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Achieving Rapid Growth in the Transition Economies of Central Europe

by

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I. Introduction

The preeminent economic challenge for the Central European economies in transition (hereafter CEEs) is to grow rapidly for a sustained period of time in order to narrow the economic gap with Western Europe. There are two important reasons to believe that the gap can be reduced sharply in the next couple of decades. First, before the Soviet imposition of socialism on the CEEs at end of World War II, the CEEs had enjoyed per capita income levels comparable to those of many countries of Western Europe. Czechoslovakia was one of the most prosperous industrial economies of Europe, while Poland and Hungary had income levels comparable to those of the poorer economies of Western Europe, such as Greece, Portugal, and Spain. In 1955, for example, Poland had a higher estimated per capita income than Spain, $715 versus $516 measured at purchasing power parity (see Balassa, 1970). By 1993, the Polish per capita income was a mere 37 per cent of Spain's. Second, and more generally, economic history shows that poorer countries that are closely integrated with richer countries tend to grow more rapidly than the richer countries, thereby tending to narrow the gap in per capita income levels.

Table 1 shows the 1993 levels of three Central European economies and 14 European Union economies (EUEs). On average, the CEEs stood at 38 per cent of the EUE average The richest of the three CEEs, the Czech Republic, was 47 per cent of the average, and was 16 per cent below the poorest country of the European Union (EU), Greece. Poland, the poorest of the three CEEs, was a mere 31 per cent of the EU average, and only 55 per cent of the Greek level. Now that the CEEs have adopted market economies and open trade with Western Europe, they will experience a strong tendency towards economic convergence, i.e., towards growth rates consistently in excess of those of the EU, so that the income gap will tend to narrow over time. The tendency towards convergence has been shown to hold for economically integrated economies (i.e., those linked by trade and factor movements) in several recent studies, including the U.S. states (Barro and Sala-I-Martin, 1995), Japanese prefectures (Barro and Sala-I-Martin, 1995), the regions of Western Europe, the member countries of the Organization for Economic Cooperation and Development (OECD) (Dowrick and Nguyen, 1989), and the subset of the entire world economy composed of the open trading economies (Sachs and Warner, 1995).

The key economic issue facing the CEEs in the future will probably not be convergence *per se*, but rather the *speed* of convergence. If the CEEs grow only slightly faster than the EU, convergence will take several decades, a point made by earlier authors (e.g., Baldwin, 1994). To see this, suppose that per capita income in the EU grows on average at 2 per cent per year. If Poland's per capita income increases at an average of 3 per cent per year (around 3.7 per cent overall, in view of population growth), then it would take 24 years for Poland to reach 50 per cent of the average per capita income of the EU. On the other hand, if Poland manages to grow at 5 per cent per capita per year, the period until Poland reaches 50 per cent of EU per capita income would be cut to 12 years. The key issue for Poland and the other CEEs therefore is to achieve high rates of economic growth in the coming decades.

To do this, the CEEs will have to do better in the coming years than the recent performance of the poorer European Union economies (hereafter PEUEs) -- Greece, Ireland,

Portugal, and Spain. While Ireland has been growing rapidly in the 1990s, the other three economies have been growing very slowly. And for the entire decade 1985-95, all four countries fell short of 5 per cent per capita growth. On average, the PEUEs grew at a rate of 3.09 per cent during the decade 1985-95. Instead of being satisfied with the recent growth performance of the PEUEs, the CEEs should instead try to match the performance of the very fastest growing countries in the world, countries such as Singapore and Malaysia in East Asia, or Chile in Latin America. Eight very fast growing economies (hereafter VFGEs) achieved sustained growth rates of 5 per cent per capita or more during the past decade. These fast-growing economies share important characteristics of economic strategy which underlie their superior growth performance. They therefore highlight important policy directions for the CEEs as they aim to achieve very rapid growth in the coming decades.

This paper describes ways that the CEEs can speed their convergence with the EU by emulating the growth strategies of the very fast growing economies. In Section II, we introduce the VFGEs, and discuss some of the sources of their superior growth performance. In Section III, we demonstrate the role of key policy variables in the context of cross-country growth equations. In Section IV, we examine how the CEEs can emulate key aspects of the economic policies of the VFGEs, in order to raise their growth in the coming years.

