the euro area, most central banking functions will be transferred to the Eurosystem, with the notable exception of bank regulation and supervision.

The Plan envisions a transitory central bank governance structure. This is inconsistent with the maintenance of confidence. We recommend that the central bank be constituted with a permanent governance structure as soon as practical. Although it will take time to fully integrate the two existing central banks, at a minimum the following functions should be taken over by the new Central Bank of Cyprus from the outset: refinancing of commercial banks, foreign exchange operations, and supervision of commercial banks in both constituent states.

The Plan also envisions consolidating central bank management and policy-making responsibilities within a single body over this transition. This is not in line with international best practice; it is highly undesirable even for a transitional period. A Board of Directors with responsibility for setting broad policy guidelines and supervising the central bank's administration and a Monetary Policy Committee responsible for the day-to-day conduct of policy should be set up from the outset. Separate branches, if they remain in the Plan, should have strictly limited non-policy functions.

The limited information available to us suggests that many banks in the T/C area are not likely to be viable in a competitive environment. There is a very real danger of a bank panic occurring early on, possibly even before the entry into force of the Annan Plan. This makes it important that bank restructuring and recapitalization be tackled very early on. If this is done, the necessary bank restructuring need not be costly. As currently written, the Annan Plan seems to include a blanket bank deposit guarantee to be extended to the T/C banking system by the Bank of Turkey for a period of three months. Limiting the guarantee for three months is dangerous, as it invites a run; so is the ambiguity in wording. The provisions of the guarantee should be expressed in

unambiguous terms, and when the Bank of Turkey's commitment ends, it must be made clear that the guarantee will continue to be extended subsequently. This requires an explicit, unconditional commitment from either the constituent states or the Central Bank of Cyprus. In addition, as soon as the Plan is agreed upon, both central banks should cooperate, in particular in the supervision of the two existing banking systems. All banks must be immediately subject to a thorough auditing process, possibly conducted by internationally reputable firms.

As the Annan Plan currently reads, the one central bank-one currency principle is undermined by a number of regrettable ambiguities that may encourage the circulation of parallel currencies in the T/C constituent state. While parallel currencies do not represent a threat to price stability, they would reduce the usefulness of the currency as a medium of exchange until the adoption of the euro. And they may threaten Cyprus' ability to qualify for adoption of the single European currency if taken too far. For both reasons the ambiguous language of the Annan Report regarding these matters should be corrected.

Federal government finances

The Annan Plan envisions a financially-weak federal government. The federal government's resources will be strictly limited, which will also in turn constrain its ability to borrow. Furthermore, the federal government will have to assume some previously accumulated debts of the constituent states. According to the Annan Plan, the federal government will have competence over indirect taxation and will be excluded from direct taxation and social security and insurance contributions. This is the opposite of usual practice. In addition, the plan makes no provision for budgetary planning in the Presidential Council. All this means that there is a serious risk of imbalance between revenues and responsibilities, which could lead not only to uncontrollable deficits but also to serious political conflicts.

It is vital that the financial position of the federal government be strengthened. To this end we recommend the following changes:

- An effective framework for controlling the federal budget is necessary. This requires explicit budgetary planning compatible with EU practice, for providing the Finance Ministry with more authority in planning and executing the federal budget, for limiting and possibly prohibiting the Parliament's ability to increase the budget deficit, and for reconsidering quotas in the federal administration.
- The Plan must include the possibility of sharing direct taxes between the federal and constituent state governments. This calls for a commonly agreed definition of taxable income and rules for setting tax rates.
- The Federal Government cannot be burdened responsibility for distributive policies nor with significant debt. The Plan must clearly specify that the federal government only assumes past external debts.
- The federal government should not be assigned the costs of the UN peacekeeping operation, which would represent more than half of its revenues. At most it could finance the operating costs of the peacekeeping operation.
- Vertical transfers should be limited to a transitory period.

Federal administration

The Annan plan requires that at least one-third of federal public servants at every level of administration hail from each constituent state. This may lead to an excessive large federal administration and represents a major financial risk. This rule should be made more flexible, for example by applying it to the overall administration rather than at each level. We also recommend that the Public Service Commission be required to develop a medium-term personnel plan to be approved by the federal parliament.

Relations between the federal and constituent states governments

The assignment of tasks between the federal government and the constituent states, while generally consistent with accepted norms and principles, leaves a number of issues open. The term “federal economic policy,” which is undefined and dangerously open-ended, must be clarified. It must be made clear that the federal government possesses the competence to develop and implement a common framework for state policies in the areas of education, health, social policies, and financial, commercial, and market regulation.

The federal government will be dependent on the constituent states in the implementation of its policies. The federal government’s competences vis-à-vis the constituent states in monitoring and enforcing common regulatory policies and the EU *acquis communautaires* therefore need to be clarified.

Relations between the constituent states

The Annan Plan’s assignment of indirect taxes to the federal government and direct taxes to the constituent states creates a danger of harmful tax competition. To prevent the constituent states from excessive and harmful tax competition, we recommend that federal regulations establish floors for tax rates and that tax advantages granted by the constituent state governments be listed in a publicly accessible federal register.

Growth and convergence within the UCR

The objective of “eradication of economic inequalities between the constituent states within the shortest possible time,” stated in the Annan Plan, is unrealistic and likely to be disruptive to economic normalization and growth if interpreted too literally. It may severely strain the resources of the Federal government and jeopardize macroeconomic stability.

There should not be an unconditional mandate imposed on the federal government to eliminate economic differences between the constituent states. Instead, the Annan Plan should define a general federal competence for a common development policy and leave it to the federal parliament to fill this with content.

In addition, there is a potential contradiction between the objective of eradicating economic inequalities between the two constituent states and the Annan Plan’s open ended safeguard regarding labor mobility and the acquisition of properties in the T/C constituent state by non-residents. In addition, both measures stand in clear violation of the Single Market. The Annan Plan requests a blanket exemption from the requirements of the Single Market from the European Union. We recommend that, if such an exemption is indeed granted, it be explicitly of limited duration and subject to periodic appraisal by the European Commission.

1. Introduction

The present report was prepared by a team headed by Charles Wyplosz, Professor of Economics at the Graduate Institute of International Studies in Geneva. The team includes a public economist, Jürgen von Hagen, Professor at Bonn University, a monetary economist, Barry Eichengreen, Professor at the University of California at Berkeley, and a development economist, Riccardo Faini, professor at the University of Rome.

This report has been commissioned by the Government of the Republic of Cyprus. We have been entirely free to express our own views whether or not they coincide with the Government's positions. In carrying out our work, our exclusive concern has been that the economic agreements included in the Annan Plan provide a sound and sustainable basis for unification. Our analysis and proposals are intended to serve the common interests of both Cypriot communities. Where these interests diverge, the report offers viable alternatives and indicates how these alternatives affect each community's interests.

We have examined the Annan Plan (26 February 2003 version) intended to enable the creation of a federal United Cyprus Republic (UCR), and we have evaluated its economic aspects. Our overall assessment is that the economic aspects of the Plan provide an adequate basis for a lasting settlement to the Cyprus question. At the same time, we are concerned that important economic issues have not been adequately addressed. While failing to deal with some of these potential difficulties may jeopardize the prospects for a solution, we believe that the Plan can be amended to address these problems. To this end, our report proposes a number of modifications and additions that aim at improving the Plan. In preparing these proposals, we have taken the basic approach of the Annan Plan as given, striving for pragmatism and, we hope, political realism.

Perhaps the most difficult issue is the property restitution process. We are very concerned that the current version of the Plan may put an unbearable financial burden on the envisioned Federal government. On the one hand, the ability of the federal government to raise revenues is strictly limited, essentially for political reasons. On the other, the Plan's proposed property restitution process has the potential to create uncertain and potentially unlimited claims against the federal government. Assuming that it would be impossible to profoundly modify the principles that underline the restitution process with a view to making it more manageable, we propose an alternative scheme. Our scheme rests on one observation and one principle. The observation is that most of the transfers implied by the restitution process will actually be from Greek Cypriot (G/C) taxpayers to G/C displaced persons. These amounts will depend on the evolution of property prices in the two constituent states over several years, which are unpredictable and would create considerable uncertainty for the Federal budget, should the plan remain unchanged. We therefore recommend replacing the Federal government's open-ended liabilities with a closed fund that will collect income from property sales and redistribute it to property claimants and then close down. Moving to this approach would not alter any of the property restitution rules, nor would it necessarily reduce the amounts of transfers paid out to displaced property owners. But it would make these transfers dependent on the evolution of property prices, in effect

mimicking a market process. Instead of issuing public debt, the Fund would issue shares. In turn this will limit the financial risks associated by the federal government in carrying out the restitution process.

Even without the cost of property restitution, we are concerned that the Federal government's finances could be strained by normal governmental responsibilities. Normal governments can, if the need arises, raise taxes or borrow, nationally or internationally. Under the Annan Plan, as we read it, none of these alternatives will effectively be available to the Federal government. As a result, there is a serious risk that the Federal government could become bankrupt. This is why we make a number of proposals to strengthen its financial position.

The Plan envisions restrictions on the ability of G/C citizens to take up residence in the T/C constituent state, while allowing T/C citizens to move to the G/C state. In theory, this limits labor mobility. In practice, given the current difference in income levels, it is likely that most migration will be from the T/C to the G/C constituent state. Given the small size of the island, it is also likely that a considerable amount of labor mobility will take place through commuting. While at one level this is reassuring, this diagnosis conceals the fact that labor mobility requires agreements on unemployment insurance, health benefits, retirement plans since, according to the Plan, these schemes will be the responsibility of each constituent state.

The monetary arrangements foreseen by the Annan Plan are less than transparent. The Plan foresees a common currency and, consistent with this vision, a single central bank. Yet, it allows for accounting in euros and provides for central bank branches in the two constituent with undefined competences. Eventually, the United Republic of Cyprus (URC) will become a euro area member, which will enshrine the principle of a common currency once and for all. The transition to the European monetary union, however, will require that the Maastricht criteria be fulfilled, which in turn requires one currency and one independent central bank for the UCR. Economic prosperity and financial stability will benefit from one currency and one independent central bank as well. We therefore offer a number of proposals to guarantee that these elementary principles will be respected.

Little is known of the situation of commercial banks in the T/C area. Available information suggests that these banks' balance sheets include sizeable non-performing loans. When the Bank of Turkey terminates its support for the T/C banking system, it may become apparent that many of its constituent banks are insolvent. There is a risk that this will trigger a bank panic, quite possibly as soon as the Plan is agreed. The resulting collapse of the T/C banking system would be a major economic and political disaster. It must and can be avoided. The report includes a number of measures that must be taken as soon as possible, ideally immediately, through concerted cooperation between both existing monetary authorities.

The present report comes in five parts. Section 2 deals with the financial aspects of the Annan Plan. It includes an overview of the general principles of fiscal federalism, which are then applied to the specific situation of the UCR, providing detailed suggestions on how to improve the Plan. Section 0 focuses on the property restitution program. It emphasizes the budgetary risks of an open-ended commitment, which could bankrupt the federal government. Instead it proposes the establishment of a close-ended fund that would be automatically balanced and dismantled when all properties under restitution

are disposed of. In a nutshell, instead of issuing federal bonds, as envisaged in the Plan, the Property Board would issue shares. Section 3.4.1 deals with growth and convergence in the UCR. Beyond offering an evolution of growth prospects in the two constituent states, this section examines the importance of factor (labor and capital) mobility in fostering convergence. This leads to a number of recommendations and a warning that foreign aid is unlikely to meet the estimated costs. Section 4 is concerned with monetary issues. It examines critically the Annan Plan's proposals for the central bank's governance and makes alternative suggestions. While reaffirming the principle that one central bank manages one currency, it considers various possibilities of parallel currencies; it also studies the question of bank reorganization and recapitalization in the T/C constituent state.

2. Fiscal Policy Aspects of the Annan Plan

2.1. The Federal Design of the United Cyprus Republic

2.1.1 Assignment of Tasks: Principles

Classical Fiscal Federalism

The assignment of responsibilities (or competencies) to the different levels of government is a key issue for theories of federalism. The classical economic theory of fiscal federalism regards it as a static allocation problem and derives answers based on principles of efficiency. Public choice theory and the new theory of *market-preserving federalism* (Weingast, 1995, MacKinnon, 1997) interpret federalism primarily as a way of imposing discipline on self-interested politicians and governments and a hedge against the abuse of power and excessive growth of the public sector. From this perspective, the allocation of responsibilities and resources should create a maximum degree of competition among governments.

The assignment of responsibilities to different levels of government is the subject of the traditional theory of fiscal federalism. The main idea here is to achieve an optimal provision of public goods and public services. The basic assignment rule is the *principle of reciprocity* (Musgrave, 1986), or *fiscal equivalence* (Olson, 1969). It says that the geographical boundaries of public goods should coincide with those of the government operating and financing them. Benefit or cost spillovers from one jurisdiction to another create external effects. The government operating the relevant policy program might disregard these externalities and fail to implement the best policy for all jurisdictions.⁵ Similarly, fiscal equivalence rules out "internalities," i.e., situations in which the policy area is smaller than the area of the jurisdiction, which leads to similar welfare losses.⁶ The correspondence of the region benefiting from a policy and the region paying for it assures Pareto-efficient outcomes in the provision of public goods and services.

⁵ Defense is a classical example. If the operation of the military were left entirely to city governments, no city would take into account that strengthening its forces has a positive impact on the security of neighboring cities, and, therefore, cities would invest too little in defense. Hence, defense policies are typically allocated at the national level. Macroeconomic stabilization is another classical example.

⁶ Here, a classical example is regional infrastructure. If regions can obtain infrastructure funding from the national budget, their representatives will ask for more projects than they would if the funding came entirely out of the region itself since the cost of each project is spread over all taxpayers in the country.

The equivalence principle is an important benchmark for the design of federal entities. As an organizing principle, it says that public policies characterized by important spillovers between local jurisdictions should be administered and financed by higher-level governments, while policies with no or small spillovers should be administered and financed by lower-level governments. *Pure* public goods such as national defense, whose benefits fall on the entire population of a country, should be provided by the central government, while *local* public goods, whose benefits and costs are locally concentrated – such as street lighting – or which are strongly congestible – such as parks or schools – should be provided by local governments (e.g., Inman and Rubinfeld, 1997).⁷

The principle of fiscal equivalence does not rule out redistributive policies within jurisdictions. To the extent that relatively rich citizens dislike conspicuous poverty in their immediate neighborhoods, economic support for the poor has the character of a local public good and, by the principle of fiscal equivalence, should fall under the competence of local governments for efficiency reasons (Pauly, 1973).⁸ Nevertheless, traditional fiscal federalism assigns the responsibility for redistribution to the central government (Musgrave, 1997). The main argument is that decentralization would lead to too little income redistribution. When taxpayers are mobile, local governments will compete for rich taxpayers by offering them low tax rates; meanwhile, poor individuals will move to jurisdictions offering generous welfare programs. As a result, rich and poor individuals will tend to cluster in different jurisdictions, which implies that there is little scope for redistribution at the local level.

The efficiency principle behind fiscal equivalence implies that the level and the quality of public goods and services should vary across regions according to citizen preferences and local cost conditions. Traditional fiscal federalism indeed regards the ability of local governments to tailor the provision of local public goods and services to local demands and circumstances as the principal justification for decentralized government (Olson, 1969). Oates' (1972) *Decentralization Theorem* holds that “in the absence of cost-savings from the centralized provision of a good and of inter-jurisdictional externalities, the level of welfare will always be at least as high (and typically higher) if Pareto-efficient levels of consumption are provided in each jurisdiction than if any single, uniform level of consumption is maintained across all jurisdictions.” Decentralization gives the citizens the opportunity to move to jurisdictions offering packages of taxes and public goods they like best. This is the essence of Tiebout's (1956) theory of decentralized government. Households “vote with their feet” to obtain the best combination of taxes and public goods. If jurisdictions are small and households are mobile, decentralized government can achieve the welfare optimum.

When public goods or services have large externalities and there are differences in regional preferences, the assignment of competencies faces a trade-off between the efficiency gains from moving the relevant policies to higher levels of government and internalizes the relevant externality, and the welfare loss from not responding to

⁷ Inman and Rubinfeld (1997) point out that important public services such as health, water supply, sewage, and public education can be produced efficiently by relatively small communities.

⁸ Following this logic, critics of unemployment support in Germany demand a stronger role of city governments in the administration of these programs. See e.g. Berthold (2002).

preference heterogeneity (Alesina et al. 1999, 2001). Large economies of scale in the production of public services pose similar trade-offs. With homogeneous preferences, large externalities or economies of scale suggest assigning the production of the relevant public good to a higher-level jurisdiction. But if preferences differ across regions and governments are constrained to deliver their services in uniform levels and qualities throughout their entire jurisdiction, the welfare costs of uniformity can exceed the efficiency gains from centralization.

Shared Responsibilities

One way of dealing with this dilemma is shared responsibilities, i.e., assigning competencies over the same policy to different levels of government at the same time. Indeed, insofar as the geographical design of local and regional jurisdictions is more often the result of historical developments than of deliberate planning, shared responsibilities should be the norm rather than the exception. Externalities between local jurisdictions can be addressed by taxes and subsidies imposed by the central government. By paying to local governments conditional, per-unit grants subsidizing public goods generating positive externalities (such as environmental clean-up), or by imposing financial charges on the production of public services generating negative externalities (such as dump sites), the central government can change the marginal costs of the relevant policies for the local governments and induce them to provide the levels of public goods that maximize social welfare at the national level. The provision of the relevant public goods then remains a task of the local governments subject to incentives set by the central government. The advantage over centralized provision is that such arrangements preserve the responsiveness of public policies to local preferences and conditions, and yet correct for externalities.

However, the efficient use of taxes and subsidies requires the verifiability of local preferences and conditions. When local governments can misrepresent costs, preferences, or the size of the relevant spillovers, taxes and subsidies can distort choices at the local level and create more inefficiency rather than less.⁹ In practice, informational constraints may be too large to use this approach extensively.

An alternative way to implement shared responsibilities is in the form of federal mandates or through parallel central and local government provision of public goods. Under a federal mandate, the central government requires local governments to produce a minimum level of a certain public good, leaving it possible to locally provide more. With parallel provision, the central government provides a uniform level of a public good to all local jurisdictions, allowing local governments to provide additional levels financed out of local taxes if they wish to do so. By requiring a minimum standard or delivering a lower level of the public good than it would if it were the sole provider, the central government can achieve a better position in the trade-off between welfare gains from centralization and losses from uniform central services. While the central government policy alleviates the externality problem in these cases, the possibility of additional, local production of the public good reduces the cost of uniformity.

⁹ For example, in an empirical analysis of federal grants in the US, Inman (1988) concludes that the link between interjurisdictional spillovers and the size and structure of grants received is very weak at best.

It is important to distinguish between shared responsibilities and poorly defined competencies. If the assignment of competencies is vague or competencies of different levels of government are overlapping, citizens will find it difficult to hold policymakers responsible for unsatisfactory performance. The result is poor delivery of public services and abuse of public funds. In such situations, local governments frequently find ways to take the central government hostage by abusing funds for essential services such as schools and hospitals and calling upon the central government to provide more funds to maintain a reasonable level and quality of these services.¹⁰ This happens often in situations where the federal government provides the financing for programs run by local governments, or where the local government is responsible for implementing central government programs. Obviously, shared responsibilities need an even more carefully designed assignment of tasks to avoid such situations.

Competition to Discipline Governments

The efficiency considerations behind fiscal equivalence rest on the traditional view of government as a neutral body maximizing public welfare. Public choice theory takes a different view. It regards politicians as rent-seeking individuals using their positions to pursue private goals and government as an institution that encroaches on individual freedoms and seeks to increase its grip on the private economy as much as possible. This view of government as a “Leviathan” emphasizes the importance of institutional rules and arrangements forcing politicians to serve the public interest in the pursuit of their own goals and limiting their discretionary powers (Brennan and Buchanan, 1977).

The Leviathan view leads to a different perspective of the optimal regional structure of government. Brennan and Buchanan argue that competition among local jurisdictions constrains the discretionary powers of politicians and leads to lower levels of government spending and taxation. By creating and promoting such competition, federalism puts a check on the growth of Leviathan and on the abuse of power by rent-seeking politicians. In Hirschman’s (1970) terms, federal structures give citizens opportunities for “exit” – moving or taking their assets to jurisdictions whose economic and fiscal policies they like – in addition to the “voice” of their democratic votes. This means that decentralization of government is beneficial even in the presence of homogeneous regional preferences regarding public goods and that externalities and economies of scale must be large to justify centralization.

The claim that competition among governments improves the efficiency of the public sector is not uncontroversial. Theory suggests that the effectiveness of competition depends on the circumstances. Oates and Schwab (1988) show that it can yield efficient outcomes if consumer preferences are relatively homogeneous and local governments have access to efficient tax instruments. The efficiency of inter-jurisdictional competition requires that all jurisdictions be small and act like price takers and taxpayers do not have market power. This is obviously unrealistic in the Cyprus case, but the results of imperfect inter-jurisdictional competition are less well understood. Practical experience suggests that it can lead to inefficient outcomes, e.g., when a large potential taxpayer such as a multinational company shops around regional governments for infrastructure investments as a precondition for building a new production site. As all regional governments deliver such investments but only one obtains the production

¹⁰ See Fernandez-Arias, Stein, and von Hagen (forthcoming) for details.

site, the others are left with wasteful, unused infrastructure. Under such circumstances, some collusion among the regional governments assuring that no government invests resources before locational decisions have been made can improve the outcome. Another caveat against competition arises from the observation that the most mobile citizens do not represent the average or the media citizen.

Sinn (1997, 1999) challenges the idea of competition among Leviathans noting that government interventions in the economy tend to respond to market failures. Sinn calls this the *selection principle*. Under such conditions, competition among governments cannot replace competition among private suppliers without leading to the same problems of market failure. Sinn (1997: 270) summarizes succinctly: “Competition is bad when government intervention is good.” This suggests that competition among Leviathans can be useful to discipline government in areas where their intervention is not essential from an economic point of view, but the general applicability of the concept to the design of federal entities is limited to that.

Market-preserving Federalism

The concept of “market-preserving federalism” (Weingast, 1995; McKinnon, 1997) regards federalism as a solution to the *fundamental political dilemma of an economic system*: “A government strong enough to protect property rights and enforce contracts is also strong enough to confiscate the wealth of its citizens. Thriving markets require not only the appropriate system of property rights and a law of contracts, but a secure political foundation that limits the ability of the state to confiscate wealth.” (Weingast, 1995:1) Market-preserving federalism solves this dilemma by combining strong local government with a federal government enforcing nation-wide free markets and free mobility of factors, goods, and services.

A federal system is market preserving when (1) primary responsibility for regulatory and economic development policies remains with the sub-central governments, (2) a common market is enforced, and (3) sub-central governments have access neither to money creation nor to central government bailouts for bad local projects or policies or excessive debts. The first condition limits the central government’s power to confiscate wealth. Together with the second condition, it establishes competition among the sub-central governments, assuring that individuals can leave regions with unfavorable regulatory regimes and that local governments cannot abuse their power by erecting artificial barriers to trade and mobility. This keeps local governments from appropriating excessive economic rents. The third condition assures that local governments are responsible for their actions. Market-preserving federalism demands the following assignment rule: *Local governments should be responsible for all policies of economic regulation and development, while the central government is responsible for developing a federal constitution committed to the principles of free and open markets and for monitoring and enforcing its proper implementation.* Rules such as the interstate commerce clause in the US or the principle of mutual recognition of national regulation in the EU are essential elements of a constitution promoting competition among local governments.

2.1.2 Assignment of Revenues: Principles

Classical Fiscal Federalism

The “tax assignment problem” in fiscal federalism (McLure, 1983) asks which taxes are best assigned to different levels of government. The key issue is to avoid distortions in

the locational choices of mobile households and firms, which could arise if tax rates charged at the local level differ widely across jurisdictions. For example, large differences in excise taxes between local jurisdictions could induce consumers to expend resources on inefficient travel to places with low tax rates. Similarly, low business tax rates may bias investment decisions away from locations where the pre-tax marginal return on capital is higher.

Inter-jurisdictional tax spillovers are associated with tax exporting, congestion costs faced by residents of other jurisdictions, tax revenues received in other jurisdictions, and changes in output and factor prices in other jurisdictions (Gordon, 1983). The first occurs when residents of other jurisdictions pay part of the tax revenue, e.g., because they buy a product produced and taxed locally. The other effects are the result of taxpayer relocations due to changes in local taxes. For example, the congestion of local schools and parks declines, if taxpayers move away from a community in response to lower taxes elsewhere.

The basic insight is that local governments should avoid non-benefit taxation of economic agents, factors, or goods characterized by a high degree of mobility (Oates, 1999). While mobile agents, factors, or goods could be charged benefit taxes by local governments, i.e., taxes charged for services like sewage or water (Oates and Schwab, 1988), the ideal objects of taxation for local governments are immobile factors such as land. Non-benefit charges should be left to higher levels of government.

A further implication is that non-benefit charges on mobile individuals, factors or goods imposed by sub-central governments, if they cannot be avoided, should take the form of resident-based taxation rather than source-based taxation (Inman and Rubinfeld, 1996). Since the implementation of residence-based taxation is difficult for taxes on output and consumption, this strengthens the argument against assigning such taxes to local governments.

Tax Competition

An important issue in the assignment of taxes arises from the potentially detrimental effect of tax competition under decentralized taxation. One version of the argument holds that local governments compete for businesses and new jobs or for rich tax payers by promising low tax rates or generous tax breaks for firms locating in their region (Break, 1967).¹¹ When all local governments do this, the equilibrium outcome involves low tax rates and revenues, which limits the quantity and quality of (non-business oriented) public services. Each local government finds it optimal to keep its tax rate low to attract taxpayers, although all governments and citizens collectively would prefer higher tax rates and higher levels of public goods. Tax competition thus leads to equilibrium with inefficiently low public services. Although empirical evidence on the importance and the effects of tax competition is scant (Musgrave, 1997; Krogstrup,

¹¹ Similar arguments pertain to local regulatory policies. For example, Donahue (1997) reports that Alabama offered Mercedes a subsidy package worth USD 168,000 per job to attract the company's new automobile plant.

2002), the argument plays an important role among policy makers and in discussions about tax assignment in practice.¹²

The response of traditional fiscal federalism is an efficiency-based theory of tax harmonization among local governments and a theory of vertical grants, i.e., transfers from higher to lower level governments (Olson, 1969; Break 1980). Limiting regional differences in tax rates reduces the importance of tax considerations in citizens' locational choices and thus results in inefficient competition for tax resources. If local governments are deprived of taxes, the central government can pay vertical transfers to close the gap between local revenues and spending needs. If such transfers are permitted, tax assignment can be made entirely on the basis of efficiency criteria (Spahn, 1988). Economies of scale in the collection and administration of taxes then suggest vesting the highest level of government with the right to collect the most important taxes such as taxes on income or value added.

However, centralized tax collection and heavy reliance on vertical grants by local governments weaken incentives to maintain a sufficiently large tax capacity at the local level, as the pay-off from doing so accrues to all governments. A solution is to reduce the vertical grants by tying their size to the taxes collected in the local government's jurisdiction, or by allowing local governments to piggy-back on central government taxes, i.e. to charge a local tax in addition to the federal tax collected by the central government.

From a public choice perspective, tax harmonization and vertical transfers are harmful forms of inter-government collusion that limit competition among local governments and generate more discretionary power for politicians. Similarly, market-preserving federalism argues against tax harmonization and vertical grants and demands instead that local governments have sufficient own tax resources to operate, as this promotes responsibility.

An important issue here is the form of competition under decentralized tax policies. The potential for harmful competition is probably greater when individual taxpayers like large corporations enjoy considerable market power. In such cases, it is important to ensure that local governments do not engage in resource-wasting bidding wars. Transparency of the process can probably do much to limit the potential damage. Furthermore, agreements to harmonize tax rates among local governments create incentives for moving competition to the dimension of local tax administration, e.g. by promising variable levels of enforcement to potential taxpayers. Such competition is worse than competing on tax rates, as it promotes "price-discrimination" between taxpayers. Again, transparency is important in this context. Rather than suppressing tax competition among local governments, the central government's role is to design and enforce rules promoting transparency and efficient competition.

¹² Theoretical literature on the issue shows that, tax competition can generate efficient equilibrium and, indeed, be beneficial for local government when incumbent residents of a jurisdiction ultimately benefit from efforts to attract capital and business. However, as Oates (1999) points out and Sinn (1999) critically remarks, this requires assumptions that turn local governments into the equivalent of price-taking firms in perfectly competitive markets. In an interesting empirical study of tax competition in pre-World War I Germany, Hallerberg (1997) shows that Prussia enjoyed considerable market power and was able to hold taxes high.

2.1.3 Assignment of Tasks in the Annan Plan

Principles

According to Art 2, the constituent states have the competences for all matters that are not explicitly assigned to the federal government.

Art. 14 lists the specific competences of the federal government. The federal government is responsible for external political and economic relations (Art. 14 a, b), activities with large regional spill-overs (Art 14 c, f, g), certain judicial affairs (Art 14 h, i, j, k). While this corresponds to conventional arguments, it is not clear why the federal government should be responsible for antiquities (Art 14 l) and natural resources (Art 14 e). In both areas, economic benefits are locally concentrated and, therefore, responsibility for relevant policies could be left to the constituent states. An argument can be made that preserving natural resources and antiquities is a common responsibility with benefits accruing to future generations, and that local governments might be too myopic to give proper weight to such considerations. This problem, however, could be solved through the adoption of a federal regulatory framework rather than the general assignment of these areas to the federal government. A potential conflict over competencies could arise from the close connection between federal policies dealing with “natural resources” (Art. 14.1e) and environmental policies, which Art. 15.3 puts explicitly under constituent state authority.

A significant weakness of the assignment under the Annan Plan is the lack of federal competences in areas where lax policies by one constituent state can undermine the effectiveness of policies aiming at the protection of citizens in the other constituent state, and where inappropriate policies in one constituent state can distort trade and competition in the internal markets of the UCR. This mainly concerns education (higher education in particular), health, social security, and commercial and industrial regulation including the regulation of safety of the workplace, minimum work standards, and product safety. Under the assignment rule of the Annan Plan, there is a significant risk that the less economically developed T/C State would try to compensate comparative disadvantages due to lower capital equipment and a less educated workforce by introducing a significantly weaker regulatory regime.¹³

Another weakness is the lack of federal competences for financial regulation other than banking regulation. The risk here is that lax policies in one constituent state can undermine systemic stability in the other constituent state.

While leaving the competencies for these areas to the constituent states might be regarded as in line with the principle of market-preserving federalism that the states should run policies determining their economic development, the Annan Plan lacks the federal regulatory framework necessary to ensure that the negative effects associated with such decentralization will be avoided. One might argue that the risks emerging from uncoordinated policies in these areas are mitigated by the fact that the EU imposes minimum standards in these areas. However, the EU itself has no instruments to enforce its standards. Art. 19.5 calls upon the federal government to take “necessary measures in lieu of the defaulting constituent state” if a constituent state fails to fulfill obligations of

¹³ The strictures of the *acquis communautaires* may limit its ability to do so, although this leaves open issues of enforcement – see also below.

the UCR vis-à-vis the EU. Violations of the *acquis communautaires* would fall under this provision. However, it is entirely unclear what the federal government could do to force a constituent state to pass and enforce proper regulation in these the areas. Given its financial and administrative weakness as construed by the Annan Plan, the federal government will be unable to implement policies for which a constituent state will be responsible. Nor will the federal government have much financial leverage to penalize constituent states for laxity in discharging their responsibilities. If, as the Annan Plan hints, tax collection will be done by the constituent state administration, the latter can easily withhold their shares of indirect taxes, giving the federal government no leverage from that end. Short of a genuine federal competence in these areas and the means to implement federal policies, federal enforcement of EU rules will be weak at best.

Art 14e assigns the federal government competences for the federal finances, including budgetary policy, indirect taxation, and federal economic and trade policy. Trade policy will, in effect, be a competence of the EU by virtue of Cyprus's EU membership. For federal finances, see below.

The federal government has the competence to maintain a federal administration to execute its tasks (Art. 14.2). It is called upon by Art 14.3 to delegate the implementation of its laws to constituent state authorities. This includes the collection of federal taxes. The principle can serve to keep the federal administration small, which is in line with the fact that the federal government's financial resources will be relatively small. It follows from the model of "cooperative federalism" which is also the principle of federalism adopted in Germany. An important weakness of this model is that it makes the federal government dependent on the constituent states in the implementation of its policies.

To start with, constituent states can undermine the effectiveness of federal policies by choosing a low level of implementation. This could be a problem in the context of EU regulatory policies, where the federal government is responsible to the EU for proper implementation of EU regulations, but may not have the means to fulfill its obligations if a constituent state refuses to deliver proper implementation. The problem is aggravated by Art. 14.4, which stipulates that international obligations, which include EU obligations, will be implemented by the level of government under whose competence they fall. This is balanced by Art. 19.4 which stipulates that in cases where the EU requires the existence of a national authority to implement a part of the *acquis communautaires*, this authority will be established at the federal level. In all other cases, however, the establishment of administrative structures will be decided on the basis of undefined efficiency principles. In view of the economies of scale involved in the enforcement of the policies of the *acquis*, economic efficiency would most likely call for federal administrations in these cases. However, the financial weakness of the federal government may severely limit the size of the federal administration, with the consequence that constituent state administrations may still be the more efficient solution.

In addition, lax implementation of federal policies, in particular of regulatory policy and indirect tax collection, could become an area of competition among the constituent state governments for mobile businesses.

Grey Areas

The Annan Plan currently has no explicit list of shared responsibilities. Compared to the norms of fiscal federalism, this is surprising. On the one hand, one would expect that preferences regarding public goods and services are markedly different between the two communities, while, on the other hand, the size of either constituent state is too small to exhaust economies of scale or internalize all local externalities. The coarse assignment rule of the Annan Plan is likely to produce many inefficiencies.

Shared responsibilities could effectively emerge in the UCR in two ways. The first is through Constitutional Laws, which stipulate forms of binding cooperation between the federal government and the constituent states (Art. 16.1), and Cooperation Agreements (Art. 16.2). Constitutional laws must be approved by the federal and both constituent state legislatures and have precedence over federal and state laws. Annex II of the Annan Plan suggests that such laws would be limited to the area of internal security and citizenship. However, Attachment 1 to this Annex, which regulates the elaboration and adoption of constitutional laws, is still to be filled with content. Cooperation agreements must be approved by the federal and the constituent state legislatures and have the same legal standing as Constitutional Laws. They can create common organizations or institutions. By giving each constituent state parliament veto power over cooperative arrangements, the scope for sharing responsibilities under these arrangements seems rather small.

The alternative route to create shared responsibilities is coordination and harmonization of constituent state policies (Art. 16.3) not (necessarily) based on Cooperation Agreements. This is deemed possible “wherever appropriate” and especially in some specific areas listed in Art. 16.3. Art. 16.4 allows the federal government in particular to initiate such coordination or harmonization. Art. 16.6 requires the federal government to financially and logistically support cooperative policies among the constituent states. This unqualified mandate is a potential weakness, as the constituent states might use it as a basis to extract funds from the federal government to support local activities.

Furthermore, agreements on cooperation and harmonization can be approved by the “competent branch of the constituent state governments” and if necessary “the competent branch of the federal government” (Art. 16.5). This raises two concerns. First, it takes cooperative agreements outside the realm of parliamentary control. Governments could undermine parliamentary powers by entering into cooperative agreements “forcing” them to do things the parliaments did not approve. Second, it takes the financial control over such agreements away from the finance ministers of the relevant governments. In particular, heads of federal line ministries might be willing to accept federal financing of cooperative agreements for political opportunity and create substantial federal financial obligations in this way.

Art 14d assigns the federal government the competence over “federal economic policy.” This term is vague and undefined. In the language of EU treaties, “economic policy” is typically understood as the macroeconomic part of fiscal policy. This would include macroeconomic stabilization policies and, more importantly, redistribution and social insurance. The proximity to “federal finances” in Art. 14d might suggest a similar interpretation. However, by requiring, during the first five years after the entry into force of the Agreement, “federal economic policies” aiming at the harmonization of the economies and the eradication of economic inequalities, Art. 52.1 suggest that “federal economic policy” includes large aspects of regulatory policies (where harmonization is

important), as well as development and redistributive policies (which can reduce economic inequalities.)

Furthermore, the mandate to eradicate economic inequalities between the constituent state economies in the shortest possible time can be read as an obligation for the federal government to eliminate differences in standards of living between the constituent states. While this may be regarded as farfetched, such an interpretation would not be different from existing obligations of the Canadian and the German federal governments. In these two countries, such obligations are the basis for extensive fiscal equalization schemes, i.e. mechanisms for transferring tax revenues from rich to poor states. In the absence of horizontal revenue sharing among the constituent states (see below) this could give rise to large demands for transfers to the T/C constituent state from the federal government, which the latter would be unable to finance from current revenues.

2.1.4 Assignment of Tasks: Proposed Changes

The Annan Plan's current assignment of tasks would produce serious inefficiencies in the areas of education, health, social policies including social security, and financial, commercial, and market regulation. Commercial regulation includes rules for trade marks and intellectual property. Industrial regulation includes product standards, safety regulation, workplace safety and similar rules concerning the quality of products and their production processes.

Due to the large differences in standards of living, federal funding of schools and universities, federal hospitals, or federal programs for unemployment insurance or pensions are likely to imply sizeable transfers from the G/C to the T/C economy. In the regulatory areas, placing too demanding standards on less developed producers in the T/C economy may create there severe competitive disadvantages. If, for political reasons, these conflicts cannot be resolved by common agreement, it is important that policies at the level of the constituent states do not create major inefficiencies or internal distortions of investment and trade. For example, low standards of workplace safety or maternity leave in the T/C constituent state could be used to obtain cost advantages: similarly, low levels of trade-mark protection could attract producers wishing to circumvent the need to obtain licenses. As noted below in Section 4.4.2, these questions also have implications for growth and convergence of income levels inside the UCR.

We therefore recommend the following modifications of the Annan Plan:

- The federal government should have the competence to develop and implement a common framework for state policies. The common framework ought to define what states are and are not allowed to do in these areas and to ensure that constituent state policies are mutually consistent. This implies that the federal government should have the competence to develop minimum standards that must be respected and implemented by the constituent states. Each state would retain the right to impose higher standards in its own territory. This would respect the possible need of less technologically advanced producers in the T/C state while preventing a general deterioration of safety standards throughout the UCR. Specific areas to which this recommendation applies are workplace safety, federal government hospital services, medical training, and retail services for medical drugs.

- The federal government's competences vis-à-vis the constituent states in monitoring and enforcing common regulatory policies and the EU *acquis communautaires* (Art. 19.5) should be clarified. Given the small size of the federal government, the rules and regulations of the *acquis communautaires* will have to be implemented in practice by the constituent states, although the federal government will be responsible for the quality of implementation vis-à-vis the European Community. This objective can be met as follows.

First, since the quality of compliance with EU regulations of the constituent states is likely to be higher when the constituent states have a say in the development and negotiations of these regulations, the federal government should invite the constituent states to be part of the relevant negotiating committees at the EU level.

Second, the federal government must have the power to enforce existing EU rules and regulations. A natural approach would be for it to have the right to impose adequate penalties on a constituent state failing to comply with EU obligations, especially in those cases where the federal government does not act itself. However, the power of such penalties is likely to be quite limited. In principle, the federal government could withhold vertical transfers to a constituent state when the latter fails to comply with EU obligations. Since for tax collection the federal government is likely to depend on the constituent states, a constituent state facing a penalty in the form of withholding a transfer from the federal government could retaliate by not transferring the tax payments it owes to the federal government. As a result, financial penalties will work at the margin at best. The judicial system offers alternative mechanisms for enforcement. Disputes between the federal government and the constituent state governments will be decided by the Constitutional Court. To avoid an overload of the court, following the EU example, we recommend the creation of a Court of First Instance. The Court of First Instance would have the authority to decide in cases of lesser importance and decide which case has the merit to be passed on to the Constitutional Court. Another route of enforcement, especially as regards the *acquis communautaires* is the civil and the administrative court system. To make this route effective, citizens should have access to these courts when their rights from the *acquis communautaires* are violated by administrative or business practices in the constituent states.

Third, even if policies under the *acquis communautaires* are carried out by the constituent states, the federal government must be the point of contact with the European Commission. Given the small size of the federal government, this point of contact should be located in the federal ministry of finance or economics, whether or not the federal government delegates some of its regulatory powers to independent agencies such as a Regulatory Authority for Telecommunications. Independent agencies are useful for removing regulatory (technocratic) decisions from the sphere of political interests and facilitate a better implementation of regulatory policies.

- There is a clear need for strengthening political and financial control over cooperative arrangements between the federal and the constituent state governments. The federal finance minister should have the right to veto cooperative arrangements with financial implications for the federal government.

- The meaning of “federal economic policy” should be clarified. A straightforward solution would be to interpret “economic policy” in the sense of macroeconomic policies at the federal level. This would include macroeconomic stabilization policies and labor market policies at the federal level. The scope for such policies, however, would be effectively small given the small financial scale of the federal government.¹⁴

- The Annan Plan (art. 52.1) mandates the federal government to eliminate economic differences between the constituent states. Mandates of this type can become the basis for large-scale redistribution and weaken the incentive for state governments to behave in fiscally responsible ways. Instead, the Annan Plan could foresee a general federal competence for a common development policy and leave it to the federal parliament to fill this with content.

2.1.5 Assignment of Revenues in the Annan Plan

Art. 14 of the Annan Plan assigns to the federal government competence over all indirect taxation. This implies that the federal government has no competence over direct taxes or social security and insurance contributions. This assignment of revenues stands in contradiction with conventional economic reasoning which would give the authority to tax mobile factors and tax payers to the federal government. This assignment maximizes the potential for harmful tax competition, making it likely that the two constituent states will compete fiercely against each other and end up in financial distress.

Attachment 7 Sect. 1.1. holds that the federal government will transfer at least one third of all revenue collected from indirect taxes to the constituent states in proportion to their population. Attachment 7 Sect. 1.2 holds that each constituent state will receive one third of the VAT revenue collected in its territory. Under EU rules applying from 2004, the EU owns the revenue from 0.5 percentage points of VAT. Given the current VAT rate of 15 percent, this amounts to approximately 3.3 percent of VAT tax revenue. Attachment 7 section 1.3 mandates that at least five percent of the revenue from indirect taxes not transferred to the EU will be spent on cooperative projects of the two constituent states or municipalities in the constituent states.

To estimate the tax capacity of the federal government resulting from these provisions, we start with figures for the current central government of the Republic of Cyprus. In 2002, indirect taxes amounted to about 46 percent of all taxes, or 13.06 percent of GDP. Of this, 53 percent was revenue from VAT. The first rule above implies that the federal government retains no more than two thirds of all indirect tax revenues. The second rule implies that the federal government transfers another 17.67 percent of indirect tax revenue from VAT to the constituent states. The EU receives 1.77 percent of revenue from VAT and (assuming that all current import duties are from imports from non-EU states) 9.6 percent of the revenues from indirect taxes, which come from import duties. Thus, under rule 3, the federal government is obliged to spend 4.41 percent of indirect tax revenue on cooperative endeavors. Together, these rules imply that the federal government will retain 43.82 percent of all revenues from indirect taxes for its own purposes. At current tax rates, this would constitute federal tax revenue of 5.7 percent of

¹⁴ At any rate, in a small open economy like Cyprus, the scope for stabilizing macroeconomic fluctuations with means other than the exchange rate is very limited.