II. Sources of Growth in the VFGEs

We define the VFGEs as all middle-income developing countries that achieved a per capita growth rate of 5 per cent per annum or higher during the two periods 1985-90 and 1990-94. There are eight countries that meet this standard: Chile, Hong Kong, Malaysia, Mauritius, Singapore, South Korea, Taiwan, and Thailand. Their growth rates and income levels, as well as those of some comparator countries, are shown in Table 2. Of course, there is no universally accepted interpretation of the striking successes of the VFGEs, and especially of the East Asian countries that form the bulk of the group, whose growth performance has been most studied and debated. Our own interpretations of the outstanding VFGE success is based on four clusters of factors.

The first cluster involves **allocative efficiency**, that is the efficiency with which resources are allocated among the various sectors of the economy at a point in time. In our interpretation, allocative efficiency is especially high in the VFGEs because these economies have relied mainly on market forces in the allocation of resources, and have kept government intervention to relatively low levels. These countries evidence a high degree of market competition, built upon a low degree of government intervention in the economy, a high degree of openness of the economy to international trade, flexibility of labor markets, and generally low levels of taxation, especially of labor income.

The second cluster involves the **promotion of high rates of saving and investment**. The VFGEs have achieved rates of saving and investment as a per cent of GDP that are far in excess of the averages for other economies at similar income levels. These high saving and investment rates are the result of a combination of high rates of *government* saving and

investment, high rates of *private* saving, and high rates of *foreign* direct investment (FDI) from abroad. In turn, the high private savings and FDI seem to be related mainly to a combination of demographic characteristics, national pension (retirement) policy, and overall fiscal and regulatory policies described below.

The third cluster involves **technological upgrading**, that is the ability of national economies to absorb new technologies from abroad and to adapt them in domestic production. None of the VFGEs is a major innovator in technology, but all have been effective in utilizing world-class technologies for purposes of upgrading domestic production. Technological efficiency seems to be achieved by a combination of attraction of foreign technologies (through foreign direct investment and licensing), infrastructure spending, and education policy.

The fourth cluster involves **favorable structural endowments** of the VFGEs, related to their resource base and geographical characteristics. The VFGEs enjoy some favorable structural conditions which have supported their high rates of growth. Fortunately, the CEEs share these key characteristics. Both the VFGEs and the CEEs are relatively poor in natural resources; perhaps somewhat paradoxically, a scarcity of natural resources have been an advantage to economies seeking to establish export-led growth in manufactures. Also, the VFGEs are blessed with good access to international shipping. The CEEs, similarly, enjoy low transport costs to the markets of Western Europe.

We now turn to these four clusters of characteristics, to show in some detail the unusual characteristics of the VFGEs. In the next section, we then demonstrate that these characteristics are related to high rates of economic growth, in the context of cross-country econometric growth equations.

1. Allocative Efficiency

A convenient starting point for assessing the allocative efficiency of the VFGEs is the Index of Economic Freedom (henceforth IEF) first created by the Heritage Foundation in 1995, and updated in 1996 (see Johnson and Sheehey, 1996). The IEF aims to measure, on a consistent cross-country basis, the extent of market distortions in 140 economies. The index focuses on two main kinds of distortions: **(1)** market distortions caused by government intervention (e.g. through trade barriers, taxation, wage and price controls); and **(2)** the absence of well-defined property rights (e.g., through government corruption, arbitrary government confiscation of property, high levels of black market activity). The IEF is constructed from ten sub-indexes, measuring market distortions resulting from: protectionist trade policy; taxation; government consumption expenditure, monetary policy (inflation), restrictions on capital flows and foreign investment, restrictions on banking, wage and price controls, the absence of secure property rights, interventionist regulatory policy, and black market activity. For each category, a sub-index is created which runs from 1 (the lowest level of distortion) to 5 (the highest level of market distortion). The overall index is a simple arithmetic average of the 10 sub-indexes.