GDP. It would leave the G/C constituent state with 19.67 percent of GDP in tax revenues.

Despite their approximate nature, these calculations demonstrate that the federal government will be financially weak, both in absolute terms and relative to the constituent states. This may be by design – the constituent states may wish to delegate only minimal fiscal powers to the federal government.

Given the distribution formula for VAT, rate increases are unattractive for the federal government. This leaves the imposition of excise taxes as the main source for additional finance. Excise taxes are costly to administer, they cause economic inefficiencies due to relative price distortions, and they have limited revenue prospects as excessive excise taxes invite tax evasion and the emergence of black markets. Furthermore, excise taxes fall relatively more heavily on poor than on rich consumers, implying undesirable distribution. The most likely tax with considerable revenue potential would be a federal land tax. The allocation of a land tax to the federal level would, however, contradict conventional wisdom which regards land taxes as the ideal tax for local governments.

An alternative way of strengthening the finances of the federal government might be an arrangement for sharing direct taxes between the federal government and the constituent state governments. Such a sharing arrangement is not mentioned as a federal competence by the Annan Plan but, assuming the consent of the two constituent states, it may be possible through a cooperation agreement.

Without very significant increases in tax revenues, either from additional indirect taxes or by sharing direct taxes, the federal government cannot be burdened with substantial current expenditures, e.g., for development or redistributive policies, nor with significant debt. Being by design financially poor and fragile, the federal government will be unable to raise significant amounts of debt in the capital market. This means that a market for federal government debt is unlikely to emerge.

It is difficult to estimate the federal government's financing needs with precision. Initially at least, ignoring the costs of appropriate office buildings, the federal government is not faced with the need for major capital expenses. Given that responsibility for health, education and social programs and debt service remain at the constituent state level, the initial spending of the federal government will mainly cover personnel and administrative costs, as well as the UCR's transfers to the EU and the costs of the UN peacekeeping force (Art. 8.1d). Much depends on the size of the federal bureaucracy, therefore.

As a benchmark, we take the sum of "wages and salaries" and "goods and services" from the current central government budget as an estimate of personnel and administrative costs. Together, they amount to 12.89 percent of GDP. Given our revenue estimate above, if all revenues were spent in this way, federal revenues could support a federal administration of 44 percent of the current central government administration's size. This is probably larger than necessary.¹⁵

¹⁵ There is no inconsistency between this statement and our earlier assessment that the federal government will be financially weak. We consider that the planned resources are adequate for a federal government

By shifting the cost of the UN peacekeeping operation to the federal government, the Annan Plan creates an additional fiscal cost that is not already borne by the Republic of Cyprus today. The cost of that peacekeeping operation could amount up to CYP 200 million annually, or three percent of GDP. This would represent more than half of the federal government's current revenues and thus represent a substantial burden for the new government. Since the cost of the peacekeeping operation was not charged to Cyprus before, it would seem reasonable not to burden the new federal government with it, either. A potential solution would be to limit the UCR's contribution to the operative cost of the peacekeeping operation.

We estimate the set-up cost of the federal government to be manageable provided that appropriate building can be found. Since indirect taxes are owned by the federal government and these taxes flow in on a current basis, the federal government will immediately have cash resources to spend for salaries, leasing premises etc. If need be, the federal government should be able to bridge its initial cash needs by means of short-term loans from the banking sector to be paid back during the first fiscal year.

2.1.6 Assignment of Revenues: Proposed Changes

We take it as given that the weakness of the federal government finances is an expression of a strong political preference for a small federal government. If so, everything must be done in the Annan Plan framework to limit the fiscal burden placed on the federal government and to constrain its ability to borrow. In particular, there must be no mechanisms allowing the constituent states to drain the federal government of resources, and there must be a tight and effective framework for controlling the federal budget.

- Excessive growth of the federal administration is a major financial risk. A tendency for excessive growth can easily result from Art. 30, which requires that at least one-third of the federal public servants at every level of administration must hail from each constituent state. Such a rule may be difficult to apply in a small administration and, given the need of specific training and expertise, at higher levels of administration as well. This rule should be made more flexible, for example by applying this ratio to the overall federal administration. Furthermore, the Public Service Commission created by Art. 30 should be required to develop a medium-term personnel plan for the federal administration. This plan should be approved by the federal parliament. The Commission should not be allowed to exceed the number of positions foreseen in this plan at any time.

- Furthermore, there is a significant risk of excessive and detrimental tax competition among the constituent states. Similar to the regulatory policies discussed above, this calls for a federal framework regulating tax policies at the state level and defining floors of tax rates. This would include floors on tax rates and common definition of the tax base applied in both constituent states. Following the example of the EU, it should include the rule that tax benefits cannot discriminate between foreign and domestic firms. Furthermore, it is important that tax competition remains transparent. This can be achieved by creating a federal register in which all tax advantages granted by the

with limited competences, as conceived by the Annan Plan. We warn that the federal government should not be burdened with large debts and transfer programs.

constituent state governments are listed and made public. Today, the Dutch government maintains such a register (Dutch experts can help in its application in Cyprus).

The possibility of sharing direct taxes between the federal government and the constituent state governments should be explicitly established.

2.2. The Federal Budget Process

2.2.1 Budgeting Processes and Fiscal Stability: Theory

Public spending is a story of some people spending other people's money. In modern democracies, voters elect politicians to make decisions about public spending for them, and they provide the funds by paying taxes. An important aspect of this is that most public spending today consist of distributive policies, i.e. they are targeted at subgroups of citizens (taxpayers). An important characteristic of distributive policies is that those who benefit from a specific public policy and those who pay for it are generally not the same. As a result, politicians representing the interests of individual groups in society tend to overestimate the net social benefit from targeted public policies, as they perceive the full social benefit from policies targeting their constituencies, but only that part of the social cost that the latter bear through their taxes. This is the "common pool" property of public budgeting (von Hagen and Harden, 1994.)

The common pool property generates potentials for excessive levels of spending, taxation, and public borrowing, a prediction confirmed by empirical studies (von Hagen, 1992; von Hagen and Harden, 1994; Strauch, 1998; Kontopoulos and Perotti, 1999.) Other studies suggest that government spending and debt increase with the intensity of ideological and ethnic divisions within a society (Roubini and Sachs, 1989; Alesina and Perotti, 1995; Alesina et al. 1997), or by ethno-linguistic and religious fractionalization (Annett, 2000). To the extent that such conflicts make voters on either side of the divide neglect the tax burden falling on those on the other side, they aggravate the common pool problem.

Making politicians more aware of the true budget constraint can reduce these excess spending and deficit biases. This is the main role of the budget process. Appropriately designed, it can induce policy makers to taking a comprehensive view of the costs and benefits of all public policies financed through the budget. The budget process can serve its purpose effectively only if all conflicts between competing claims on public finances are indeed resolved within its scope. An important deviation from this principle, and one that undermines its effectiveness, is the existence of contingent liabilities such as guarantees for financial commitments of public or non-public entities. While contingent liabilities cannot be fully avoided, their existence and importance for the government's financial stance can be brought to the attention of decision makers in the budget process by requiring the government to submit a report on the financial guarantees it has entered into as part of the budget documentation. To that effect, institutional arrangements are important in all stages of the budget process.

At the executive planning stage, it is important to promote agreement on spending and deficit targets derived from a comprehensive and medium-term view of the budget. This requires the consistent setting of spending and deficit targets at the outset of the budget process and a guarantee that they effectively constrain subsequent decisions. A key issue here is the process of conflict resolution among the members of the executive. Uncoordinated and ad hoc conflict resolution involving many actors simultaneously

promote logrolling and reciprocity and, hence, fragmentation. Cabinet decision-making based on the principle of unanimity, as in Japan, has a similar effect.

At the legislative approval stage, it is important to control the debate and voting procedures in parliament. Because of the much larger number of decision makers involved, the common pool problem is even larger in the legislature than in the executive. Limits on amendments and the scope for logrolling are key instruments to improve fiscal discipline at this stage.

At the implementation stage, it is important to assure that the budget law effectively constrains the spending decisions of the executive. The weaker the constraints created by the budget law for actual spending decisions, the more fragmented is the budget process. The finance minister's ability to monitor and control spending flows during the fiscal year is critical at this stage. Another important element is the rule concerning changes of the budget law during the year. The easier it is to change the budget law or to replace it by a new one, the less effective is the budget process in constraining financial decisions of the government and solving the common pool problem. The frequent use of supplementary budgets during the fiscal year is a strong indicator of fragmentation at this stage.

2.2.2 Federal Budget Governance in the Annan Plan

The Annan Plan foresees the existence of a federal law on the budget (Attachment 8). Currently, this has only one stipulation, pertaining to the carry-over of the previous budget in case of a parliamentary deadlock. The Plan makes no provision for budgetary planning in the Presidential Council. The function of a Minister of Finance is not even foreseen explicitly. The fact that the president and the vice presidents, as well as the ministers of foreign affairs and of EU affairs, are mentioned explicitly will inevitably give these positions higher ranking on the council than the finance ministry, suggesting that the latter will have a weak political position.

The Annan Plan makes no mention of medium-term fiscal planning or fiscal targets. To be sure, the obligation to present annual Convergence Programs to the EU, which arises from the *acquis communautaires*, implies an obligation to present annual targets for deficits and debts. But these programs are not binding on countries not using the euro, and even within EMU the Stability and Growth Pact has not been very powerful so far to discipline spending and deficits in the member states (Hughes Hallett et al., 2003).

Art 26.7 requires the Presidential Council to make decisions by consensus whenever possible. If this extends to budgetary decisions, it will enormously amplify the common pool problem and lead to a bias for excessive spending and deficits.

Art 24.5 holds that the federal budget is adopted by the federal parliament. Approval of the budget requires the consent of both chambers with a special majority requirement (Art. 25.2,2d). This requirement invites lengthy budget negotiations between the two chambers in which special interests will be very powerful. The examples of Belgium and Italy in the 1980s show how this leads to excessive spending and deficits. No limits on parliamentary amendments are foreseen. Budget decisions require a simple majority plus at least two fifth of the sitting senators from both constituent states. This, again, creates excessive power for special interests.

2.2.3 Proposed Changes

The Annan Plan should include a mandate for a federal law on budgeting. This law should assure the comprehensiveness of the budget and require that spending and taxes be voted annually, i.e., there should be no multi-year appropriations. This does not rule out multi-annual spending programs, but it forces the government to reconsider all programs annually. In addition, this law should have the following features:

- First, it should require the presidential council to present at the beginning of its term a set of broad fiscal targets for its entire time in office. The federal parliament should take a vote on this at the beginning of a new term of the Presidential Council.
- Second, it should require the presidential council to present a set of specific fiscal targets (total spending, spending by major categories, total revenues, debt/GDP) for the next three fiscal years at the start of the annual budget cycle. The federal parliament should vote on this annually at the beginning of the budget planning cycle.
- Third, it should limit the scope for parliamentary amendments. For example, it could include an outright ban on amendments leading to increased budgetary expenditures or lower revenues, or a rule saying that parliament can only reduce spending and raise taxes.¹⁶ Furthermore, it should require that each budget chapter be voted on individually, followed (or preceded) by a vote on the main budgetary aggregates.
- Fourth, it should define and strengthen the position of the finance minister in the implementation of the budget. The finance minister should have the authority to impose across the board and specific spending limits during the fiscal year. All disbursement of federal funds should require authorization by the finance minister.¹⁷
- Fifth, there should be clear rules for dealing with unexpected surpluses or shortfalls in federal spending and revenues.

2.3. Vertical Fiscal Relations

2.3.1 Effects of the Annan Plan on Constituent State Budgets

The assignment of indirect tax revenues to the federal government implies that the constituent state governments will lose these revenues immediately.

For the current G/C government this will amount to a loss of 31 percent of its tax revenues. Since the federal government will fulfill some tasks that the G/C and T/C authorities execute today, not all of this loss of revenue will have to be compensated by increases in direct taxes. However, it is clear that a federal structure implies at least some duplication of functions at the federal and the constituent-state level. Since personnel expenditures of the federal government will not represent personnel savings at the state level, the consolidated public sector is almost certain to grow. Some of that growth will have to be financed by the constituent state budgets.

¹⁶ Such restrictions exist, for instance, in France and Greece. In the UK, the role of parliament in the budget process is even more limited.

¹⁷ Countries where the Finance Minister effectively controls disbursements include France, Greece and the U.K. For a detailed analysis of this question, see Hallerberg, Strauch and von Hagen (2001).

Budgetary data for the government of the T/C area is scant and of questionable quality. Nevertheless, data from the “Central Bank of the Turkish Republic of Northern Cyprus” (Bulletin September 2000) give some indication. According to these data, the government in the T/C area collected indirect taxes amounting to almost 12 percent of GDP in 1999. Assuming that GDP in the T/C area is 10 percent of GDP in the South and population is 29 percent of population in the South, and applying the rules for indirect tax revenue sharing, implies that the Northern government would receive indirect taxes transferred from the federal government amounting to 1.056 percent of its GDP. In addition, the government of the T/C state would retain one third of the VAT collected in its territory. We have no information about how much that is, but it is likely that the result will be a fiscal gain of several percent of GDP for the T/C government. However, available data indicate budget deficits of up to 19.4 percent of GDP in the years 1995 to 1999.

While a large part of these deficits was paid for by foreign aid from the Republic of Turkey, borrowing still reached up to 6.9 percent of GDP. Thus depending on the transfers of indirect tax revenue from the federal government, the financial situation of the T/C state government is likely to be precarious, even if Turkey should decide to continue to support it after the signing of the Agreement. If Turkey decides to end its support, the government in the North most likely faces financial collapse.

The state governments will enjoy fiscal windfall profits from the Annan Plan, since they will have no more military expenditures. The G/C authorities report that these expenditures amount to about 7.4 percent of total tax revenues.¹⁸ Furthermore, the government of the Republic of Cyprus currently supports displaced persons. These funds, which the Vassiliou study estimates to be around 4 percent of total spending represent another windfall benefit. Thus, the windfall gains produced by the Annan Plan could amount to 11.4 to 17.4 percent of total tax revenue.

At the same time, the constituent state governments will be faced with demands arising from the resettlement of persons within their territories. Both the Vassiliou study and our discussions with government experts in Nicosia suggest that the government of the G/C state will have an obligation to facilitate the financing the reconstruction of the returned areas and their resettlement. It is difficult to assess the corresponding financial implications. One thing, however, is clear: they involve political choices, albeit difficult ones, which can be taken with more or less financial responsibility. Most of the resettlement and rebuilding investments can be left to the private sector, since most of the benefits are bound to accrue to the private owners of properties and homes. Given the geographical dimension of the problem, this is true even for roads, energy and water-related infrastructure, and telecommunications. Specifically, it is possible to finance the related services by user charges, and, therefore, to leave them to private providers which would carry out the required investments. It is important to stress this point, because it clarifies the nature of the problem, which is ultimately a political one of distributing the cost of rebuilding the returned areas between the persons who settle there and the remaining population of the G/C constituent state.

¹⁸ The Vassiliou study (2003) estimates these savings at about 13.4 percent of total tax revenues.

The larger the part of the financing of resettlement that the constituent state governments decide to assume, the larger will be their financial needs. In view of the tax competition problem, it is clear that there are limits on the additional taxes that they will be able to raise. At the same time, the G/C state probably has already exhausted its borrowing capacity, its debt reaching 70 percent of GDP. The implication is that the Annan Plan will leave the constituent states in a financially precarious situation.

2.3.2 State Budget Governance

Fiscal discipline at the level of the constituent states is important for the federal government, since its obligations to the EU are with regard to general government deficits and debts and because, beyond that, financially weak constituent state governments are likely to pressure the federal government for help. Although government deficits and debt have not always complied with the Maastricht criteria in recent years, the Cyprus Republic has so far been able to maintain good fiscal discipline. In contrast, fiscal discipline is weak in the North.

2.3.3 Vertical Transfers

There will be an obvious tendency for the constituent states to appeal to the federal government for financial relief. In fact, this solution is anticipated by the Vassiliou study, which proposes a much larger transfer of VAT revenues to the states. The federal government will, therefore, be faced with strong demands to implement additional vertical transfers.

A first danger is that such demands could be met positively in the early years of the federation, when central government expenditures are still small and the federal government might have a budget surplus. Great caution is required to assure that the federal government does not, under those transitory circumstances, assume financial obligations that will be difficult to fulfill later.

A second danger is that the federal government, politically weak as it is, will tend to accommodate demands by the constituent states and finance them by additional borrowing.

2.3.4 Proposed Changes

To avoid permanent fiscal weaknesses owing these problems, the Annan Plan and future federal law should both specify that additional vertical transfers can only be enacted with a lifetime not exceeding, say five years. The federal budget law should require a clear separation between the federal government's current and capital budgets and allow deficit financing only for expenditures under the capital budget. This would exclude in particular that the constituent states could pressure the federal government into deficit-financed vertical transfers.

In view of the need for fiscal discipline, the Annan Plan should require the constituent states to adopt budget laws that follow the guidelines indicated above (Section 2.2.3). To comply with the EU obligations in this regard, there should be a coordination mechanism between the federal government and the constituent states. This mechanism should assure that the deficit and debt developments at the federal and state levels are consistent with the EU constraints. Other federal states, e.g., Austria, Spain, and Belgium, have developed "Internal Stability Pacts" for this purpose, which translate the

EU restrictions on the general government deficit and debt into constraints for each level of government.

2.4. Soft Budget Constraints

2.4.1 Principles

Soft budget constraints prevail in a federal system when local governments are able to obtain more vertical grants to finance local expenditures *ex post* than *ex ante*, i.e., to spend more money than originally foreseen when local and federal budget decisions were made. An important context in which soft budget constraints arise is when central governments bail out over-indebted local governments. When bailouts can be anticipated, they create the same incentive problems as budgeted vertical transfers. Local governments borrow excessively to finance additional spending; when they find themselves unable to service their debts, the central government or central bank intervenes with the necessary funds.

A necessary condition for soft budget constraints is the central government's willingness to grant bailouts. There are several important challenges to the credibility of a no-bailout commitment by the central government. If local governments are allowed to default on their debts, ripple effects can be transmitted through the financial system and the entire country may face an increase in its risk premium due to the reputational damage. Important recent examples for this are Argentina and Brazil, whose debt problems in the 1980s and financial crises in the late 1990s and in 2001-2 are largely due to excess borrowing at the level of provincial governments (Aizenman, 1998). Sharp fiscal adjustments may force local governments to cut spending on health, home security, and education, which can have significant negative spillovers to other jurisdictions.

Given the cost of letting local governments default, central governments may find providing grants more attractive than denying a bailout, even if they were determined to enforce hard budget constraints *ex ante*, a classical problem of "time inconsistency" (Kydlund and Prescott, 1977). Even if the central government is unwilling to grant bailouts, it may be forced to do so by a legal mandate. An example is Germany, where the Constitutional Court ruled in the early 1990s, that the federation must grant state governments the resources to fulfill the tasks assigned to them by the federal constitution. In practice soft budget constraints are a significant problem in many federations, including Argentina, Brazil, India, Mexico, Australia, and Germany.

The idea that large jurisdictions are "too big to fail" is a popular one closely connected to the bailout issue. For instance, noting that negative externalities from local government default are proportional to the size of the jurisdiction, Wildasin (1997) observes large regions are more likely to obtain bailouts. However, empirical evidence from the OECD (Australia, Germany, Italy, and Sweden) and several Latin American countries lends little support to this view (von Hagen, 2000). In fact, bailouts are often granted first to small states or regions. An example is Germany, where the federal government bailed out two of the smallest states in the early 1990s. Political considerations and the perception that the cost of bailing out small jurisdictions is small may explain that observation. A second empirical observation is that bailouts often follow an increase in unfunded central government mandates or a shift of fiscal responsibilities from the center to local governments that is not matched by an increase in vertical transfers. In such scenarios, bailouts may reflect local governments'

unwillingness to assume the responsibilities put on them by the center and to use local tax resources to fund them.

In order to enforce hard budget constraints at the local level, many existing federations subject local governments to ceilings on borrowing or debt. Such ceilings pose complex issues in practice. Evidence suggests that borrowing constraints invite creative accounting and borrowing through off-budget entities, local financial institutions, or payment arrears with the private sector, allowing local governments to nevertheless incur large financial liabilities.¹⁹ As the example of the EU suggests, debt and deficit ceilings must be combined with transparent accounting rules. By relying on numerical limits on deficits and debts, debt and deficit ceilings also constrain the ability of local governments to react to negative fiscal shocks and, therefore, to contribute to macroeconomic stabilization (Poterba, 1994). Where local government is relatively large, the resulting macroeconomic costs can be significant.

Vertical imbalances are again important in this context. The larger the share of local governments spending financed by own taxes, the more a local government in financial distress can be expected to make the necessary adjustments itself and raise additional taxes. In contrast, where local governments almost entirely depend on federal grants, denying bailouts is hardly credible, as the required adjustment can only come by cutting important local public services. Von Hagen and Eichengreen (1996) show that the empirical incidence of borrowing constraints is more likely in countries with greater vertical imbalance. This suggests that reducing vertical imbalance is an important element in assuring hard budget constraints at the local level.

2.4.2 Soft Budget Constraints in the Annan Plan

The main potential source of soft budget constraints in the Annan Plan is Art. 47. Art. 47.1 obliges the federal government to service and repay loans that were assumed by constituent states between 1964 and the entry of the agreement into force, if the loan was used for public investment benefiting the whole of Cyprus. This rule will create numerous disputes, since the geographical incidence of public works is difficult to determine given the size and geographical structure of Cyprus. Furthermore, Art. 47.1 is likely to burden the federal government with financial obligations that, in view of its own financial weakness, it will be unable to fulfill.