In Table 3, we present the sub-indexes and overall IEF for several sub-groups of countries. The first sub-group is the VFGEs, which is the focus of our immediate attention. The second sub-group is four prominent slow-growing economies (SGEs) among the

middle income nations: Argentina, Brazil, Mexico, and Turkey. This group provides a useful contrast to the VFGEs among developing countries. Our third sub-group for comparison includes all developing countries other than the VFGEs (henceforth RDEs, signifying the *r*est of the *d*eveloping *e*conomies). The fourth comparator group is the four poorest European Union economies, the PEUEs. The fifth comparator group is the European Union. The sixth and final comparator group is the three CEEs themselves, the Czech Republic, Hungary, and Poland.

As we see from the Table, for almost all sub-categories vis-à-vis almost all comparator groups, the VFGEs display a relatively low level of market distortions. We can summarize these findings along three broad dimensions: openness to trade, size of government spending and taxation, and distortions of property rights caused by government intervention or lack of legal enforcement. First, we see that the VFGEs are much more open to trade than the average developing country (and about the same as the PEUEs, the post-1989 CEEs, and EUEs). Second, the VFGEs have small governments, as measured by tax rates, the level of government consumption as a per cent of GDP, and the restrictive monetary policy (measured by the inflation rate over the past decade). Third, these economies have a low extent of regulation (e.g., the absence of price controls and the restriction of entry of new banks), combined with a strong enforcement of property rights, and the absence of black markets. The combination of low taxes, open trade, and relatively low levels of market regulation is, in fact, probably the main *cause* of the low level of black market activity, since black markets thrive precisely at points where governments distort market-based exchange, through regulations, taxation, or other restrictions on international and domestic trade.

The IEF is a useful indicator of the extent of market distortions, but it must be regarded as a first look, not a definitive measure, since it is clearly subject to error and judgmental biases. The CEEs are rightly classified as being more distorted, on average, that the VFGEs, but the very low score (i.e., low distortion) of the Czech Republic versus Hungary and Poland overstates the actual gap between these countries (and probably *understates* the distortions that remain in the Czech economy, especially in view of the continuing high levels of government expenditure relative to GDP, as discussed below).[1] Thus, while the IEF offers us useful comparative summary measures of the main aspects of market distortions, it is also very important to look in more detail at the three main aspects of government intervention: restrictions on international trade, the size of government, the regulatory regime.

The issue of trade policy has been examined in depth in Sachs and Warner (1995a). This earlier study demonstrated that protectionism was the rule, rather than the exception, among developing countries during the decades of the 1960s-1980s. Only a handful of developing countries bucked the general trend towards protectionism, by keeping markets open to world trade. For purposes of that study, openness was defined as the absence of strong protectionist policies in any of four dimensions of trade policy: tariffs; quotas and licensing; inconvertibility of the currency; and export taxation. If a country was protectionist in at least one of the four dimensions in a particular period, it was judged to be protectionist overall during the period in question. *The VFGEs are all characterized by a very early date of trade liberalization in the post-war era*. In fact, it is in the dimension of

open trade policies that these countries most stand out from their counterparts in the developing world. According to our earlier assessments, five of the eight VFGEs have always maintained open trade policies: Hong Kong, Malaysia, Mauritius, Singapore, and Thailand. The three others opened very early by the standards of the developing world: Taiwan in 1963, Korea in 1968, and Chile in 1976 (these dates signify the first year in which the country meets the threshold conditions for openness as defined in the paper).

The VFGEs are also notable, in comparison with most other countries, both developing and developed, in the limited size of the state in the economy, as measured by *government spending and taxation*. In Table 4, we compare the levels of government consumption spending, and total government current spending (including transfer payments), of the VFGEs and four other sub-groups: the SGEs, the PEUEs, the EU, and the CEEs. We see that the VFGEs have the lowest levels of government consumption spending and overall current government spending among these groups. The EU countries and the CEEs are on very high end, reflecting the extensive social welfare spending within Western Europe and Central Europe.