Art. 47.2 makes the federal government responsible for all external debts other than debts to Turkey and Greece or debts from the purchase of armaments. While the header of this article seems to limit its provisions to existing debts incurred between 1964 and the date of entry into force of the agreement, the word “however” suggests a more general reading, making the federal government responsible for future debts, too.

Making the federal government responsible for constituent state debts gives the constituent states a clear incentive to borrow heavily from abroad and default on their

¹⁹ For example, Italian local governments, whose tax basis was thin in the 1980s and which were subject to a complete ban on borrowing nevertheless managed to incur large debts through payment arrears. These arrears were then presented ex post to the central government with the threat of closing hospitals and schools unless a bailout was provided. Italian local governments thus contributed significantly to the expansion of national debt in the 1980s (Bordignon, 2000). For evidence on US states see von Hagen (1992).

debts, anticipating that the federal government must pick up the bill. The stipulation of Art. 47.2, according to which the internal financial responsibility for servicing and repaying the debts remains with the constituent state incurring the debt provides little remedy against this. A constituent state defaulting on its external debt would incur a liability to the federal government, but the latter has little if any hope that this liability will be paid. This tendency for fiscal indiscipline is even more acute if one considers that local governments (cities) are not prohibited from borrowing externally.

The reasoning behind Art. 47.2 is presumably that constituent state governments could benefit from the reputation of the federal governments in external capital markets. However, our analysis above has shown that, due to its financial weakness, the federal government will have practically no borrowing capacity in international capital markets. At the same time, in the medium run at least, membership of Cyprus in the euro area will boost the constituent states' reputation in the international markets, as there will be no foreign exchange risk arising from fiscal weaknesses on their part. Bearing that in mind, the constituent states have little to gain from a federal government guarantee of their external debts.

2.4.3 Proposed Changes

- Art. 47.1 should be eliminated. For the last 40 years, public investment decisions in the constituent states have been based on the assumption that any project financed generated sufficient benefits for the constituent state incurring the loans. In particular, the project should generate sufficient revenue to continue financing the loan in the future. If this condition was met before the creation of the UCR, there is no reason to assume that it will cease to hold afterwards. Avoiding the risk of overburdening the federal government seems more important than solving the ambiguous and difficult question of the distribution of benefits of a loan-financed project after the creation of the United Cyprus Republic.

- Art. 47.2 should be rewritten in a way that excludes clearly and unambiguously any responsibility of the federal government for any debts incurred by the constituent state governments or any other public authority in the constituent states. If such a rule is politically not acceptable, Art. 47.2 should be clarified to apply only to debts existing prior to the entry into force of the Agreement.

- Tight regulations on the borrowing of the constituent states and their public authorities must be imposed to protect the federal government against bailouts of subnational authorities.

3. The Property Problem

3.1. The Solution Proposed by the Annan Plan

Art 10 of the Annan Plan sets out the basic approach to solving the problem of property owners dispossessed by the events prior to the creation of the federal state. In this report, we only deal with the property problem as it relates to properties outside areas subject to territorial adjustment. We leave aside the question of territorial adjustment since it will become internal affairs of the constituent states.

Art 10 lays out three principles:

1. Current users of properties of dispossessed owners can apply for and receive title if they give up their claim to titles of properties of similar value of which they were dispossessed in the other constituent state. Current users of dispossessed properties who made significant improvements to these properties may apply for and receive title if they pay for the original value of the land. There shall be incentives for owners to sell, lease, or exchange property with current users or other persons in the other constituent state.
2. A limited amount of property shall be reinstated to owners from the other constituent state.
3. Dispossessed owners of affected properties, which do not fall under the first two principles, will be financially compensated for their loss of property.

According to Art. 10.4, the solution of the property problem will be administered by the Property Board, an independent institution.

Section A of Annex VII establishes the principle of full and effective compensation of dispossessed owners. Compensation will be done on the basis of an imputed “current value.” Attachment 1 Art. 1 of Annex VII defines the “current value” as the value of the property at the time of dispossession (which can be determined from the property records) plus an adjustment reflecting the appreciation since then. This calculation will be based on the increase in average sales prices of properties in Cyprus in comparable locations. Art. 8.3 of Annex VII determines that payment is made in the form of compensation bonds.

Art. 17 of Attachment 2 of Annex VII determines that the federal government shall make an initial contribution to the Property Fund of 100 million Cyprus Pounds. Art. 18 of Attachment 2 of Annex VII determines that compensation bonds will be issued by the Property Board, drawn on the Compensation fund established at the Central Bank of Cyprus (Art. 17). Compensation bonds shall have a maturity of 10 or 15 years and bear an interest rate comparable to the interest rate on federal government bonds of equal maturity. The federal government shall guarantee compensation bonds and interest payable on them.

These provisions aim at a peaceful settlement of property claims of individuals dispossessed as a consequence of political events for which they are not individually responsible. The procedure clearly intends to limit the reassumption by dispossessed owners of their properties, i.e., it wishes to preserve as much as possible the current geographical design of the federation and the implied separation of populations. We take these goals as given.

3.2. Economic Implications

Fair treatment of dispossessed owners is the principle behind the concept of “current value.” From an economic perspective, this is understandable, but the implementation proposed in the Annan Plan is not efficient or equitable. It is based on the assumption that property prices would have developed in the way they did since 1974, even if the political events leading to the separation of the country had not occurred. Given developments since 1974, it is likely for example that the Northern coastal areas would have been more developed than they currently are, with the opposite effect in parts of the Southern area. If so, the increase in property values in the South would most likely have been less, since a simultaneous development of both areas would have increased

competition. By ignoring this, the principle of comparison embedded in the “current value” concept fails to provide the fair treatment to which it aspires. If the benchmark is to be the evolution of property values in the South, then the principle overstates the true economic loss for which the dispossessed owner should be compensated, raising the costs to the general taxpayer. More importantly, perhaps, our criticism illustrates the general point that trying to substitute rules to actual market values is bound to create inequities and, therefore, recriminations.

This is why, once a peaceful settlement has been found, property values should in principle be determined by the market, which will promptly reflect the benefits of future developments. Compensation should be based on market values of the affected properties once the Annan Plan enters into force. This implies that the fairness issue is limited to the compensation of Greek Cypriots who were dispossessed of properties in the North. In the South, where a property market exists, the market value of properties is easy to determine and fair compensation of dispossessed owners from the North can be based on market values.

In the North, current property users or other potential buyers from the constituent state in which the property is located may not have the financial resources to pay true market values, which are already depressed relatively to values in the South. If land purchases are restricted to current users, property prices will remain undervalued due to the lack of purchasing power. An appropriate response is to alleviate the borrowing constraints faced by current users or potential buyers. An example would be the creation of a public mortgage bank lending to buyers at relatively advantageous conditions. The federal government or the government of the T/C constituent state should be able to obtain the assistance of international financial institutions such as the World Bank or the EBRD for such purposes. An alternative, which may be deemed politically undesirable, is to sell property to foreign investors.

The reference in the Plan to federal government bonds of equal maturity in the determination of the interest rate on obligation bonds is likely to be impractical, since, in view of its financial weakness, the federal government may well be unable to place bonds of 10 or 15 years maturity in the markets.

The federal government guarantee to the obligations of the Property Board will add to the financial weakness of the federal government. A debt ratio of more than 100% of GDP, which is the likely outcome of the envisaged property restitution scheme, would effectively bankrupt the federal government at the start.

The compensation scheme implies a redistribution of wealth. For the following reasons, most of this redistribution is likely to occur among Greek Cypriots rather than between the two constituent states:

- The large value gap between land dispossessed from G/C in the North and land dispossessed from T/C in the South implies that the Property Board may have to offer higher values to dispossessed G/C owners than it will receive when it sells the corresponding properties.
- Assuming that the Property Board will find it relatively easy to sell land in the G/C constituent state and compensate dispossessed T/C owners with the proceeds, compensation paid for with compensation bonds will mainly go to dispossessed G/C

owners. This conclusion is based on the assumption that, given the depressed state of the Northern economy, G/C dispossessed owners will have no incentive to sell or lease property soon and will opt for compensation through bonds.

- Resources of the federal government, whose revenues will mainly come from the G/C constituent state, will ultimately be used to redeem those obligation bonds and the interest paid for them, which may not be covered by the proceeds from sales of properties in the North.²⁰

The only viable alternative is a massive inflow of foreign aid to finance the property settlement. It is unlikely that foreign governments will want to finance a wealth transfer among citizens of the G/C constituent state.

That the property compensation scheme as proposed in the Annan Plan will ultimately transfer resources among citizens of the G/C constituent suggests shows that it can be separated into two parts: a part dealing with the transfer of ownership and wealth between the two constituent states, and a part dealing with the transfer of wealth among citizens of the G/C constituent state. Since the latter will involve, in our estimates, far larger financial resources than the former, this implies that the main political goal, a peaceful settlement between the two constituent states, can be had at a much lower price and with a much reduced financial burden placed on the federal government. In fact, the wealth transfer among citizens of the G/C constituent state could be regarded as an internal affair of the latter.

3.3. Compensation for Loss of Use

Art. 21 of Annex VII to the Annan Plan determines that any claims for compensation of the loss of use of an affected property shall be considered by the constituent state from which the claimant hails.

The loss-of-use provision aims at protecting Turkey against financial claims from dispossessed owners, a significant burden made more real by the recent decision of the European Court of Justice in the Loizidou case. The provisions of the Annan Plan could shift the liability for the majority of such claims effectively on the government of the G/C constituent state. In doing so, it could place an enormous financial strain on the G/C constituent state.

Nevertheless, the practical importance of this provision may be very limited. The first reason is the context from which it arises. The separation of possession and use of a property is unusual, since one is normally tied to the other. Therefore, the economic rationale behind this provision is debatable. One possible reasoning could be that capital investments made before dispossession were lost afterwards. However, since capital

²⁰ Art. 8, Section A of Attachment 2 requires constituent states to purchase at “current values” properties remaining unsold on their territories. The article could be read as requiring the T/C state to acquire unsold properties on its territory at “current values” at the time of winding-down of the Property Board, which could result in a large wealth transfer from the T/C to the G/C state. However, the article is unlikely to be of any relevance in practice, as the government of the T/C state can refuse to acquire such properties arguing that the unsold properties are still required for the carrying out of the Board’s functions. Unless the amount of properties left is very small, the T/C state government could use this argument to avoid a large wealth transfer.

investments are intimately tied to the development of a property; their return is captured in the appreciation of the land, so that compensation for loss-of-use implies a double counting of losses.

In the Loizidou case, the unusual concept of “loss of use” separated from loss of possession was presumably chosen because Turkey could not be held responsible for the dispossession, which happened in 1974, but it could be held responsible for not allowing the owner to use the property after it joined the Council of Europe in 1987. After the re-unification of Cyprus, dispossessed owners of properties will be compensated, and this compensation will include compensation for both loss of property and loss of use. To clarify the issue, this might be stated explicitly in the provisions regarding the compensation plan.

Additionally, it is not clear that this provision is in agreement with international law. The Human Right Court may well regard the shift of responsibility from Turkey to the constituent states of the UCR as invalid.

3.4. Recommendation: A Close-Ended Property Board

3.4.1 The Risk

The main problem of the property settlement is the lack of a well-developed property market in the T/C constituent state. A property market cannot develop without well-defined property rights, and property rights cannot be established without a solution to the problem of dispossessed owners. In the absence of such a market, the economic value of the affected properties in the North is very uncertain. This uncertainty is a fact of life. The important question is who bears the economic risk resulting from it. The solution proposed by the Annan Plan, which replaces claims on properties by claims for compensation based on imputed values, puts the entire risk on the shoulders of the new federal government. If the imputed “current value” of the properties exceed the true economic value, the solution proposed in the Annan Plan is likely to bankrupt the federal government at its very beginning.²¹

3.4.2 Principles for a Closed-Ended Fund

We propose instead that the Property Board be created as a closed-end real estate fund, created for a limited period of time (say, 20 years) at the end of which it must be liquidated. The Property Board would assume ownership of all affected properties immediately upon the entry into force of the agreement. All dispossessed owners of affected properties would receive shares in the Property Board in proportion to their land value as of 1974 (or, alternatively, in proportion of their land value based on “current values”). These shares would determine the proportion each claimant would receive in the final settlement, not the absolute amount of the compensation. With this step, property rights are immediately established – all affected properties belong to the

²¹ It is sometimes believed (cf. the Vassiliou study) that foreign aid will reduce the cost borne by the federal government. From a political viewpoint, it is extremely unlikely that foreign donors will have any interest in transferring significant amounts of money to individuals for property compensation. At any rate, our most optimistic estimates of foreign aid (see Section 4.6) amount to a fraction of the costs of property compensation. Finally, from an economic viewpoint, even it were forthcoming, a large transfer of this kind would create serious macroeconomic imbalances.

Property Board, all dispossessed owners own shares of the Board – and there are no further hindrances against the development of a property market.

To set up the Property Board in this way, the federal government would first call all dispossessed owners to list their property claims and determine their value. Upon registration, a dispossessed owner would receive a certificate of registration. This call should be limited to a maximum period of three years. At the end of this period, dispossessed owners of properties eligible for reinstatement under the rules of the Annan Plan would have the right to exchange their certificate of registration for the title of their reinstated properties. This exchange should be made possible only for a limited period of time.

Once this exchange has been executed, the Property Board can determine the total notional (1974) value of the land it owns. Each dispossessed owner's relative share in the Property Board can be determined and certificates of shares can be issued to the holders.

The mandate of the Property Board would be to manage its portfolio of properties aiming at the best shareholder value possible. The provisions for current users and owners of improvements would continue to apply. Over time, as the property market in the T/C constituent state develops and land values rise, the value of shares in the Property Board would increase. The Property Board could sell, lease or rent properties. It would have revenues from these activities and could use them to cover its administrative expenses and, possibly, pay a dividend.

Shares in the Property Board will be tradable in a secondary market, which is likely to develop soon. Dispossessed owners desiring an early solution will be able to sell their shares on the secondary market. The Property Board could also use (part of) its initial funding of CYP 100 million to buy back shares of dispossessed owners who want to exit early.

3.4.3 Governance

The main task of the Property Board will be to sell the properties that it has received. An agreement will have to be reached on who can buy from the Property Board, especially concerning citizens hailing from a constituent state different from where the property is located and foreign investors. From the shareholders viewpoint, the freer is the Property Board to sell, the better it is, but the Annan Plan stipulates a number of restrictions that will have to be taken into account. The Board ought to aim at selling its properties as soon as possible, but it should also factor in the likely evolution of property values. For this reason, an end date should not be specified ex ante, but the Board's managers should be instructed to strive to as early an end as practical.

The governance of the Property Board could be designed much like the charter of an investment fund. The Property Board should have a management consisting of professional experts of real estate management. The managers' contracts would mandate them to maximize shareholder value. Their salaries could be (partly) dependent on performance. The managers should be hired by and accountable to a Supervisory Board which could be created along the lines foreseen in the Annan Plan. Importantly however, Art. 3.6 of Attachment 2, Annex VII, which sets appointment terms of three years, must be modified to allow for open-end terms as is customary for all managers.

The Property Board managers' contracts should be terminated at the Supervisory Board's discretion if their performance is considered unsatisfactory.

The Property Board would have to publish a financial balance sheet and a financial report regularly and present it to the annual shareholder assembly. The Property Board should be subject to financial auditing by an appropriate accounting firm chosen by the Supervisory Board and confirmed by the shareholders assembly.

At the end of its lifetime, the Property Board will be dissolved. The rules setting up the Property Board should set a fixed date for dissolution, which could only be changed with the consent of the federal parliament and the parliaments of both constituent states. This assures that the Property Board focuses on its mandate of selling properties and does not evolve into a large real estate company in the long run. Since expectations about terminal dates and prices can increase the volatility of share prices before the dissolution of the fund, the lifetime should be chosen long enough to avoid unnecessary uncertainty and volatility in its early years. Any properties which are not sold before the terminal date should be auctioned off when the end of the Property Board's life has been reached.

As it takes over property rights, the Board will act as landlord and rent out properties to current tenants at market price. Rental rates should be adjusted annually through an indexation formula to avoid tenants sticking to their current dwellings if, as expected, market prices rise. Rents paid by residents in the T/C constituent state will be generally lower than rents paid by residents in the G/C constituent state, thus contributing less to the financial value of the Property Board. This will simply reflect market values. It would be highly distortionary, and possibly seriously contentious, to try to correct this aspect by administratively setting rents. The relevant distortion here – lower prices in the T/C constituent state – is the underlying property market with limited purchasing power; the correct policy intervention is to open the market to foreign purchases and provide for an efficient credit market, as noted above.

The key advantage of our proposal relative to the existing provisions of the Annan Plan is that this arrangement creates no financial burden for the UCR while preserving the principle of fair compensation. Dispossessed owners will receive all the revenues collected by the Board, less its audited operation costs. These revenues will reflect the evolution of market prices during the existence of the Board. Shares should be freely negotiable, allowing shareholders who wish so to cash in whenever they want, again at market price. In effect, there will be no transfers from taxpayers to dispossessed owners, simply intermediated payments from buyers to sellers.

Under the restrictions for reinstatement of properties in the Annan Plan, it is foreseeable that the Property Board would not deal at all with affected properties in the South where markets exist and the restrictions for reinstatement are not binding. Thus, the activities of the Property Board could be limited to properties in the North from the start. Under the rules outlined above, this would make no important practical difference.

3.4.4 Intermediate Solutions

As indicated above, uncertainty about the true value of the affected properties and its development over time is a fact of economic life. It cannot be eliminated. The main consequence of our proposal is to free the federal government from the risk resulting from this uncertainty. If economic values are low, at least the federal government

remains financially viable. The risk is not eliminated, however, it is shifted to the dispossessed owners. If economic values turn out to be higher than the imputed “current values” used under Annan Plan, they will receive more, if economic values turn out to be less, they will receive less. Thus the risk does not mean a loss; quite conceivably, those who assume the risk may end up with sizeable gains.

Whether this risk shift is acceptable is a political decision, which concerns the relative interests of the taxpayers and of the dispossessed property owners, mostly from the G/C constituent state.²² If the proposed solution is deemed politically unacceptable, intermediate solutions can be found.

Even if an intermediate solution is preferred, the general principle that the Property Board be created as a closed-end real estate fund with a finite lifetime can and should be preserved in order to prevent potentially unmanageable federal government liabilities. What can be mitigated is the shifting of risk between taxpayers and dispossessed property owners. The Annan Plan places the entire risk burden on the taxpayers, our proposal places it on the dispossessed property owners.

An intermediate solution would be for the federal government could to guarantee a minimum value for the shares issued by Property Board when it winds up its operation. A natural minimum would be the nominal value of their properties in 1974. These values are readily known and can therefore be precisely established. This guarantee²³ would only become effective in the case when the Board has not been able by the end of its lifetime to sell the properties at a better price than those prevailing in 1974. This solution offers a limited protection to the dispossessed property owners without putting an excessive burden on the federal finances. Importantly, the size of the federal guarantee is known from the outset instead of being completely undetermined until the end of the Property Board as is the case in the Annan Plan.

It may be noted that, if the chosen solution is the one described in Section 3.4.2, i.e. without a federal guarantee, it is very likely that financial firms will spontaneously offer a similar guarantee.²⁴ They will offer dispossessed property owners the option of exchanging their unguaranteed shares for guaranteed payments, charging a fixed cost for the service of removing downward uncertainty. The higher the guarantee, the higher will be the cost. Thus the choice of an intermediate solution amounts to deciding whether the guarantee is undertaken by the federal government or purchased by the dispossessed property owners who do not wish to carry the implied risk. Once again, the

²² Since the Annan plan sets the responsibility of guaranteeing the compensation payments to the federal government, both G/C and T/C taxpayers are involved. At current GNP levels, though, most of the burden falls on G/C taxpayers, but the situation is likely to change somewhat over the lifetime of the Property Board.

²³ In financial terms, the guarantee can be interpreted as a put option. The option will be exercised only if the Property Board's net revenues do not exceed the 1974 value of its properties.

²⁴ This will likely take the form of a put option, as explained in the previous footnote. Other financial instruments can be envisioned. The advantage of the private market solution is that allows each dispossessed owner to decide how much risk he is willing to carry against the prospect of a large gain in the event that property prices in the T/C constituent state rise significantly.

choice is a political one, involving the respective interests of the taxpayers and of the dispossessed property owners.

3.4.5 Particular Issues

This section takes up a number of details concerning the functioning of the Property Board.

Reinstated properties

Section 3.4.2 describes the treatment of properties that are to be reinstated to their pre-1974 owners. These properties will be initially assigned to the Property Board. After all claims for reinstatement are treated, within three years of the entry into force of the agreement, those which will be reinstated are taken out of the Board's portfolio. During this interim period, the Property Board will rent the properties to the current users or other interested persons, but it will not be allowed to sell any property, thus guaranteeing all reinstatements.

Sales of rented properties

The Property Board will endeavor to maximize share values, which implies a judicious choice of leases and sales. In practice, in order not to overload the property market in the T/C constituent state, the Board is likely to slowly sell its properties. In the mean time, it will seek to rent those that are in its portfolio. What if a sale opportunity arises while the property is leased? It is usually common practice that a property can be sold while being leased, and there is no reason why the Property Board should not do so if it is the best possible commercial solution. Local laws that protect tenants in such instances will normally apply.

Separate sales of land and constructions

The occasion will arise when a particular property can best be sold by separating the land and the constructions that lie on the land. Two solutions are possible:

- The Property Board freely negotiates the sale prices of each part with interest buyers. Normal market conditions and prices will apply.
- A market for occupied land and the associated properties can be developed along the lines of the practice that is common in London or parts of Germany. The constructions remain attached to the land, which is sold according to prevalent market conditions. The properties are leased for a limited period, for example 60 to 99 years, after which ownership reverts to the landowner. Over the life time of this contract, the construction can be released for the remaining period of the original contract; the price of leases declines as the maturity of the original contract declines.

Leases to former owners not reinstated

Art. 10.e of the Annan Plan authorizes dispossessed owners not reinstated to lease their former properties. This possibility is not subject to the 10% limit that applies to dispossessed owners reinstated in the T/C constituent state. There is some ambiguity regarding the practical implications of these arrangements.

One possible interpretation is that dispossessed owners can long-lease their property, e.g. to current users, and subsequently after the elapse of the lease period the property is

returned to the dispossessed owner. Another interpretation is that the Property Board will have the possibility to offer long-term leases to the original owners. This ambiguity must be removed, for it has profound implications and could be the source of serious disagreements.

Under the first interpretation, former owners could choose to obtain title of their property subject to the condition that they lease that property long-term to current users or other local residents. Dispossessed property owners would then be free to choose between transferring their properties to the Property Board in exchange for shares (or bonds in the current version of the Plan) and assuming ownership and eventually resettling there. This seems a very different approach from the one pursued by the Annan Plan in principle, but it does not lead to any economic inefficiency and could work if acceptable to all parties.

The other interpretation allows former owners to return to their properties, not as owners but as tenants. If agreeable to all parties, this possibility can also work, but it should be exercised subject to the following two conditions:

- It only applies to the former property of a dispossessed owner.
- The rental cost must be set according to prevailing market conditions in the specific area where the property is located.

4. Growth Prospects: the Role of Economic Policy

4.1. The Growth Challenge: Principles

Growth in income per capita is the result of the accumulation of productive factors (mainly physical and human capital) and of advances in technological knowledge. Both elements play a key role in the process, with total factor productivity growth – the economist’s measure of technical progress – contributing on average to about half of the growth in output per worker.

One key lesson that emerges from empirical work accumulated over the last decade is that policy matters (Easterly and Levine, 2001). Policy affects the incentives to accumulate human and physical capital, the rate and the diffusion of technological progress, the efficiency of resource allocation as well as the size of the market. The impact of policy on growth may be permanent or transitory but, even when it is temporary, its effects are persistent.

While there is still considerable disagreement as to which facets of policy (e.g. a sound institutional set-up, an outward orientation) matter most, there is little question that a broadly sound policy stance that promotes macroeconomic stability, offers a stable and relatively undistorted set of economic incentives to savers and investors, and establishes well-defined property rights, is a key determinant of growth.

Policy is likely to matter even more in the context of open economies. The ability to catch up with richer economies – in terms both of relative factor endowments and technological advances – is largely a function of policy. First, international technological spillovers depend on the degree of the economy’s openness to trade. Second, foreign direct investment – a key vehicle for the transmission of new

technological advances and of management know how – is strongly influenced by domestic policies. In a small open economy like Cyprus, the overall economic performance is even more likely to hinge on openness to trade, foreign capital, and foreign skills.

The adoption of a sound policy stance is fundamentally linked to the presence of well-designed institutions that enable policymakers to resolve social and political conflicts in a way that is not inimical to economic growth and stability. This is why the institutional architecture proposed by the Annan Plan is so crucial. The ability to prevent political and social deadlocks on key economic decisions, to shield policymakers from the pressure of interest groups, to make credible commitments with respect to macroeconomic and industrial policies are all factors that are bound to have a profound influence on growth and standards of living in united Cyprus.

4.2. Prospects for the Greek Cypriot constituent state

Cyprus growth performance since the end of the eighties has been quite respectable, averaging 3 per cent annually on a per capita basis. A comparison with Southern Europe – Greece, Portugal and Spain – is instructive (Table 1). These countries have benefited from EU transfers aiming at reducing regional inequalities. Structural and Cohesion Funds have been used to boost human and physical capital after accession to the European Union. The results have been broadly satisfactory with growth averaging 2.5 per cent over the whole period, somewhat below that of Cyprus, however. Moreover, growth accelerated significantly in the second part of the period, climbing from 1.7 per cent in 1988-93 to 2.8 percent over the last decade. By contrast, Cyprus growth performance has been more stable, despite significant intra period fluctuations, averaging 3 percent in 1988-93, 1993-98, and 1998-02. In relative terms, the average GDP per head in PPS in the three southern European countries climbed from 67.8 per cent of the EU average in 1988 to 79.0 percent in 2002. For Cyprus, according to the latest Eurostat estimates, it was 77.2 percent in 2002²⁵.

Table 1. Growth performance: a comparative assessment
(annual average growth in GDP per capita)

	Greece	Spain	Portugal	EU-3	Cyprus
88-02	2.1	2.5	2.6	2.4	3.0
88-93	0.5	2.0	2.7	1.7	3.1
93-02	2.9	2.8	2.6	2.8	3.0

²⁵ See S. Stapel and J. Pasanen (2003). Between 1995 and 2001, GDP rose at a substantially faster pace in Cyprus than in the EU. Yet, according to the latest Eurostat revisions, Cyprus' GDP per head in PPS rose only marginally from 75% in 1995 to 78% in 2001.

That Cyprus converged relatively faster to the EU average despite the fact that it did not benefit from the support of EU regional policy is explained by favorable initial conditions and a good policy stance. Educational attainments are quite significant, with 39.3 percent of the population in the 25-59 age cohort holding an intermediate degree and 28.1 percent holding a college diploma. This is substantial better than the cohesion countries (see

Figure 1 and Figure 2). Similarly, the endowment of physical capital, approximately measured by the number of telephone lines per inhabitant, is relatively high compared not only to the cohesion countries but also to the more advanced economies in the EU (

Figure 3). Finally, the Dollar Easterly indicator of the policy stance – a composite index of inflation, budget deficit, and black market premium – shows that economic policies in Cyprus were quite sound even when compared to the rest of the EU (Figure 4). All in all, it is not surprising that Cyprus performed relatively well compared to countries with more limited educational achievements, less abundant endowment of capital, and a less favorable policy stance.

Figure 1. Educational attainment

(% of persons aged 25-59 with a secondary education)

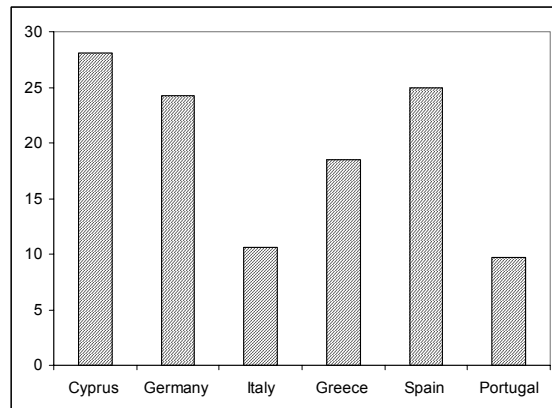
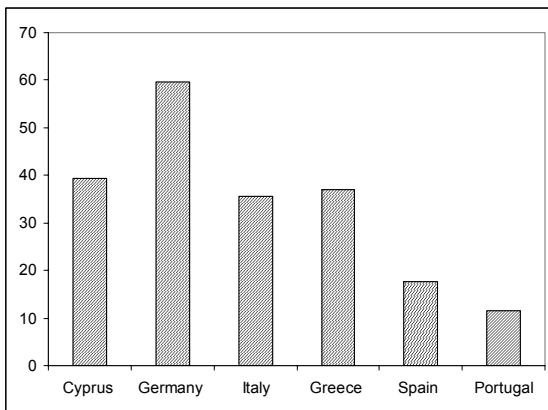


Figure 2. Educational attainment

(% of persons aged 25-59 with a tertiary education)

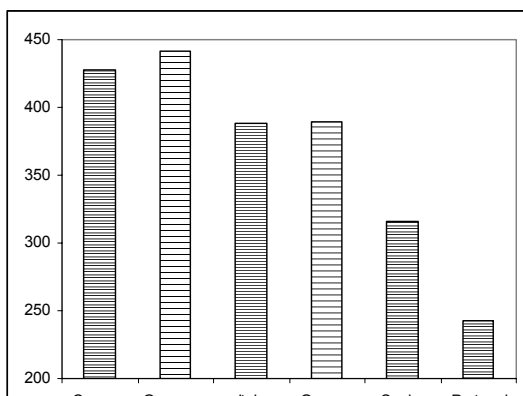
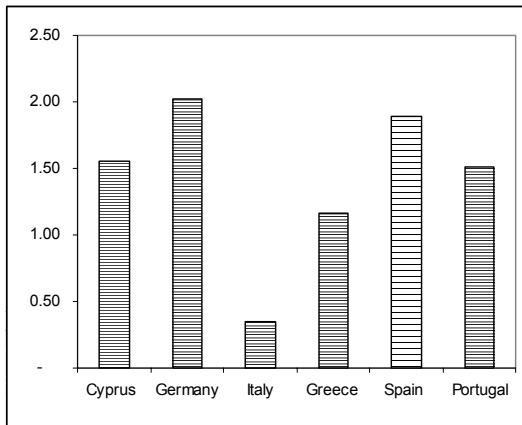


Figure 4. Quality of the policy stance



performance will be sustained, or even over this question we need to assess more factors that are supposed to affect growth. To regression (along the lines of Easterly, 2002) initial level, educational achievements, physical samples, methods, and detailed results are

presented in Appendix A. We find that growth is positively related to educational levels (measured by secondary school enrollment), the endowment of physical capital (proxied by the number of telephone lines per inhabitant²⁶), and the quality of the policy stance (using either the Dollar Easterly indicator described above or, more simply, the inflation rate and the level of the real exchange rate²⁷). Growth is also negatively related to initial GDP per capita. These results confirm that the economy of Cyprus has been converging to the EU level for traditional and well-known reasons; accordingly, they can be used to assess future evolutions.

The equation allows us to estimate that Cyprus's potential growth during the 1990s was 3.2 per annum. This is close to the actual growth performance. What can be said about growth over the next decade? Under fairly favorable assumptions – namely the continuation of a sound policy stance, a substantial increase in the stock of physical capital, and a further strengthening of educational achievements – our estimate is an average annual growth rate of around 3.7 per cent. This projection is fairly similar to the latest estimate (3.4% on a per capita basis) provided by the working group of the Economic Policy Committee. The lower bound estimate of the pre accession plan for Cyprus is somewhat higher, 5% and 3.9% on an aggregate and per capita basis respectively.

How reliable are such estimates? As an extrapolation of past trends, they must be taken with a grain of salt. Moreover, they rely on inevitably arbitrary assumptions as to the evolution of the main determinants of growth. The actual turnouts may be less or more favorable than predicted. Overall, there are both upside and downside risks to the projections.

On the upside front, we need to mention the possibility that the investment boom associated with reconstruction may boost growth, albeit temporarily, from the demand

²⁶ This is a very rough measure of physical capital. However, it is widely used in the literature. Moreover, it is the only reliable indicator available for the Turkish constituent state.

²⁷ So as to be able to apply the estimated equation also to the T/C area for which only data on inflation are available.

side. The boost to growth may also come from the supply side. The pre-accession program (PEP) assumes that the investment to GDP ratio will increase from 18.5 to 25 per cent while it foresees a basically stable incremental capital output ratio (ICOR).²⁸ As a result, growth jumps to 5.5 per cent.

However, there are also a number of downside risks that need to be considered.

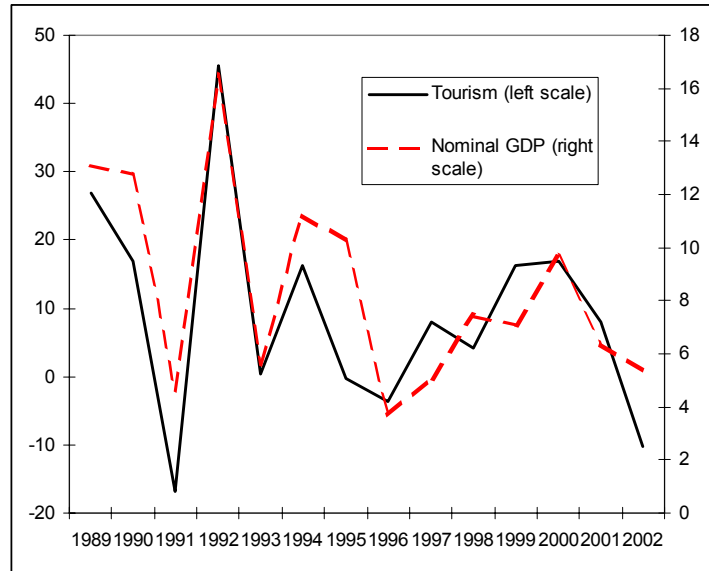
- First and foremost, growth may suffer if the expected surge in investment is financed mainly through higher budget deficits and hence is accomplished at the expense of macroeconomic and budgetary stability. Moreover, higher investment without an accompanying rise in saving will increase an already large current account deficit, raising concerns about long term external sustainability. It must be noted, however, that unification is a unique event that carries promises of higher standards of living. In such a situation, it is perfectly sound for the government to run temporary budget deficits and for the current account to deteriorate; these changes can be seen as investing for the future. The projected increase in investment, even if fully realized, may not translate into faster growth. The PEP projections may be too optimistic for at least two reasons: a) the empirical literature shows only a weak relationship between investment and growth (Easterly, 2001); b) the ICOR has already increased in the latest part of the period (it averaged 6.4 in 1996-2002) and may increase even further reflecting the large infrastructure component of the investment boost.
- The convergence process in the G/C area has run most of its course and is bound to loose steam. Standard estimates of the convergence parameters indicate that, for each 10 per cent increase in per capita income, the impact of catching-up factors on growth declines by around 0.2 per cent.
- As

²⁸ The ICOR measures the marginal capital output ratio. It is a very rough but widely used measure of the efficiency in capital use.

Figure 5 shows, tourism demand strongly affects the growth performance. The World Tourism Organization projects that tourism to the Mediterranean will grow at an annual average rate of only 3 per cent between 2002 and 2020. This may represent a stifling constraint on Cyprus's growth outlook.

To sum up, there are good reasons to be prudent as to the growth prospects of Cyprus over the next decade. A medium term growth projection for the government controlled area of around 3 per cent is both prudent and better in line with existing estimates of the expansion of tourism demand and historical trends. The virtual completion of the convergence process with respect to the EU and a less than buoyant outlook for the expansion of tourism suggest that growth will not depart radically from its previous trend. Growth could even fall, quite substantially, if the fallouts of an ill-managed reunification imperiled macroeconomic stability. Finally, cautious growth estimates are key to ensure that future fiscal policy will be run on a sound basis.

Figure 5. Tourism and growth



4.3. Prospects for the T/C constituent state

Assessing the growth prospects for the T/C constituent state is highly uncertain, particularly in light of the lack of information. The Planning Bureau of the Republic of Cyprus provides some general information on average economic trends since 1974, but data on physical and human capital stocks, crucial for growth estimation, are not available. We have made the best of what is available, using existing information on GDP per capita, policy stance (as measured by inflation), physical capital (proxied by the number of telephone lines per inhabitant), and an educated guess on educational achievements²⁹ in our growth regression. Our estimates suggest that per capita growth in the T/C constituent state should rise to around 5 per cent in the next decade, up from around 2 percent in the 1990s. This sharply improved performance is predicated upon the adoption of better policies (as epitomized by the convergence of inflation to Greek Cypriot levels), an improvement in educational achievements and better infrastructures. Growth, however, could remain hampered by the scarcity of both human and physical capital.³⁰

Reunification could have additional effects on the T/C income level rather than its growth rate, i.e. there will be once-off effects that will temporary – still over a long period of several years – increase the measured growth performance:

²⁹ We take the estimated value of a simple panel regression of secondary school enrolment on GDP per capita. See the appendix for details.

³⁰ This assessment, if correct, means that restrictions to the mobility of people and capital to the T/C constituent state foreseen in the Annan Plan will be economically very costly.

- The lifting of trade restrictions will allow T/C firms to trade directly with the rest of the world. This will reduce trade costs and open up new trading opportunities.
- Tourism should receive a major boost once it becomes possible to travel directly to the northern part of the island rather than through Turkey.
- Improved security conditions and a pattern of specialization more in line with the comparative advantage of the area will also exert a positive influence.

Finally, and more crucially, workers in the North will be able to take up employment at higher wages in the South. Independently of whether T/C workers will commute or will move to the G/C constituent state, labor supply in the North will fall, unless unemployment there is initially large. This implies that wages will rise also for workers who do not migrate. This may lead some firms – the least productive ones – to close down, but it is crucial to realize that the concomitant fall in capital income will be more than offset by the positive effects of higher wages earned by workers at home and in the G/C constituent state. Put differently, GNP will definitely rise, boosted by the income of migrant workers, while GDP may fall. In fact, GDP may not fall at all if there currently exists a large pool of unemployed workers. If these workers commute or take up the positions vacated by commuters, the rise in wages and the closure of the least productive firms can be prevented or mitigated.

The increase in GNP, induced by migrant workers' remittances, will fuel spending, which should boost supply in the non traded goods sectors. This too could raise GDP. The key point, however, is that even in the case where, initially, GDP in the North does not grow or possibly fall, the rise in GNP will definitely result in perceptibly higher standards of living through sharply increased consumption. As shown below, this economic improvement is likely to be substantial. In assessing the impact of reunification it is therefore crucial to clearly distinguish between the GDP effect, which initially may or may not be positive but has a limited bearing on economic welfare, and the GNP effect which should definitely be favorable.³¹

In order to provide a plausible estimate, we assume that 10,000 foreign workers – approximately one third of the total – currently present in the Republic of Cyprus are replaced by migrants, or more likely by commuters, from the T/C constituent state. This should not affect wages in the South. If, as seems reasonable, we assume that wages in the North are approximately 40 percent of those in the South, migration allows T/C workers to boost their earnings by 150 percent. Total wage income in the North would increase by 16.6 percent.³² In turn, this represents a 11.7 percent increase in GDP, assuming that total income of non migrant factors remains unchanged in the North and that labor income accounts for 70 percent of GDP. This is a sizeable effect. This

³¹ This observation anticipates post-unification political debates in the T/C constituent state, which will pit workers and owners of firms that close down against the majority of the population that will enjoy sizeable improvements in its living conditions. In order to make the best of the post-unification boom, the T/C authorities will have to be able to resist to pressure from those who will not benefit from the general economic improvement, possibly resorting to temporary subsidies carefully designed to smooth the transition.

³² Given that 15 thousand workers, i.e. 16.7 percent% of the local workforce, work in the South at a wage which is 150 percent its initial value.

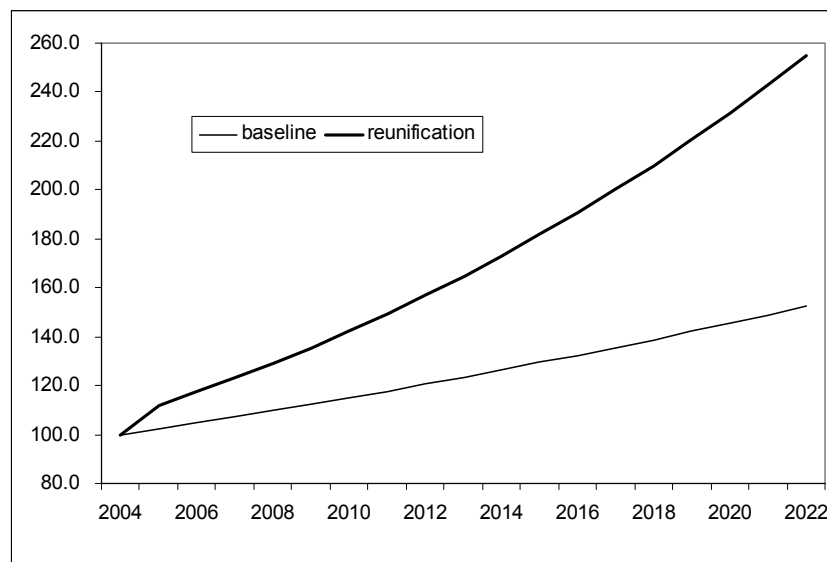
calculation ignores secondary effects such as an increase in local wages in the North and a concomitant reduction in capital income. Even though, and even if the unavoidable assumptions made along the way prove to be optimistic, the overall effect on GDP is bound to be large, and immediate.

Summing up, reunification should provide the North with a large economic bonus. First, growth will accelerate significantly, thanks mainly to improved macroeconomic management, but also to faster capital accumulation. Second, income per capita will benefit from a one time boost.

Figure 6 puts these two effects together. It compares the income path following unification with a situation where average growth in the T/C constituent state remains unchanged from the 1990s. The effects are large and grow over time. The immediate impact of unification is to boost income in the North by almost 12 percent. The benefits then rise over time thanks to faster growth. In 2015, for instance, income in the T/C constituent state would be 100 percent larger than in the absence of unification.

Even under this scenario, the income gap between the two constituent states will not shrink as rapidly as perhaps desired. Using our earlier estimate that GDP, per capita in the G/C constituent state grows at an average annual rate of 3%, and assuming that pre-unification income per capita in the T/C constituent state is 40% of its value in the South, we find that in 2020 income in the T/C constituent state will have risen to 62 percent of its value in the South. These calculations illustrates that the Annan Plan's mandate to eradicate economic inequalities between the two constituent states within the shortest possible time may unduly raise expectations and, in the end, even lead to severe disillusionments as to the benefits of reunification.