One of the striking aspects of the post-communist reforms in the CEEs has been the continued high levels of government expenditures. The most important change, evident in the Table 5, is a sharp cut in budget subsidies to enterprises and households, which has been offset by a steep increase in social spending as a per cent of GDP. Thus, while Poland cut budgetary subsidies by 9.6 percentage points of GDP between 1989 and 1993, it simultaneously increased social spending by 11 percentage points, from 10 per cent of GDP to 21 per cent of GDP. The bulk of the increased spending went to retirement pensions, as middle-aged Poles took up the options of early retirement and of generous qualification for disability pensions. The number of pensioners rose by a startling 28 per cent during 1989 to 1993, at time when the overall population increase was a mere 1.5 per cent. By 1993, roughly 32 per cent of Polish adults were pensioners, compared with just 21 per cent of the adult population in the United States. A sharp growth of the number of pensioners, and of pension spending as a per cent of GDP, has occurred in most of the other transition economies of Central and Eastern Europe. The result of these budgetary changes is that total public spending as a per cent of GDP remains around 50 per cent in the CEEs, among the highest in the world, and certainly the highest for market economies at comparable levels of income.

One crucial consequence of a high levels of government expenditure as a per cent of GDP is the distortionary effects of the taxes levied to pay for the government spending. The VFGEs greatly limit the distortionary effects of taxation by keeping overall government expenditure under control. To measure the extent of the tax distortions, it is important, though very difficult, to examine the incentive effects of the overall tax system, not just particular tax rates. To do this precisely, we would need to know the marginal tax rates for the entire range of taxes in the economy, and presumable for various income groups (which would tend to face different marginal tax rates). We would also need a model of tax incidence in order to assess the general-equilibrium effects of the tax system. As a much simpler and cruder expedient here, we calculate one measure of the burden of labor-income taxation, by calculating the tax wedge between the cost of labor to the enterprise and the real take-home pay of a worker of average income.

In our calculation, the tax wedge has three components: the payroll tax; the personal income tax; and the value added tax (which raises the price of goods to the final consumer). Suppose that the pre-tax price level is P, and the pre-tax wage level is W. The nominal take-home pay of workers is $W(1-\tau y)$, where τy is the marginal rate of income taxation. Since P is the pre-tax price level, the consumer price level is $P(1+\tau v)$, where τv is the rate of consumer taxation (or VAT taxation). The real-take home pay is therefore given by $W(1-\tau y)/P(1+\tau v)$. The cost of labor to the firm is $W(1+\tau p)$, where τp is the rate of payroll taxation (calculated as the sum of employer and employee contribution rates). Now, we define the tax wage τw as equal to 1 - (real-take-home-pay)/(cost-of-labor). We can see directly that this tax wedge is given by:

$$\tau w = 1 - [(1- \tau y)/(1+ \tau v)]/(1+ \tau p).$$

In the final column in Table 6, we show the calculation of the tax wedge for four subgroups of economies: the VFGEs, SGEs, PEUEs, and the EU-8, using the 1994 tax code. The VFGEs have, by far, the lowest tax wedges, suggesting the lowest levels of tax distortions in the labor market. *Note in particular that the VFGEs rely very little, if at all, on payroll taxation, in sharp distinction to the European economies (including the EUEs, the PEUEs, and the CEEs).* This low reliance on payroll taxation is mainly a consequence of the distinctive character of the pension systems in the VFGEs, a point to which we return later in our discussion of national saving rates.

The low rates of the labor tax wedge in the VFGEs have two main consequences. First, there is a powerful incentive to operate in the legal market rather than in the black market, since the gains to tax evasion are relatively small. We have already seen evidence that black market activity is relatively low in the VFGEs, at least as measured by the sub-index of the IEF. Second, there is the incentive for high rates of labor market participation, assuming realistically that the elasticity of labor participation with respect to the post-tax wage is positive. In the other countries, by contrast, the high tax wedges will discourage labor-market participation, through a variety of channels: more frequent spells of unemployment, reductions of average hours at work per month, temporary withdrawals from the labor force, and early permanent retirement. It is surely no accident that unemployment rates in the VFGEs are negligible, while they often stand at double-digit rates in the SGEs and the EU economies. Similarly, average working hours per month are much higher in the VFGEs than in the SGEs, though per capita income levels are comparable.