Figure 6. The impact of reunification on growth in the T/C constituent state



4.4. The Impact of the Annan Plan on Economic Growth

Economic policy can play a major role in sustaining growth, particularly in the event of reunification. Unfortunately, this is an area that is all but neglected in the Annan Plan with potentially destabilizing implications for the future course of the reunited state. Even more crucially, many of the provisions in the Annan Plan may negatively impact on growth.

Specifically, the Annan Plan does not take adequately into account the fact that sound institutions, macroeconomic stability, and the openness to trade and factor mobility are key determinants of growth. Instead, the Plan provides for economic institutions that will not promote, and could jeopardize economic integration and growth. It gives a blanket authorization to the poorest part of the UCR to impose far-reaching restrictions on the mobility of goods, services, capital and people. It severely restricts the flow of human and physical capital toward the T/C constituent state with potentially severe economic repercussions on its growth prospects. And, last but not least, it contemplates a restitution scheme that may gravely undermine macroeconomic stability (see Section 3.2).

4.4.1 Factor Mobility

The Annan Plan substantially restricts the mobility of capital, goods, services and labor. Art. 1 of the protocol to be attached to the treaty of accession of Cyprus to the European Union gives a blanket authorization to the T/C constituent state to impose restrictions on the purchase of real property by non-residents in its area of jurisdiction. In addition, Art. 2 of the same protocol allows for the adoption of safeguard measures for a period of three years if the free mobility of capital, labor, goods, and services causes, or threatens to cause, serious economic difficulties in the T/C constituent state. This will put the government of the T/C constituent state in a difficult position to resist protectionist pressures when economic restructuring takes place, as explained in Section 4.3. Finally, Art. 10.3.e of the main articles of the new constitution imposes tight limits on the reinstatement of properties to G/C residents. In theory, restrictions on capital mobility may be compensated by labor mobility. Unfortunately, the Annan Plan envisages even tighter restrictions on migration. Art. 3.4 of the main articles stipulates substantial limits to the right of G/C residents to establish their residence in the North. The initial moratorium will be only partly and very gradually phased out.

These restrictions seem to have been adopted at the request of the T/C side. Somewhat paradoxically, their main effects will be to severely hamper growth prospects in the T/C constituent state. The main effect will be to impair growth in tourism, likely to be the main engine of growth in that area. It would then be difficult to replicate the successful model of the G/C tourist development, mostly led by well-managed small enterprises. A way out would be to allow G/C residents to start their business in the North, but this is going to be severely impeded by restrictions on both labor and capital mobility between the two constituent states. An alternative mode of developing the tourist sector would emphasize large undertakings by foreign investors. However, the blanket authorization to impose restrictions on the ownership on real property by non-residents could discourage foreign investors. The possibility of imposing safeguard measures would further deter FDI.

The first best solution would be to do without these cumbersome restrictions. Allowing, and even fostering, the mobility of both capital and skilled labor toward the North is key

to ensure a rapid take off of the economy in the T/C constituent state. The Annan Plan's limits on the free mobility of labor, capital, goods and services may hurt precisely those they are intended to favor. If political constraints nonetheless prevail and prevent the adoption of the first best strategy, it becomes imperative that the restrictions envisaged in Art. 1 and in Art. 2 of the protocol to be annexed to the accession treaty be subject to a review by European institutions.

We recommend therefore that, at the very least, the imposition and maintenance of such measures – a clear violation of the Single Market – be made conditional to the continuing consent of the European Commission. More precisely, we propose that the exemptions from the three freedoms that define the EU, while envisaged by the Annan Plan, be subject to periodic review by the Commission in the understanding that they will be lifted as soon as the political and economic conditions allow.

4.4.2 Allocation of Tasks: Specific Growth Enhancing Aspects

As already noted in Section 0, the Annan Plan is silent on the distribution of economic policy tasks between the federal states and the two constituent states. Art. 14 simply includes “federal economic and trade policy” in the competences and functions of the Federal Government. No attempt is made to define “federal” economic policy paving the way for disruptive institutional controversies. While in some fields (energy, transports), EU directives will dictate the creation of federal bodies, or at least will provide a fully effective coordination framework, this is not the case in other fields.

For instance, a key federal function is anti trust policy. In the Annan Plan, this is not included among the competences and the functions of the Federal Government and is therefore automatically vested to the constituent states. The revised version of the Annan Plan should include antitrust policy in the competences of the Federal Government.

The problem is quite general. In other key fields such as industry, commerce, consumer protection, professions and professional associations, the Annan Plan only calls upon the constituent states “to strive to coordinate or harmonize their policy and legislation” (Art. 16.3). This is likely to be wholly inadequate, as the European Union experience demonstrates. At the very least, the Federal Government should be in charge of the process of coordination and harmonization, with a view toward the early adoption of the principles of mutual recognition of possibly different regulations. Otherwise, market segmentation would ensue, with severe implications on resource mobility and allocation. It should be emphasized that, as demonstrated by recent OECD research, inadequate regulation in the product and service market can significantly discourage foreign direct investment. Given the urgent need to rely on such a flow both as a way to further modernize the island's economy and to finance a likely current account gap, an effective institutional framework to ensure that product market reforms are well designed will be essential to the success of the Annan Plan.

These observations reinforce the logic behind our proposals presented in Section 2.1.4.

4.4.3 Development Policy

The UCR will need to adopt an ambitious plan to reunite the economies of the two parts of the island (Art. 52). Development policy will play a key role in this respect. It may be argued that coordination in this area is not essential and that institutional competition

may offer a palatable alternative (the principles behind this view are laid out in Section 2.1.1). However, in the case of Cyprus, this may not be optimal in view of the large differences in initial economic conditions between the two constituent states, the consequent need to manage large interregional transfer of resources (the T/C constituent state would receive almost 8 percent of its GDP just from the VAT scheme envisaged in the Annan Plan), the significant externalities of infrastructure investment in a small sized economy, and finally the EU Commission insistence on strengthening administrative and coordination mechanisms with a view to effectively managing the flow of regional and other European funds.

The logic would be to vest the Federal Government with the responsibility of coordinating large infrastructure investments (including the project appraisal phase) and supervising the effective use of European aid in the two constituent states. Both functions should be reunited in a single federal department. However, the limited resources available (see Section 0) make this solution dangerous as it could saddle the Federal Government with expenditures that exceed its revenues. There is no simple way-out: either adequate resources must be provided or we must accept that regional development policies will be inefficient. The worst solution would be to ignore this problem, as it would lead to both budgetary problems and inefficient development policies.

4.5. Regional Policy, Labor Market and Migration

The UCR will inherit large regional inequalities. According to the Planning Bureau income per capita in the T/C constituent state is approximately one third of its value in the G/C constituent state. The objective of political cohesion will dictate a substantial effort toward a reduction of economic inequalities between the two constituent states.

Europe is ripe with attempts to reduce regional inequalities. A major item in the budget of the European Union is regional policy with the declared aim of promoting income and employment convergence among regions and among states. Similarly, Italy has struggled to limit regional inequalities, since at least the end of the WWII. Germany is still facing the economic repercussions of the 1991 reunification. By and large, the success of regional policy in fostering economic convergence has been quite disappointing. Fortunately, there is much to be learned from previous failures and the UCR should make the best possible use of these lessons.

4.5.1 Principles and Previous Experiments

A key success factor for regional policies is the ability of regional economic systems to respond to exogenous shocks. Weak or inadequate institutions hamper the necessary reallocation of productive factors across sectors and regions. Whenever national wage setting imposes a common wage across regions, regional shocks may have prolonged and pervasive consequences, particularly so if factor mobility is limited. With rigid wages, a downward shift in labor demand results in a fall in employment and an increase in unemployment. In the US, regional shocks trigger migration. In Europe, however, labor immobility means that the impact of the shock will be felt over a prolonged period of time.

Unsound regional policies may aggravate the problem (Obstfeld and Peri, 2000): in response to growing and persistent unemployment, policy makers may be tempted to increase the flow of regional aid, either directly through income and unemployment

subsidies, or indirectly through an increase in public sector or public enterprises employment. In turn, large income transfers and subsidized employment further discourage workers from moving to regions where employment opportunities are more plentiful. In this context, even capital mobility is not of much help in reversing regional misfortunes. Relatively high wages and depressed economic conditions typically discourage firms from moving toward such regions. Economic stagnation is the ultimate outcome. By and large, this is the story of Southern Italy and East Germany.

The contrast with other relatively backward areas in Europe is instructive. The stylized fact is that countries converged substantially faster than regions. For instance, Ireland and Portugal, where wages could respond flexibly to changing economic circumstances, achieved fast growth and converged quite rapidly toward the European average. Instead, despite massive income and capital flows over half a century, the income gap between the Mezzogiorno and the Italian average has not changed in any substantial way. If any, it has slightly worsened.

Convergence in both labor market institutions and in wage levels should not come ahead of productivity and income convergence. Trade union pressure toward a rapid equalization of wages is usually strong, but premature. The motivation is usually that, otherwise, competition from workers in relatively poor regions will depress wages in more prosperous areas. The result of such a policy is an increase in unemployment in the backward regions. This evolution, in turn, is met with large income transfers, designed to raise income there, which again discourages migration. Such a strategy is intrinsically faulty on at least three counts: a) it breeds a culture of transfer dependence in the poorer regions that stifles the incentives to invest; b) by discouraging mobility, it leads to even higher unemployment that requires a further flow of income transfers under the guise of unemployment subsidies, wage subsidies and sometimes even, as in the case of Italy, disability pensions; c) it severely undermines the sustainability of fiscal policy. In Germany between 1991 and 1999 public transfers have accounted on average for almost 40 percent of GDP in the East. In Italy, debt accumulation during the 1980s can be largely traced back to the primary deficits associated with large transfers to the South.

Theory and practice, therefore, suggest the following lessons:

- Regional wages should be set according to local labor market conditions.
- Labor mobility should not be discouraged, as it represents a key mechanism for regions to adjust to idiosyncratic shocks.
- Fiscal transfers should be limited in size and designed in a way that does not generate a perverse impact on mobility and economic activity.

4.5.2 The Annan Plan, Convergence and Mobility in the UCR

Art. 52 of the proposed constitution stipulates “federal economic policy shall give special attention to the harmonization of the economies of the constituent states and the eradication of economic inequalities between them within the shortest possible time”. Achieving such an objective is not an easy task and the Annan Plan offers little more than an exhortation in this regard. This is surprising in light of the fact that economic cohesion between the two constituent states will represent a key factor for the long run success of the plan.

We note first that, compared to the European experience, the case of the UCR presents many similarities and some distinctive features. To start with, regional income inequalities while large are not disproportionately so by European standards. Existing estimates are that the T/C GDP per capita stands at approximately one third of that in government controlled territories. The gap is probably smaller if allowance is made for the black economy in the Northern part of the island³³. The revised figure would put Cyprus' regional inequalities at par with Italy's: in the early fifties income per capita in the Mezzogiorno accounted for about 50 per cent of that in the North. This figure had not changed much since. Comparison with Germany is even more telling: in 1991, income per capita in East Germany was only 38 per cent of that in the West.

Next, the scope for financially destabilizing fiscal – and economically distortionary – transfers will be limited. As a member of the EU, the UCR will have to maintain fiscal stability, a requirement that will be strengthened once it fully participates in EMU.

Surprisingly perhaps, from an economic perspective migration is not as contentious as in Italy or Germany. Opposition to immigration comes from the T/C side, which is presumably why the Annan Plan imposes strict limitations to migration flows from the south to the north. But it is the opposite flow, from the T/C to the G/C area, which will be triggered by economic incentives. Indications are that this flow will be met with favor, at least with no hostility, in the receiving region. The G/C constituent state will see it as a way to forge stronger ties between the two communities. In addition, this flow will have positive, at least not negative economic and social effects. High labor mobility fosters convergence and a more rational allocation of resources. Even the traditional short run concerns for wages and unemployment in the receiving region should be quite limited, given that the increase in labor supply induced by migration will be largely offset by a fall in the number of foreign workers currently employed in the Greek Cypriot region.

Finally, the social costs of mobility are likely to be limited in view of the small size of the island and the possibility of resorting to commuting. In the end, therefore, wages should converge quite rapidly, whereas the process of income per capita convergence will be substantially slower given the substantial differences in human and physical capital between the two communities.

Overall, there are good reasons to be optimistic as to the prospects of economic convergence among the two constituent states. Compared to both Southern Italy and East Germany, migration and the attendant flow of remittances are likely to play a substantial role in fostering regional convergence and preventing regional stagnation and unemployment. We have seen in Section 4.2 how, under a fairly plausible scenario, income in the North should rise on impact by almost 12% because of the migration related flow of remittances. Similarly, immigration should not depress wages in the south to the extent that the larger inflow will be offset by a reduction in the stock of foreign workers. The pattern of growth will therefore be markedly different from Mezzogiorno and East Germany where consumption convergence was fostered by large public transfers rather than by remittances, and migration was strongly resisted.

³³ A report on the TC economic web site estimates that the income per capita ratio between the T/C and the Greek Cypriot areas would rise to 50 per cent if account is taken of the informal economy.

Migration related tensions with the receiving region complaining about native job losses because of immigration and the sending region lamenting the fact that immigrants are less well paid than local workers should be relatively subdued given the overwhelming benefits coming from a better integrated labor market.

4.5.3 Proposed Changes

Large scale commuting leads to a completely different set of issues that are not addressed in the Annan Plan.

First, consider income taxes. Typically, commuters pay income taxes only in their region or state of residence with no tax withdrawal at the source. Would this system be applicable to the UCR case? Probably not. In a situation where tax compliance is limited, it may lead to widespread tax evasion. The best solution, then, is tax withdrawal in the region of work. However, a mechanism of tax withdrawal at the source would deprive the T/C constituent state from a significant portion of its tax base. Consequently, some form of compensatory transfers must be agreed upon at the outset³⁴ or through a cooperative agreement between the two states. Most likely, as we note below, transfers will only be partial with some of tax revenues being retained in the region of work.

Second, access to health also raises a number of difficult issues. In section 2.1.4 we have suggested that the federal government should have the competence to develop minimum standards in the health field, with each constituent state retaining the freedom to impose higher standards in its own territory. Under this framework, residents in one constituent state should still retain the right to access health services in the other constituent state if they personally pay for it, or if they are duly authorized by their own constituent state health system, or for emergency reasons. Compensatory payments could be arranged between the two systems. The treatment of commuters may be different, depending on the transfers agreed upon as part of the adoption of source taxation, given that health is financed through general taxation and that commuters will be taxed at the source. Transfers can be net of contributions to the source state's social security, in which case commuters should enjoy access to health services in their region of work; alternatively no contribution is withdrawn from the transfers, and the commuters are treated like the other residents of their state of residence.

Third, the pension system raises similar issues. According to the latest IMF report, the pension system in Cyprus already suffers from significant sustainability problems. In the presence of high labor mobility, the coexistence of different systems in the two constituent states would generate significant distortions. In particular, workers' locational choices may be unduly affected by the different generosity of actuarially unfair pension systems. The alternative of restricting mobility would be even more damaging. Instead, portability arrangements should be considered. At present, pension benefits in the south have two components, a basic pension and a supplementary pension based on lifelong earnings. Migrant workers should have full access to the latter scheme. Workers whose careers span over the two states should be allowed to choose upon retirement whether to draw benefits separately from the two systems or to

³⁴ Such arrangements exist between Switzerland on one side, and Germany and France on the other side, for the metropolitan areas of Basel and Geneva that attract a large number of trans-border commuters.

consolidate them into one stream of payments. With respect to the basic pension component, its access should be restricted, given its actuarially unfair and overly generous nature. Failure to do so may unduly encourage mobility and would place a substantial burden on the pension system in the G/C constituent state.

Finally, there must be an agreement on unemployment benefits. The natural solution is that, in each constituent state, eligibility conditions and benefits are the same for all workers independently of their state of residence. For example, T/C residents working in the G/C constituent state would be treated as G/C workers.

As already stated in Section 2.1.4, in all these areas (social security, pensions, unemployment benefits), the federal government must have the competence to develop and implement a common framework for state policies. This common framework provides the federal government with the competence to develop minimum standards, which must be respected and implemented by the constituent states, leaving each state free to adopt higher standards in its own territory.

4.6. Reconstruction: Will Foreign Aid Fill the Gap?

The Planning Bureau of the Republic of Cyprus estimates an upper bound for the reconstruction cost of € 850 million per year over a 10 year period. Even though they exclude the cost of compensating dispossessed property owners³⁵, at close to 7 per cent of GDP in the UCR, these figures are extremely large. This could put a substantial burden both on public finance and the current account. The Annan Plan calls for a large increase in foreign aid to fill such a gap.

A donor conference is to be conveyed by the European Union. The key question is whether foreign aid would be sufficient to make a substantial contribution to the financial gap of the Annan Plan. There are good reasons to doubt that this may be the case.

A simple regression analysis relating foreign aid to GDP per capita (see Appendix A) shows that a country like Cyprus should on average receive no more than 1 per cent of its GDP in foreign aid. Even though the historical situation is likely to make an important difference, a request for seven times this amount is unlikely to be met with enthusiasm by international donors already hard pressed with other commitments.

A bottom up approach detailing the possible sources of foreign funds also falls severely short of the 7 per cent target. Most of the funds should come from the European Union, under three headings: 1) a special European fund of €206 million over the 2004-2006 to help with the reconstruction of the northern part of the island; 2) the allocation of objective region 2-3 and other funds (around €100 million) to the southern part, 3); in the event that the T/C State is treated as an autonomous NUTS2 region (more on this below) a further allocation of objective 1 region funds in the order of €70 million per annum³⁶. Assuming that the first two items are distributed equally over a three-year

³⁵ Our Property Board proposal (Section 3.4) would ensure that there is no budgetary cost involved in property restitution. The modified proposal, which includes a guarantee for share prices, may involve foreign aid.

³⁶ Based on the assumption that each resident in the T/C state will receive an average of € 350 per annum, i.e. the highest figure of per capita aid for objective 1 regions awarded so far. The amount could be somewhat higher (to around € 80 billion) if existing rules were applied without modifications: in this case

period, the total figure would amount to 1.4% of GDP, well short of the declared objective. There may be minor additions, with help being given to defray the cost of reconstruction in the G/C constituent state, but they are unlikely to change the overall picture except marginally.

Our calculations take for granted that the European Commission will not object that the T/C constituent state be treated as a separate NUTS2 region. Existing regulations require population of a NUTS2 region to be at least 800,000 units. However, exceptions are admitted based on particular geographical, economic, historical, cultural or environmental circumstances, particularly so in the case of islands and remote regions. Clearly, the UCR will have a strong case in arguing for a separate classification of the T/C constituent state. Moreover, the UCR will also have a strong interest in pressing such a case. On the one hand, a united Cyprus will be mostly unlikely to be eligible as a whole for objective 1 status for more than a very short period of time³⁷. Moreover, given that financial arrangements for the programming period 2004-2006 are unlikely to be radically modified, the short run benefits from Objective 1 status for the island as a whole may not be very large. On the other hand, the T/C constituent state will be one of the poorest regions in the enlarged union of 25 countries, and would be likely to maintain its objective 1 status for a prolonged period of time, allowing it to receive a fairly generous amount of EU aid.

Achieving Objective 1 region status for the island as a whole would unquestionably benefit the G/C constituent state, which otherwise would be eligible only for much less generous assistance. Conceivably, this could even result in a higher aggregate flow of resources for the UCR, given the much larger population of the South. However, this would occur only in the short to medium run, with the net benefit depending therefore on the discount rate, and at the detriment of the T/C constituent state, unless compensatory transfers from the G/C constituent state were arranged.

Still, the fact is that even if the quest with the Commission is fully successful and the best option is selected, the amount of foreign aid will fall definitely short of its stated objectives. In our view, it is highly unlikely that in an unsettled international situation and with many urgent demands on foreign donors, the international community may be willing to cover a large part of the financial costs of reunification. Given that most of

the T/C constituent state would receive 4 per cent of the gap relative to EU25 average GDP per head in PPS. Such a gap can be estimated at around 200 per cent of income per capita in the T/C constituent state.

³⁷ According to the new Eurostat estimates, income in the South stands at around 86% of the EU25 PPS average. Unification will bring this value down quite substantially. Indeed, in nominal terms, per capita income in the North is estimated to be equal to only one third that in the South. The true gap however is likely somewhat smaller both because of the larger weight of the underground economy in the North and because the conversion to PPS typically results in smaller income differentials. Assuming quite conservatively a 40% gap, and given that population in the North accounts for 22.2% of the UCR total, it can be easily checked that income per capita in the UCR would be 74.5% of the EU25 average. It would not take much then to cross the 75% threshold, particularly in light of the forthcoming revisions of GDP estimates in the South. Moreover, these simple calculations are most likely to underestimate GDP per head in PPS in the T/C constituent state and hence in the UCR. Rather than “guessing” the income gap between the two constituent states we can try to estimate it by regressing GDP per head in PPS on GDP per capita in \$ (and its square). If we do this for the full sample of 142 countries from the World Bank WDI data base we find that the “true” gap (i.e. the ratio between Northern and Southern GDP per head in PPS) is slightly higher than 50%. In that case, the UCR would not be eligible as an objective 1 region.

the reconstruction projects will have an intrinsic economic value, it will be essential to attract private capital to finance such projects. For this to happen, effective regulation of good, services, capital, and labor markets will be essential. FDI in particular requires effective product market regulations. This further demonstrates the need to amend the Annan Plan in order to achieve an effective coordination for all these fields at the federal level.

5. Monetary and Financial Issues

5.1. Central Banking

5.1.1 Transition

The Annan Plan foresees a 15 month transitional central bank board to be appointed by the two interim Co-Presidents (Art. 44). That board will have three members: at least one Greek Cypriot, at least one Turkish Cypriot, and possibly one foreigner. It foresees temporarily combining the functions of the Board of Directors and Monetary Policy Committee of the Central Bank of Cyprus in this one decision-making body. (It does not envisage a separate Monetary Policy Committee to set interest rates and make day-to-day monetary policy decisions.) It also provides for separate central bank branches in the G/C constituent state and T/C constituent state and fails to define their competencies.