The IEF underscores not only the relative openness and small size of government in the VFGEs, but also the relative security of property rights, the operation of the rule of law, and the low levels of market distortions through government regulations and wage and price controls. These dimensions of government policy are difficult to measure, so the rankings of the IEF should be viewed as provisional only. Nonetheless, we can find independent supporting evidence on each dimension.

One good indicator of weak property rights is the propensity of governments to confiscate private property, perhaps most visibly in the form of nationalizations of enterprises. During 1960-1980, U.S. foreign investors experienced a total of 327 instances of nationalizations in a total of 67 developing countries. *While most developing countries engaged in at least some nationalizations, there was, remarkably, not one single instance of*

nationalizations in seven of the eight VFGEs: Hong Kong, Korea, Malaysia, Mauritius, Singapore, Taiwan, and Thailand. Only Chile among the VFGEs undertook any nationalizations, and most of these nationalization were concentrated in the Allende Regime, 1970-1973. There were no nationalizations after the Pinochet coup of 1973. Interestingly, virtually every developing country that engaged in nationalizations in the period 1960-80 ended up in severe macroeconomic crises in the 1980s, usually crises of very high inflation and non-payments on foreign debts. The linkage between nationalizations and subsequent macroeconomic crises is not direct, but both phenomena are probably symptoms of "overactive" governments that attempted to implement state-led industrialization policies, and ended up in financial bankruptcy as a result.

As for further evidence on the rule of law, we can draw upon an index of the Rule of Law (ROL) used by Knack and Keefer (1995), and by Barro (1995).[2] The ROL is an index based on survey data to measure the extent "to which the citizens of country are willing to accept the established institutions to make and implement laws and adjudicate disputes." Higher values of the index signify "sound political institutions, a strong court system, and provisions for an orderly succession of power." Lower values mean that there is a "tradition of depending on physical force or illegal means to settle claims." The range is 0-6. The variable is for the year 1982. The VFGEs indeed show a much higher value of ROL than the average for the rest of the developing countries, 4.7 compared with 1.8. On average, the VFGEs are at about the same level as the PEUEs, which have an average value of 4.8, and slightly below the EU average of 5.6.

Finally, we turn to market distortions caused by government regulations and wage and price controls. One area of particular importance is labor-market regulation. While most of the VFGEs have active trade union sectors, the framework of labor law in these countries is very market oriented, with few government-imposed standards on the freedom of hire and fire, prior notification of layoffs, severance payments, and minimum wage. Wage negotiations take place at the enterprise level, rather than at the industry or regional level as in more corporatist settings. The terms of the contractual labor relationship is left mainly to enterprises and workers themselves. In Hong Kong, for example, firms have the freedom under law to lay off workers with only one week's notice (or subject to the terms of collective bargaining agreements freely negotiated between the enterprise and unions). Similar freedom to adjust the labor force is found in the labor legislation governing Malaysia, Singapore, and Thailand. As an illuminating contrast, consider Spain's labor laws. The labor legislation puts enormous obstacles in the way of enterprise layoff decisions (see IMF, 1995a). As a general principle, workers kept beyond a short trial period (2-6 months) are considered permanent, and are thereafter entitled to generous severance payments and judicial appeals in the event of layoffs.* Collective dismissals required government approval via an Employment Regulation Procedure (ERP) with the Ministry of Labor. As

* In Spain in 1994, the average severance payment was for approximately 50 weeks of work, or about 260 days (IMF, 1995a, p. 13a). In Malaysia, by contrast, the severance payment by law is 10 days for each year of employment for total employment under 2 years; 15 days for each year of employment for total employment between 2 and 5 years; and 20 days for each year of employment for total employment above 5 years.

the IMF notes (p.45): “Businessmen and economists who study the Spanish labor market are virtually unanimous in the opinion that these high dismissal costs act as a major deterrent to the creation of permanent jobs, and thus have been a contributing factor to the high Spanish unemployment.” Recent labor law reforms have somewhat reduced the burdens of these regulations. Labor legislation, in addition, has “maintained tight controls on geographical mobility, the length of the working day, number of permissible overtime hours, minimum vacation time, and other features of the employment relationship.” (p. 30)