Providing for a transitional board for the first 15 months implies a whole series of changes in central bank governance policy making structures. There would first be a shift from the current structure to a transitional board in 2004, a shift back to reconstituted Board of Directors and Monetary Policy Committee in 2006, and then another change in competencies at the time of euro accession in 2007 or 2008.³⁸ Repeatedly changing the structure of central bank governance and policy making functions would not inspire confidence or stabilize expectations. It could jeopardize much of the confidence and credibility painstakingly acquired by existing monetary institutions. It would make the monetary and fiscal adjustments needed to reconcile reunification with Cyprus' ERM-II requirements and preparations for adopting the euro significantly more difficult to complete. Moreover, central bankers should have the independence and long policy horizons that extended terms in office permit: a 15 month interim board is not obvious consistent with this imperative.

We therefore recommend eliminating the provision in the Annan Plan that envisages an interim central bank board. A superior strategy for integrating the two central banks would be to move immediately to a single central bank with fully-constituted and permanently-appointed Board of Directors (BoD) and Monetary Policy Committee (MPC) immediately. We see no reason why this process of reconstituting both the BoD and the MPC and thereby integrating the Central Bank of Cyprus and the monetary institution in the T/C area cannot be completed in a matter of weeks. There is no reason

³⁸ At that point responsibility for monetary policy decisions will shift to the ESCB. Cyprus will then have one permanent or rotating member (its central bank governor) on the ESCB board. One can imagine the need for an independent policy board to deal with other central-bank-relevant questions, such as prudential supervision and regulation. But the relevant expertise and therefore the constitution of that board would have to be different than the constitution of the MPC.

why the full complement of permanent members of both the BoD and the MPC cannot be agreed on in a few days by the two Interim Co-Presidents. Recall that they will be appointing economic and financial experts, not politicians.³⁹

Still, it will be important for the Central Bank of Cyprus and the monetary institution in the T/C area to promptly form an ad hoc coordinating committee to facilitate information sharing and to address technical issues during this short transition. But it would be mistaken, in our view, to delay the consolidation of the two institutions for 15 months when a permanent president of the federation is selected. This coordinating committee, with no policy making function, should be a short-lived institution that should dissolve itself after a few days or weeks – that is as soon as the new members of the BoD and MPC are in place and central banking functions for the entire island come under a single management.

5.1.2 Governance

It is highly undesirable to combine the functions of the BoD and the MPC, even for an interim period. A BoD, in addition to its administrative duties, sets the broad economic policy guidelines for the central bank and thus must be strongly accountable to the polity. In contrast, day-to-day monetary policy decisions are best delegated to a committee of monetary policy experts. This allows the central bank to be strongly accountable for its strategies but independent of politics when choosing its tactics. For this reason, combining the two functions in one body is undesirable.

Monetary policy is too blunt an instrument for dealing with the problems of a specific geographical subregion within a small economy like Cyprus (the T/C zone or the G/C zone, for example). Given this, it would be counterproductive to structure the central bank's decision making committees so that two members are identified as representatives of their constituent states and are therefore encouraged to see themselves as advocates of policies tailored to the particular needs of their region.⁴⁰

Moreover, the central bank will have the responsibility of ensuring that the currency remains within its ERM fluctuation band. This is required by the *acquis communautaire*. The central bank will also have to ensure that inflation eventually

³⁹ Full integration of staff is likely to take much longer. This is not a reason for delaying the creation of the new central bank, however. Even if all positions cannot be filled immediately, the new central bank only needs to make sure that it has the means to immediately carry out three tasks : refinancing commercial banks, overseeing the monetary and exchange markets, and supervising the banking system. The first two tasks require a very small staff. We discuss the latter at great length in Section 0; here suffice it to note that emergency action may be required very early on, and it would highly dangerous to rely on the monetary authorities of the T/C area whose incentives may not be aligned with those of the Central Bank of Cyprus. The Annan Plan's requirement that at least one third of staff hails from each constituent state may be problematic in some of these areas. It should not block the urgent setting up of the central bank. We recommend that this clause concerning the composition of staff be deferred for a period of, say, 15 months.

⁴⁰ This sort of motivation lay behind the original structure of the Federal Reserve Board, which gave considerable power to the presidents of the regional reserve banks. This arrangement distorted monetary management in the Great Depression and was eliminated by the reorganization of the Federal Reserve System in 1935. Similarly, the decision to include the national central bank presidents of all euro area member states, again in order to give voice to the constituent states, along with the members of the Executive Board on the ECB decision making council is widely regarded to have been a mistake.

meets the requirement for admission to the euro area. Inflation will be defined as average inflation throughout the UCR, paying at most subsidiary concern to whether inflation is a little higher in the T/C constituent state or a little lower in the G/C constituent state. The central bank will also have the task of bringing together two disparate commercial banking systems, one of which is likely to be in precarious condition (see Section 5.4.1).

An additional reason why small committees – for example of three members, as stipulated in the Annan Plan – is undesirable is that it would be easy for outsiders to infer individual votes and thus bring to bear political pressure on what should be an independent body. The independence of the central bank is now generally recognized as an indispensable attribute; this applies with particular force in Cyprus in view of its history of ethnic conflicts.

The exact number of members of the BoD and of the MPC does not matter provided that it is large enough to insure confidentiality of the positions taken by each individual. It should not be too large either, to allow for the frank and thorough exchange of views. Nor is there any compelling reason for both bodies to be of the exact same size.

We therefore recommend that the Annan Plan be amended to provide for the appointment of both a Board of Directors and a Monetary Policy Committee. Both bodies must be independent, not least in order to meet the EU membership conditions. A simple solution would be for both bodies to include eight members, the size of the current MPC of the Central Bank of Cyprus, which seems to have worked well and is in line with international practice. The Governor and Vice-Governor would sit on both bodies and the Governor could be given the power to break tie votes.

Constituting an eight-member BoD and an eight-member MPC would imply appointing to each body six additional members along with the Governor and Vice-Governor. We have no strong views about how many of these six should come from the T/C constituent state and how many should come from the G/C state, although it is obviously desirable, not least for informational reasons, that both parts of the island be adequately represented. The important point is that ethnicity should be at best a subsidiary concern. The suggestion of the Central Bank of Cyprus to appoint at least two of the additional six members from each of the constituent states strikes us as broadly sensible. But there should be agreement that any candidates nominated on this basis must meet standards of expertise and be acceptable on these grounds to both sides.⁴¹

Our recommendation stands in contrast to the Annan Plan, which foresees a three-member BoD that would temporarily assume all management responsibilities. If it is nevertheless deemed essential to appoint a three-member committee, one possibility

⁴¹ If evaluating candidates according to expertise is regarded as too politically delicate, that evaluation could be delegated to a committee of outside experts (say, a three person committee comprised of high-level officials of the IMF, the ECB, and the Bank of England). A more radical solution would be to delegate the entire process of nomination, evaluation and selection to this outside committee of experts. To be clear, we see this more radical approach as worth pursuing only if the constituent states cannot agree on the first best approach, which is for the Co-Presidents to nominate the members of the two bodies on the basis of expertise rather than ethnicity, subject to a mild distributional requirement.

would be to establish a Governing Board comprised of the Governor, the Vice-Governor and an Assistant Governor. This Board would be vested with administrative functions, especially in the area of personnel management. The Role of the Supreme Court

5.1.3 The Role of the Supreme Court

If members of the BoD and MPC are appointed on the basis of expertise rather than ethnicity and simple majority voting rules are used for decision making (as envisaged in the Annan Plan, Art 36-6), there is no reason to expect deadlocks on significant central bank decisions. In the unlikely event that such deadlocks occur, they could be broken in the usual fashion by the central bank governor. Thus, the provision in the Annan Plan that deadlocks shall be broken by an ad interim decision of the Supreme Court would be rendered superfluous. We strongly recommend eliminating this provision, since retaining it might cast doubt on the independence of the central bank and damage its credibility. This provision of the Annan Plan is presumably intended for addressing the danger of deadlocks in other federal institutions where political independence is not an issue. Given the simple and explicit voting rules governing central bank decision making and the importance of central bank independence, the central bank should be exempted from this article.

5.1.4 Separate Central Bank Branches?

The possibility of separate central bank branches in the two constituent states, as envisaged by the Annan Plan (Art 32-7), would create more problems than it solves. Separate branches have no monetary policy autonomy in a unified monetary zone; their existence would only send mixed messages about the stance of policy and threaten credibility. The historical justification for separate branches, that these were needed to facilitate intervention in separate local money markets, no longer exists now that information technology has seamlessly integrated local markets via the interbank market. Allowing separate branches autonomy over the decision of, inter alia, what commercial bank assets to discount raises the potential for dangerous free rider problems; such decisions should be vested with the central bank, not individual branches.

The main remaining justification for separate branches is that these function as sources of information to the central bank board about local economic and financial conditions.⁴² But this rationale is weak in an economically compact economy like Cyprus where site visits can be conducted as day trips.⁴³

5.2. Currencies

The theory of optimum currency areas points to the desirability of a single currency for an economy like Cyprus.⁴⁴ The provisions of the Annan Plan potentially allowing the

⁴² For example, this was long the justification for regional reserve banks in the United States.

⁴³ If branches are nonetheless established, contrary to our recommendations, strict central control is essential. The responsibilities and prerogatives of branch managers should be clearly specified and constrained, and it should be made clear that these individuals do not have any policy autonomy.

⁴⁴ The fact that Cyprus aspires to admission to the euro area at an early date, rightly in our view, strengthens this imperative still further. We return to this below.

federal authorities to accept bookkeeping statements expressed in euros when determining private entities' tax obligations therefore strikes us as introducing unnecessary complexity into financial calculations. But bookkeeping in euros does not amount to the introduction of a parallel currency. Even if it encourages some use of the euro in day-to-day transactions, we do not see this as posing a significant threat to the central bank's monetary control.

5.2.1 Book-keeping in Euros

The Annan Plan states that the federal authorities shall accept book-keeping by private individuals and legal persons in euros. One rationale is that this is a device to enable residents of the T/C constituent state for whom use of the Cyprus pound is regarded as politically problematic to use euros for tax purposes.

The Plan does not speak to the question of whether the euro should also be regarded as legal tender and specifically whether private individuals and legal entities would be entitled to make tax payments in euros. It is important to be clear that this is undesirable on economic grounds. Multiple currencies in a relatively small economy have no economic advantage and will only slow the integration of the two economic zones. We are not aware of another federal state with several currencies that are simultaneously recognized as legal tender.

Even if the CYP is the sole legal tender, the euro may circulate in the T/C constituent state if residents will feel happier using euros rather than pounds for non-economic reasons. Obliging the federal government to accept bookkeeping for tax purposes in euros may inadvertently encourage this practice. Concern has been voiced that official use of the euro would run counter to the position of the European Commission and of the ECB, which have made clear that they would not welcome unilateral euroization by member states not yet formally accepted for membership in the euro area. Of course, use of the euro in one part of the UCR would not constitute a case of euroization, much less of official euroization, which implies the unilateral choice of a conversion rate, which is what concerns the Commission and the ECB. At any rate, one hopes that the Commission and the ECB would take an accommodating position on this question and recognize that the provision in question was a consequence of the Annan Plan and was not adopted in order to foster unilateral euroization.⁴⁵ At the same time, the situation would be easier if this provision was simply revised out of the Annan Plan.

If residents of the T/C constituent state want to use euros, there is little that the authorities can do to prevent them. As of 1 May 2004, all exchange controls will be abolished (as Cyprus accepts the relevant *acquis communautaire*). We do not think that the authorities should be overly worried if residents of the T/C constituent state want to transact some of their business in euros. Residents of this area already do so to some extent. Allowing bookkeeping to be expressed in euros will not significantly change their incentives.⁴⁶

⁴⁵ The EU Commission has been invited to act as advisor during the negotiations. It would be wise to also consult the ECB on monetary issues.

⁴⁶ Accepting bookkeeping in euros does not mean that the government must accept actual tax payments in euros. But even if it does – even if the government receives taxes in euros while its expenditures are denominated in Cyprus pounds-- it will bear only limited exchange risk. The T/C constituent state, whose

Assuming that the new central bank continues to follow sound and stable policies, the fact that there exists some opportunity for currency substitution will not substantially weaken monetary control. It will not prevent the central bank from targeting a relatively stable exchange rate and low and stable inflation.⁴⁷ Limited amounts of currency substitution need not interfere with the country's transition to the euro, assuming that these preconditions regarding central bank policy continue to be met. On the other hand, the idea that the euro should somehow be made the *de jure* currency of the T/C constituent state would damage Cyprus' prospects for qualifying for the euro area, since official euroization is ruled out as a transition strategy by the Commission, and since the latter would undoubtedly look dimly on a candidate country with two official currencies.

5.2.2 Is There a Need to Redenominate Financial Contracts?

This discussion leads to the question of what should be done about contracts written in lira if the CYP is the only officially recognized form of legal tender subsequent to unification. This has been a thorny problem in countries abruptly bringing down high inflations, in which case the level of interest rates changes sharply. But in the present case there will be no significant change in the rate of inflation of Turkish lira prices or Turkish lira interest rates, these being determined by events in Turkey. Real interest rates in Turkish lira may be higher than real interest rates in CYP, but there will be no *change* in Turkish lira real interest rates as a result of unification, and therefore no obvious financial distress creating a need to rewrite debt contracts by *force majeure*.

Still, if the CYP is the only legal tender in post-Annan Plan Cyprus, then residents with debts in lira and current incomes in CYP will become saddled with a risky currency mismatch until those debts mature. They will have an incentive to pre-pay those debts in order to convert them into CYP. But there may be fixed costs of doing so, also as explained above. There may therefore be a case for the federal government to subsidize the costs of such conversions.

5.3. Monetary and Exchange Rate Policies

The government and central bank of the Republic of Cyprus are right to regard early adoption of the euro as a priority. A national currency is of little value to a country as small and open as Cyprus and one so tightly linked to its potential monetary union

residents might be inclined to pay in euros, would provide only some 10 per cent of total tax revenues. Moreover, it is hard to imagine a scenario in which the CYP was allowed to fluctuate by more than a few percentage points against the euro. It might be argued that the fact that certain tax revenues will be denominated in euro will give the government an incentive to push for depreciation of the Cyprus pound to help address deficit problems. But, again, this incentive will be slight, since only a small fraction of revenues will be denominated in euros, and keeping the currency stable in order to qualify for membership in the euro area will be a priority of both the government and the central bank. More generally, there is little danger of self-fulfilling crises due to destabilizing balance sheet effects. The present case where assets (revenues) are denominated in foreign currency but liabilities (spending obligations) are denominated in the local currency is the opposite of the case where expectations of depreciation can be destabilizing.

⁴⁷ After all, opportunities for currency substitution exist already. There is also currency substitution in Eastern Europe and Latin America, and this has not interfered significantly with monetary control, except in instances where central bank policy was already unstable and the incentive to substitute became very strong.

partners. Monetary management will be more difficult and monetary and financial stability will be more tenuous if Cyprus stays out of the euro area for an extended period.⁴⁸ In addition, once Cyprus is a member of the euro area, the political problems that potentially complicate the question of currency issuance (Section 5.2) will become moot.

The current strategy of the government and the central bank is to maintain the currency with +/- 15 per cent bands officially and narrower (2.25 per cent) bands de facto, to enter the ERM-II early, and to remain there for as short a time as possible before adopting the euro. Cyprus' record of price stability and its fiscal position suggest that this is a consistent strategy.

The question is how this strategy should be modified to accommodate the effects of the Annan Plan. Our recommendation would be for no immediate modification but for the formulation of contingency plans.

While early adoption of the euro will not become less desirable as a result of the creation of a federal state, it could become less feasible. The main challenge will be budgetary. If Cyprus experiences a period of large budget deficits as a result of reunification, the markets may begin to doubt its ability to qualify for the euro at an early date (budget deficits of less than 3 percent of GDP being one of the reference values in the protocol to the Maastricht Treaty governing admission to the euro area). This may create pressure in the foreign exchange market. The authorities may then be tempted to confirm their commitment to early adoption of the single currency. They may attempt to signal their commitment by reiterating their intention to hold the CYP within the narrow 2.25 per cent bands of the ERM-II.

Attempting to confine the exchange rate to a narrow band may be a risky strategy under uncertain circumstances like those that will inevitably follow implementation of the Annan Plan. The federal government may not be in the position to engineer in short order a dramatic fiscal adjustment of the sort needed to keep the currency from moving from more than 2.25 per cent against the euro. Trying to hold the exchange rate within +/- 2.25 per cent bands when the fiscal and political situations are volatile could imply very sharp interest rate swings that could be destabilizing for the economy.

It would be prudent to acknowledge this reality by announcing that the exchange rate will also be allowed absorb a portion of the resulting market pressure. In other words, it would be better for the central bank to fully exploit the +/- 15 per cent bands of the ERM-II. Among other things, wider bands would create the prospect of significant fluctuations in the exchange rate in both directions. The resulting two-way bets would prevent currency speculators from all lining up on one side of the market. The central bank will still have a mandate to ensure price stability, and it should take whatever steps are needed to signal to the markets the priority it attaches to its pursuit. But this need not mean that it must prevent the exchange rate from moving by more than 2.25 per cent. While the price level is a slowly moving variable, the exchange rate is not. With a large budget deficit, a low inflation target and a somewhat more flexible exchange rate would be the best way of reconciling price stability with economic stability.

⁴⁸ The potential monetary instability in accessing countries is analyzed in Begg et al. (2003).

If budget deficits are still limited or are covered by foreign aid, the government and central bank may still be able to proceed with their early-euro-adoption strategy. But if there is the prospect of significant budget deficits for some time, it might then be necessary to delay plans for euro adoption. A substantial period of years might have to pass before Cyprus was deemed ready for entry into the euro area. The full flexibility afforded by the +/- 15 per cent bands of the ERM-II might then be required.⁴⁹

5.4. Restructuring the Banking System

5.4.1 The Banking System in the Turkish-Controlled Area

With the adoption of the Annan Plan, Cyprus will inherit the banking system of the T/C area.

That this issue has been inadequately analyzed to date is understandable: data on the banking system of the North are thin on the ground. This fact also hampers our ability to proffer advice for dealing with the problem.

- The most recent data on the website of the monetary institution in the T/C area are for 1994. At this point, the liabilities of the banks were divided roughly evenly between lira and foreign currency, and a significant share of total deposits was time deposits of more than one year. This website mentions the existence of 24 commercial banks.⁵⁰

- A 1998 publication of the Turkish Industrialists and Businessmen's Association entitled *The Economy of the Republic of Northern Cyprus, Problems and proposals for Solutions 1998* mentions the existence of 37 banks (half of which were founded after 1993).⁵¹ It reports that the resources of the banking system were 150 per cent of GDP, some two thirds of which were acquired as deposits. It provides data showing that the

⁴⁹ In the worst-case scenario, it might be hard to defend even the wide bands of the ERM-II. Chronic budget deficits and exchange rate bands are difficult to wed with one another, and recent experience has repeatedly shown the dangers of using an exchange rate commitment as a device to force fiscal consolidation. To address this dilemma, the government and central bank should ask the European Union for an exceptional derogation from their ERM-II obligation. This possibility should be negotiated quietly and far in advance. Hopefully the EU would understand that the budget deficit problem was not a sign of fiscal laxity but a circumstance beyond the government's control and grant the request. For this to happen, Cyprus would have to ask. This is a risky endeavor, since requesting an exceptional derogation would alert the markets to the authorities' limited commitment to the ERM-II. But the alternative, of attempting to peg the CYP within the bands of the ERM-II in the face of chronic budget deficits, would require serial realignments, which the markets would learn to anticipate, with destabilizing consequences. Not asking, therefore, would be worse. If as a result the central bank floats the exchange rate, it will have to put in place an alternative monetary anchor. The obvious alternative is inflation targeting. The central bank should articulate an inflation target consistent with the fiscal position: budget deficits of 5 per cent of GDP for a period of years might be consistent with an inflation target of 5 per cent, plus or minus two percentage points. The central bank could announce an inflation target and make a discussion of how it intends to attain that target, together with a retrospective on reasons why the target may have been missed in the past, the centerpiece of an annual "Inflation Report" issued publicly. This is a proven way of anchoring inflationary expectations in a situation where attempting to peg the exchange rate is undesirable.

⁵⁰ And, in addition, 25 offshore banks licensed under the Off-Shore Banking Law.

⁵¹ And 24 offshore banks.

bulk of loans are trade credits and personal loans (mortgages, etc.). Very little is allocated to production, small and medium enterprises, construction, tourism, etc.

- A 2002 study by Guzin Bayar, “The State of the Economy of the Turkish Republic of Northern Cyprus,” cites the existence of 27 commercial banks.⁵² Bayar emphasizes the decline in banks’ own resources between 1992 and 1999. Deposits increased from 42 to 58 per cent of total resources, whereas own resources – capital and reserves – declined from 23 to 4 percent.⁵³ Bayar notes the passage of a new banking law in February 2000 increasing capital requirements but provides no indication of whether those new requirements are being met.

- A January 2003 communication by Constantinos Lordos mentions the existence of 100 banks.

- Statistics published in the annual report of the monetary institution in the T/C area enumerate deposits of the consolidated banking system of US \$785 million at the end of 2001. Applying a five per cent per annum growth rate would raise these to close to US \$900 million as of the end of 2003. Capital and reserves as of that date are reported as amounting to some 6 per cent of the total liabilities of the consolidated banking system, although overdue debts alone, assuming that these are non-performing, more than wipe out listed capital.