Many other developing countries, such as the slow-growing Latin American countries, have maintained similar restrictions on hiring, firing, and working conditions. Argentina has had long mandatory notification periods for layoffs, as well as collective bargaining agreements backed by labor legislation which has given enormous power to union members vis-à-vis the unemployed and new entrants to the labor force. For example, Argentina's 1975 labor legislation enshrined the principle of “ultra-actividad,” according to which a collective agreement remained in force even after expiration, until a new agreement was reached between the unions and the employers, thereby giving enormous power to the unions in negotiation. (For further details, see IMF, 1995b, p. 49).

The overall image of the VFGEs as highly open economies, with small government sectors, and with a very light degree of government regulation, may surprise some readers. One popular interpretation of the East Asian experience is that strong, autonomous "developmental states" have led the industrialization process through detailed industrial policies and strong government intervention. Amsden (1994) has argued, for example, that the East Asian economies have deliberately “gotten the prices wrong” as part of a government-led industrial policy that has worked against market forces. Wade (1992) has made a similar, widely noted analysis in the cases of Korea, Taiwan, and Hong Kong. These authors are correct that most of East Asia has not abided by textbook laissez faire policies (though Hong Kong comes rather close, and Singapore, like Hong Kong, has almost completely free international trade). But these authors compare East Asia with pure textbook *laissez faire*, instead of with the rest of the developing world. On an international comparative standard, the East Asian economies stand out as highly market oriented, with relatively free trade, small government sectors, and limited distortions from government regulations. Moreover, the view of East Asia as strongly influenced by industrial policies was arguably correct for Japan until the mid-1960s and for Korea until around 1979, but it is much less true for these countries in recent years. Moreover, it has never been particularly true for Taiwan since the early 1960s, and is even less true for the very fast growing Southeast Asian countries during their entire rapid growth era from the mid-1960s. All of these other countries have had consistently smaller roles for industrial policy than in Japan and Korea. Moreover, as we shall note later on, there is little evidence in the cases of Korea and Japan that the industrial policies contributed to accelerated economic growth.

2. The Promotion of High National Saving and Investment Rates

One of the distinguishing characteristics of the VFGEs is the very high rates of national saving and investment achieved in these economies, as shown in Table 7. Many studies have demonstrated that countries with higher rates of saving and investment achieve higher rates of overall growth, so the high rates of saving and investment surely merit our

careful attention. We surmise that the overall macroeconomic stability, moderate tax rates, and rule of law, in the VFGEs, all contribute to the high rates of saving and investment. But equally important, in our view, are other channels through which *fiscal policy* promotes high rates of saving and investment in these economies.

Most importantly, the VFGEs tend to achieve high rates of government saving, i.e., an excess of current government revenues over current government expenditures (see Table 7). This government saving is used partly to achieve an overall budget surplus, and partly to finance a relatively high rate of public investment spending as a proportion of GDP. Since national saving is the sum of public saving plus private saving, the high public saving rate contributes to a high overall national saving rate, unless the high government saving "crowds out" an equal rate of private saving. While it is theoretically possible that lower private saving would offset high public saving on a one-for-one basis, extensive cross-country evidence suggests that such a tradeoff between public and private saving, when it exists, is much less than one for one. (For recent international evidence, see Edwards, 1995).

The high rates of government saving translate into high rates of government investment spending, mainly on infrastructure. While the VFGEs restrict their *current* spending as a percentage of GDP, they certainly engage in considerable infrastructure investment in energy, communications, and transport, often in support of international trade activities. The relatively high rates of government investment were shown in Table 4.

Another important contribution of fiscal policy in the VFGEs is to raise *private* saving rates via the organization of the national retirement system. While the European economies tend to rely on pay-as-you-go (PAYG) pension systems, with nearly universal coverage, most of the VFGEs have either small state-run pension systems, e.g., covering only government employees, or state-regulated systems that depend on *individualized savings plans* rather than PAYG financing. The most important distinction between various retirement systems is the link between an individual's saving for retirement and the individual's eventual benefits at the time of retirement. In the PAYG systems, retirement benefits tend to be only loosely related to an individual's preceding payroll tax payments. In individualized systems, by contrast, an individual's retirement benefits depend directly on the accumulation of the individual's own personal savings.

A comparison of retirement systems is shown in Table 8. We see that three of the VFGEs, Chile, Malaysia, and Singapore, have instituted a retirement system based on individualized savings accounts. Another two countries, Korea and Thailand, essentially had no state-run system until now, though both are now phasing in a pay-as-you-go system. As of now, the costs are very low, and payroll taxes are also very low. Hong-Kong, Taiwan, and Mauritius, also have pay-as-you-go systems, but with very low rates of benefits and taxation. By contrast, the Central European economies all have expensive pay-as-you-go systems, with much higher rates of taxation and benefits.

The pay-as-you-go systems prevalent in Europe, and in the advanced industrial economies more generally, have several features which tend to lower national saving rates. Modern fiscal theory, especially as pioneered by Feldstein (1983) and Auerbach and Kotlikoff (1987), teaches that pay-as-you-go pension benefits reduce national savings in

several ways. In general, the benefits are paid for by taxing the younger workers and transferring the taxes to the retirees. The pay-as-you-go financing therefore involves a transfer of income from young workers, who tend to have moderate propensities to consume (given a long life-cycle time horizon ahead), to older retirees, who tend to have much higher marginal propensities to consume (given a short life-cycle time horizon ahead). Even when retirement benefits are merely promised for the future, and therefore do not involve any *current* fiscal spending or taxation, the mere promise of future retirement income will tend to reduce the saving of the working-age population, as they anticipate the state provision of their retirement income.

Since the PAYG systems offer benefits essentially unrelated to contributions (or related to contributions with linkages that are highly complex and therefore not clearly evident to the worker/taxpayer), there are intense and recurrent political pressures to *increase* the retirement benefits for the current retirees, who typically form a powerful interest group. During the 1970s and 1980s, such pressures in the U.S. and Europe led to large transfers of income to the elderly from the current workers and, implicitly, from the yet-unborn generations. In the 1990s, the same phenomenon occurred in most of the post-communist economies of Central and Eastern Europe.

Even if a political equilibrium is eventually reached, in which current benefits are exactly financed with current payroll taxes, without further increases in benefits relative to GDP, a long-standing pay-as-you-go system leaves a **permanent negative legacy** on national savings. Each worker pays taxes when young (to be transferred the current elderly), and later receives benefits when old (paid out of taxes of the future young generation). But the present value of the taxes paid will be greater than the present value of the benefits received, so that the worker would be better off saving on his or her own account. If the government allows the younger workers to opt out of the pay-as-you-go system, as we recommend below, the government will still be stuck with a large stock of debt, reflecting the promises that have already been made to current retirees, and to current workers who have been contributing payroll taxes in anticipation of state retirement benefits. This stock of debt permanently lowers national saving rates (unless, of course, it is later reduced through a period of budget surpluses), and thus reflects a *lasting adverse legacy* of the pay-as-you-go system.

Nonetheless, there are still good reasons to shift partly or fully from the current arrangements to a national system based on individualized savings accounts. There are two main reasons to make the shift. The first is political. If benefits are linked directly to individual contributions, there will be less electoral pressure and indeed fewer institutional mechanisms to raise benefits for current retirees at the expense of future generations. The second is strictly economic. Under pay-as-you-go systems, workers tend to receive their state-mandated pensions largely irrespective of their own payroll tax payments, or at least so it seems to the individual worker.[3] The worker therefore views his or her payroll "contributions" as taxes on labor income, rather than as saving towards future retirement. The payroll taxes thereby tend to discourage work effort and labor force participation, and to encourage black market activity, as we discussed earlier. In an individualized saving system, the same payments are viewed as contributions by the individual to his or her own savings account, and so do not act as taxes on labor effort.