- Yet another way of estimating the size of the banking system of the T/C area is to regress bank assets on GDP per capita for all countries for which *International Financial Statistics* provides the requisite information (in 1999). The resulting estimates (in see Appendix B) suggest that bank credit to the private sector for an economy with the per capita income of the T/C area in 1999 would have been in the order of \$3,000 per capita; total bank credit would have been \$4,000 per capita. For an economy with a population of 220,000, this implies a banking system with assets slightly under \$1 billion.⁵⁴

Thus, if we take the GNP of the T/C area as US \$1 billion, it is reasonable to assume (applying the ratios reported by the Turkish Industrialists and Businessmen’s Association) that total deposit liabilities are US \$1 billion and total loans and investments are US \$1.5 billion. Reasonable capital for a banking system of this size would be US \$150 million assuming an adequacy ratio of 10 per cent, slightly in excess of the Basle minimum. Unfortunately, actual capital appears to be close to zero.⁵⁵

⁵² And 35 offshore banks.

⁵³ Remaining resources presumably take the form of bank borrowing abroad, tax duty and charges payable, and bills and remittances payable.

⁵⁴ The Turkish-controlled area’s banking system may be somewhat larger due to deposits by foreigners, including part-time residents. Readers will want to treat these regression estimates extremely cautiously, given the dispersion evident at lower per capita incomes and high-income countries explain the fact that most of the variation captured in the regression equation.

⁵⁵ As noted by Bayar (2002).

5.4.2 Effects of the Annan Plan on Banks in the North

That many banks in the Turkish-controlled area are severely under-capitalized as a result of bad lending and investment practices in the past means that the economic value of their assets falls short of or only marginally exceeds the face value of their deposits. Their net economic value is negative or close to zero. Indeed, it is not clear what keeps these institutions operating today, probably a combination of a lack of transparency and government subsidies allowing them to meet their current payment obligations.

Integration into the new Cypriot monetary and banking system will have two implications for these banks. First, they will experience a severe tightening of regulatory as this is brought up to EU standards as a result of the *acquis communautaire*. The book values of their assets will have to be corrected by writing off bad loans and investments. As a result, their true financial condition will become visible to depositors. Second, and as a result, the financial liability to the authorities supporting these banks will threaten to grow; consequently those authorities may hesitate to continue extending subsidies to banks in the North. In such an event, the banks will no longer be able to meet current payments.

These implications, which will become evident at the latest upon the adoption of the Annan Plan, will give depositors a strong incentive to withdraw their deposits. Realizing that banks do not have sufficient cash reserves to pay out all deposits, each depositor has a strong reason to be first in line. As all depositors try to be first, the result will be a run on the banks.

The underlying problem obviously cannot be made to disappear immediately or without cost. Someone has to bear the costs of the bad lending and poor investment practices of the past. There is an obvious logic that these costs should be paid by those “responsible for those practices” – but not if attempts to implement this principle leads to a banking panic with the capacity of threatening the financial stability of the entire island. If the run results in bankruptcy of a bank, the ensuing emergency liquidation of all its assets (not only non-performing but also well-performing ones) may force borrowers to interrupt economically viable and efficient investment projects. Distress is likely to spread infectiously among banks, which are linked together by the interbank market and assumed to have similar characteristics by their creditors. The result would be a loss of wealth to the economy as a whole. Such spill-over effects may cause runs on healthy banks, possibly even including conceivably even healthy banks in the rest of Cyprus. For this reason, the G/C authorities must be concerned about the problem. To assume that it can be left to the attention of the TC authorities could be a mistake with very serious negative economic and political consequences.

5.4.3 Policy Responses

Addressing the banking problem in the North thus involves two different issues. The first is that the loss of wealth implied by the consequences of past lending and investment practices must be allocated among bank owners, depositors, borrowers, and the state. This could be done in various ways. At one extreme, the government could simply close banks with zero or negative capital and let their borrowers walk away from their debts. This would put most of the burden on depositors and bank owners. The second extreme would be to restructure bank loans and put a larger debt burden on the borrowers, thereby attempting to let bank owners and depositors off the hook. This approach, which was taken by several transition countries in the early 1990s, would

probably make many investment projects non-viable, resulting in bankruptcies in the non-bank sector; it might not strengthen the position of the banking system in the end. The third extreme would have the government re-capitalize the banks by putting in the necessary new money. This would leave taxpayers to foot the bill.

The issue is, obviously, a distributional one. In principle, it should be solved internally in the Turkish-controlled zone. Nevertheless, the G/C authorities may decide that a situation in which the T/C authorities simply close down all banks is undesirable, because T/C citizens would blame the loss of their savings on the new federal state, thereby diminishing its political acceptance. In view of this, they may want to shoulder part of the financial burden by offering financial assistance for re-capitalizing the T/C banks, although this clearly is a political decision.

The second issue is how to avert a bank run. The classical device is for the government to impose a bank holiday. When the banks are suspended, runs are impossible; at that point, prompt corrective action can be taken (the authorities can take over the troubled institutions and oversee their restructuring and recapitalization).

In the current context, this can only be done by the current T/C authorities, because, as the day of signing the Annan Plan approaches, the likelihood of bank runs increases, reaching a maximum value when the agreement to integrate the T/C banks into a common monetary and banking system has been signed. But until this agreement is actually signed, a federal authority that could mandate a bank holiday does not exist.

The alternative way of averting a run is to extend a blanket guarantee to all deposits. If this policy is regarded credible by the T/C depositors, bank runs will not occur. But providing a guarantee without regulatory intervention creates problems of moral hazard; it will encourage asset stripping by incumbent management. It is important therefore that the guarantee be coupled with prompt intervention.

The promise of re-capitalizing northern banks with funds provided by the G/C constituent state or the federal government raises another problem. Anticipating a rescue operation, bank managers in the North will have an incentive to strip their banks of their remaining valuable assets in order to increase the financial contribution of the South. This implies that an early announcement of financial support from the South reduces the risk of a bank run but increases the risk of asset-stripping.

Such asset-stripping can only be avoided by placing the Northern banks under the firm supervision of an outside agency. This leads to the conclusion that if the G/C authorities wish to be involved in the solution of the problem, then a cooperative approach needs to be agreed to even before the Annan Plan is signed.

Re-capitalization of the Northern banks could follow the approach adopted by the German authorities first in 1948 and again in 1990. In both instances, the German government issued non-tradable treasury bills with very low coupons (say, one percent) to banks. These treasury bills could be used as collateral for borrowing from the central bank to assure sufficient cash reserves. The central bank would use its future profits to redeem these treasury bills from the government. Obviously, this approach requires a careful evaluation of the banks' assets to determine the size of the value gap between assets and liabilities. Again, this seems possible only with cooperation between the T/C and G/C authorities.

5.4.4 The Annan Plan Provisions

Attachment 6, Part I, Section 1 of the Annan Plan seems designed to deal with the risk of bank runs in the T/C area. This passage, unfortunately, is very hard to understand as written. Two interpretations seem possible:

- The first interpretation is that the Bank of Turkey will provide “upon request” a blanket guarantee for all deposits in T/C banks for the first three months following the entry into force of the Foundation Agreement. The expression “upon request” is itself ambiguous and seems to suggest that this would correspond to a bank run, i.e. to a situation where T/C banks would call the Bank of Turkey to come to their rescue. This would amount to a blanket guarantee of deposits.⁵⁶ Such a guarantee is one of the solutions discussed in the previous section. It would stabilize the situation. Under this interpretation, the costs of liquidating some or all the deposits in the T/C banking system (estimated in Section 5.4.1 to be as much as US \$1 billion) would be borne by the Bank of Turkey; they would be paid out of the bank’s foreign exchange reserves. The T/C banks would obtain CYPs to pay out to their depositors from the Central Bank of Cyprus which in turn would be compensated in euros by the Bank of Turkey.⁵⁷
- The second interpretation is that the T/C banks would only be able to convert their own cash reserves in lira into CYPs, following the same procedure as before. This would still leave the commercial banks vulnerable to a bank run. Of course the cost to the Bank of Turkey would be a fraction of the one corresponding to the first interpretation.

Because a blanket deposit guarantee is commonplace in such circumstances and because the second interpretation would not provide effective protection to the banking system, we assume that it is the first interpretation that the drafters of the Annan Plan had in mind. That is, during the first three months if a resident wants to withdraw all his lira deposits from a T/C bank and turn them into CYP he can do so at the prevailing exchange rate. The same applies to cash, up to the limit specified in Attachment 6.⁵⁸

5.4.5 The need for a permanent blanket deposit guarantee

What makes this guarantee unusual and dangerous is that it is temporary. Once it is withdrawn, the T/C banks will again be in the precarious situation described in Section 0, assuming that they still have deposits on hand. This obviously invites a run prior to

⁵⁶ The current wording “upon request” in the Annan Plan is ambiguous. It does not make clear who is entitled to request the intervention of the Bank of Turkey. If the Central Bank of Cyprus is entitled, it is clearly in its interest to do so during the three month window; this fully recapitalizes the T/C banking system that it will inherit at a cost entirely borne by the Bank of Turkey.

⁵⁷ Technically, the monetary base of Turkey would contract by the volume of bank deposits in the T/C area. The monetary base of the Central Bank of Cyprus would increase by the same amount. The latest data indicate that the Turkish monetary base is of US\$ 36 billion; the contraction would amount to close to 6% of the base. In the case of the Republic of Cyprus, the monetary base would increase by some 32%, which would require partially offsetting liquidity absorption measures. The Turkish reserves would fall by almost 3% while those of the Central Bank of Cyprus would rise by about 30%.

⁵⁸ We note that this interpretation of the Annan Plan reflects an acknowledgment that the T/C banks will not have the lira on hand needed to pay out cash to everyone who may want to withdraw it, and given their poor financial condition, that they will not be able to raise the necessary cash.

the expiration of the guarantee. Depositors will clearly want to get their deposits out of T/C banks, into CYP, and into sound G/C banks before the chance is lost.

It is critically important therefore that the guarantee should remain in place beyond the first three months. This must be made clear at the outset. Banks may be closed at some point, but the guarantee must stand indefinitely. This in turn calls for an explicit agreement concerning who will pay for the guarantee if it is not provided by the Bank of Turkey after the first three months.

In principle, the cost of the guarantee can be borne by the Bank of Turkey, by the T/C constituent state, by the T/C and G/C constituent states jointly, or by the Central Bank of Cyprus – hopefully a merged central bank by this point.⁵⁹ The usual procedure is for the central bank to advance the funds and to be reimbursed subsequently by the fiscal authorities. We described in Section 5.4.3 how this could be done most smoothly. But this requires that the guarantee be permanent and that the costs of providing it be decided *ex ante*. The choice of who is the ultimate guarantor is financial and political and ought to be explicitly and unambiguously specified in the revised Annan Plan.

5.4.6 Agreement on the Clean-Up Operation

The cost of providing the blanket guarantee might cost the full US\$ 1 billion of deposits. Some portion of these costs may be recovered subsequently once the remaining performing assets of the T/C banks are liquidated or sold off to solvent and recapitalized T/C (and G/C) banks.

Assume that depositors wish to withdraw their entire US \$1 billion from banks in the Turkish Cypriot zone and that the \$1.5 billion worth of loans and investments of the banks (valued at book) are only worth, say, US \$750 million when finally securitized or sold off to other banks. Assume, as would be appropriate, that other claims (capital, credits from foreign banks, etc.) are written off. Then the resolution cost at the end of the day is US \$250 million (25 per cent of the GDP of the Turkish Cypriot zone and perhaps 3.5 per cent of the GDP of Cyprus as a whole).⁶⁰

If the owners of insolvent banks see their capital written off, as it should be, then there is no issue of moral hazard. Because post-unification Cyprus will have one integrated

⁵⁹ This is one reason why the new central bank must be established and operational very early on.

⁶⁰ The preceding estimates of the costs of bank recapitalization are probably upper bounds. Not all debts are bad. Some banks may be solvent. Not all deposits will be withdrawn. Conceivably, the loan and investment portfolio is worth more than US \$750 million. Hoggarth, Reis and Saporta (2001) provide a compendium of estimates of the fiscal costs of resolving banking crises: average resolution costs are 5 per cent of GDP when a banking crisis is not accompanied by a currency crisis, but if the currency is destabilized as well costs can range upward to 25 per cent of GDP. International benchmarks like these suggest a resolution cost of between US \$50 million and US \$250 million. There is reason to hope that the lower end of this spectrum is more applicable in the present case (although US \$50 million may be overly optimistic). There is no reason that the banking problems of the T/C constituent state should precipitate a currency crisis if the parties agree, as recommended above, on a single currency for the island. In this case, US \$750 million of bad loans would be at most 10 per cent of the GDP (two federal states combined). It would be 2.5 per cent of the assets of the two domestic banking sectors combined.⁶⁰ Bad loan ratios for other banking-crisis economies have been much higher. Even higher ratios have not precipitated a currency crisis. But whether or not currency stability was threatened would still depend, of course, on the speed and resolve with which these banking sector problems were addressed.

banking system supervised and regulated by the central bank, having the federal government rather than the T/C constituent state pay for these costs will not raise issues of incentive compatibility.

Recapitalization at an acceptable cost can thus be achieved, but the Annan Plan must fully specify the required conditions:

- Agreement on a permanent deposit guarantee whose costs will be shared among the cooperating parties.
- Agreement that there will be no request to exercise the guarantee unless a crisis makes it unavoidable.
- Agreement that there will be prompt corrective action in the event of a banking crisis. In order for lender-of-last resort operations to be conducted efficiently and on time, the following must be agreed upon:
 - All T/C bank balance sheets should be inspected by internationally qualified bank supervisors before the entry into force of the Annan plan.
 - The procedure to mobilize quality assets in failing banks must be precisely laid out and carried under full transparency, possibly involving foreign technical assistance.
 - All parties must stand ready to intervene before the entry into force of the Annan plan.
 - There must be a precise and complete agreement on who will ultimately bear the costs of the operation.
 - All banks must be audited, possibly by an internationally reputed firm, as soon as the Annan Plan is accepted, even before its entry into force. The two monetary authorities must form a coordinating committee to that effect.

5.4.7 Currency Conversion

We do not see as compelling any of the rationales that have been offered for limiting the conversion of lira and lira-denominated bank deposits into Cyprus pounds. Such limits were imposed in Germany at the time of reunification because East German deposits had no real value; there was an immense monetary overhang; and many bank deposits were ill gotten gains. In contrast, the Turkish Cypriot Zone is a market economy, if an imperfect one. Prices clear markets. There is no monetary overhang. There is no obvious reason for limiting the value of the balances that residents of the zone can convert to pounds or move to banks in the South if they wish.

One oft-cited concern is money laundering. In order to avoid taxes in their home countries Turkish citizens or others may have moved some of the deposits in T/C banks. Limiting the ability of such individuals to evade taxes still further by preventing them from now transferring their assets to banks in the Republic of Cyprus may be doing a favor to the Turkish authorities, who want to limit tax avoidance. But this would have no first-order effects on the economy of Cyprus. Limiting the convertibility into pounds of bank deposits in the North would only run the risk of damaging confidence. We do

not see the concern with money laundering, EU and IMF strictures aside, as a compelling reason for taking this risky step.

5.4.8 Refinancing Operations

In order to preserve the integrity of the central bank, there should be a list of securities admissible by the central bank in its refinancing operations.⁶¹ This list should be announced before the federal central bank starts operating and reviewed at regular intervals.

⁶¹ This is similar to the situation in the Eurosystem. The difference is that the Eurosystem has announced two tiers of admissible papers, those admissible by the system as a whole and those admissible only by the respective national central banks. This distinction does not apply to the case of Cyprus.

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TECHNICAL APPENDICES

Appendix A. Econometric Estimates of Growth Potential

A1. The Growth Equation

To assess the growth prospects of Cyprus's economy, following Easterly (2001), we have estimated a decadal growth equation for a panel of countries. The use of decadal observations is a compromise between the needs of fully using available information and of minimizing the noise present in short frequency data.

The explanatory variables are:

Secondary school enrolment, as a measure of investment in human capital. We do not add to the list of repressors primary school enrolment, as it no longer exhibits sufficient variability in a cross section context. Even in a (short) panel, though, its explanatory power is quite weak.

The number of telephones lines per inhabitant as a measure of physical capital. This is a very approximate measure of the capital stock. It is however positively correlated with it (see Easterly, 2001) and is available for a fairly large sample of countries, including the occupied territories in Cyprus, making it possible therefore to assess growth prospects for this area as well. A further advantage is that telephone lines data are significantly more reliable than those on capital stock.

Two indicators of the quality of the policy stance: the real exchange rate, as a measure of exchange rate misalignment, and the level of inflation, as a further measure of macroeconomic instability. The Dollar Easterly indicator – an alternative composite measure of policy - is available only for substantially smaller sample.

Initial GDP per capita, to allow for convergence effects.

Time effects, to assess whether the eighties and the nineties differ in any significant way from the seventies, the first decade in our sample.

Regional variables, to verify whether some geographic regions tend to behave in a significantly different way from the rest of the sample.

We have data for 96 countries over three decades, the seventies, the eighties, and the nineties. We exclude those observations for which data are not available. Our panel is therefore unbalanced and consists in the end of 174 observations. We use a random effect estimator. Fixed effect estimations did not differ substantially but led to a large reduction in the degrees of freedom and consequently to a loss in efficiency.

The results are shown in Table A1. The negative coefficient on the initial level of GDP per capita can be taken as evidence of (conditional) convergence. Both physical and human capital are significant determinants of growth. Similarly, the policy stance – as measured by inflation and the real exchange rate – affects growth in a significant manner. Time and geographical effects also play a role in influencing growth.

Table A1. Growth Regression
Dependent variable: growth in GDP per capita

Explanatory variables	Coefficient	t-statistics
Initial GDP per capita	-1.34	3.27
Secondary school enrollment	0.26	1.89
Telephone lines per head	0.006	2.37
Inflation	-0.008	2.44
Real exchange rate	-0.009	2.70
Time effect for the eighties	-2.15	6.91
Time effect for the nineties	-3.01	4.50
Dummy for Sub-Sahara Africa	-1.11	1.76
Dummy for Mediterranean	1.30	1.46
Number of observations	174	
Adj. R ²	0.74	

A2. The Secondary School Equation

This equation is used to estimate the secondary school achievements in the Turkish-controlled area. Secondary school enrolment is assumed to be a function of the (log of) GDP per capita. Time dummies are added to the regression.

We have data for 142 countries over three decades, the seventies, the eighties, and the nineties. We exclude those observations for which data are not available. Our panel is therefore unbalanced and consists in the end of 478 observations. A random effect estimator is used for estimation.

Table A2 indicates that secondary school enrolment is an increasing function of income per capita. A doubling in income per capita leads to a 20 percentage points rise in the rate of secondary school enrolment. Finally, there is decadal tendency for secondary school enrolment to rise, independently of income, as shown by the positive and growing coefficients on the time dummies. To estimate secondary school enrolment in the Turkish-occupied area, we assume income per capita there to be equal to 40 per cent of its value in the government controlled territories.

Table A2. Enrollment Equation
Dependent variable: secondary school enrollment

Explanatory variables	Coefficients	t-statistics
Initial GDP per capita	20.78	18.81
Time effect for the eighties	10.96	10.17
Time effect for the nineties	17.02	15.14
Number of observations	478	
R ²	0.94	

A3. The Foreign Aid Equation

It is assumed that foreign aid is a function of the (log of) GDP per capita. Time dummies are added to the regression. We have data for 124 countries over three decades, the seventies, the eighties, and the nineties. We exclude those observations for which data are not available. Our panel is therefore unbalanced and consists in the end of 386 observations. A random effect estimator is used for estimation.

The results in Table A3 confirm indicate that foreign aid is a declining function of income per capita.

Table A3. The Foreign Aid Equation
Dependent variable: foreign aid/GDP

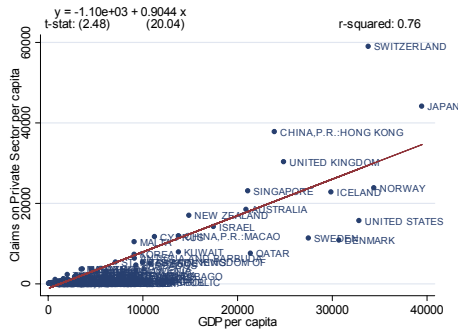
Explanatory variables	Coefficients	t-statistics
Initial GDP per capita	-5.66	7.57
Time effect for the eighties	5.88	7.12
Time effect for the nineties	7.46	8.92
Number of observations	386	
R ²	0.71	

Appendix B. Estimates of the Size of the Banking Sector in the T/C Area

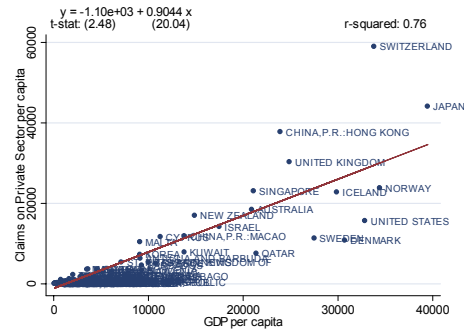
The following figures show various estimated relationships between bank credit (using two definitions) and GDP per capita.

B1. Bank claims on the private sector

Linear estimate

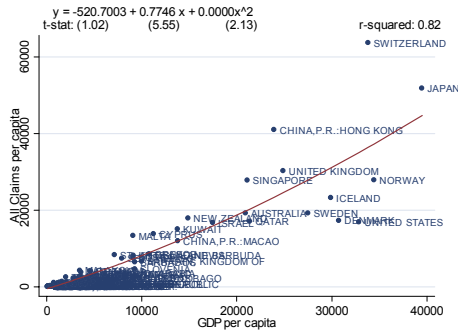


Quadratic estimate



B2. Total Bank Claims

Linear estimate



Quadratic estimate