In summary, a pay-as-you-go system has three serious defects. In steady state, it reduces national saving rates. Outside of the steady state, as in the past two decades, it stokes political pressures to *increase* transfers from young to old, further reducing national saving rates. And by relying on payroll taxation, it tends to discourage work effort and to encourage black-market activity.

In support of the negative linkage to private saving rates, Edwards (1995) finds that countries with high levels of government pension spending -- generally the countries with extensive PAYG systems -- have lower rates of private savings than countries with lower levels of government pension expenditures. We do not have the data to make our own extensive cross-section, time-series regression analysis of national saving rates.

There is another aspect of the Malaysian, Singaporean and Taiwanese systems, that might be a spur to additional household savings. In all three cases, households receive a *lump-sum payment* upon retirement, rather than a flow of benefits throughout the remaining lifetime. As Kotlikoff (1995) explains, the lump-sum payment typically can not be converted, at actuarial value, into an annuity, because of the thinness of annuity markets.[*] Therefore, households in these three countries have the incentive to engage in *precautionary savings* in old age, in order to protect against large medical expenses or survival well beyond life expectancy. These older households are then subject to leaving unexpected bequests at the time of death, which in turn raises the overall saving rate.

The VFGEs foster high rates of investment not only through high national saving rates (both public and private), but also through significant inflows of foreign capital, especially foreign direct investment (though Southeast Asian economies -- Hong Kong, Malaysia, Thailand, Singapore -- have tended to encourage FDI much more than Northeast Asian economies -- Japan, Korea, and Taiwan -- which have relied more on loans and technology licensing). The high rates of FDI in Hong Kong, Malaysia, Singapore, and Thailand, have many causes, including: macroeconomic stability; low rates of corporate taxation; flexibility in the labor markets; open economies that can be used as export platforms foreign markets; rapid growth of the domestic market. Note that these four economies accounted for roughly 27 per cent of total FDI inflows into *all* developing countries in the years 1981-1992 (Table I.5 in UNCTAD, 1994b)!

3. Technological Improvements

The very rapid growth of the VFGEs resulted mainly from rapid factor accumulation and allocative efficiency, rather than from technological innovation. In addition, most of the VFGEs achieved sustained increases in total factor productivity, but as stressed by Young (1995) in the case of the East Asian economies, the productivity growth played a smaller role than factor accumulation in the outstanding performance of these economies. Of course, factor accumulation without allocative efficiency would not prove sustainable (as is shown by the collapse of the communist economies), since rapid production would not be geared towards market demand. For example, the Soviets invested heavily in steel production, and

[*] In turn, this thinness is the result of adverse selection problems in annuity markets.

indeed achieved rapid growth in steel output, but in the end, the steel industry came crashing down since its output dramatically outstripped real market needs. Therefore, it is the *combination* of allocative efficiency together with high saving and investment rates that are the hallmarks of the VFGE's success.

Many observers have argued that government-led industrial policies in East Asia ("picking winners" through selective protectionism and selective subsidies) gave a special boost to productivity growth. As a economy-wide proposition, this is doubtful for any of the VFGEs. As we noted earlier, only Korea among the VFGEs undertook extensive industrial policies, and then only in the 1960s and 1970s. By the early 1980s, the Korean government had pulled back from its most interventionist policies (especially directed credits to industry and high trade protection for targeted industries), after its so-called Heavy and Chemical Industry (HCI) Drive during 1973-79 had helped to bring on macroeconomic instability. The other VFGE governments played a much smaller role than the Korean government in direct industrial promotion.

Moreover, the results of Korea's interventions were decidedly mixed. Detailed industry analysis does not reveal positive effects of government interventions on productivity growth (Lee, 1995). In particular, sectoral trade protectionism was consistently correlated with *slower* productivity growth in the sector, while tax incentives led to faster capital accumulation in the sector but not faster productivity growth. Thus, there is little evidence that the capital accumulation thereby promoted actually increased the overall productivity of the economy. These findings are consistent with the detailed case studies in Perkins, Stern, et. al. (1995), which showed that Korean industrial planning involved a mix of successes and failures, not the unvarnished successes sometimes imagined. Similar negative findings regarding Japan's industrial policies have been found by Weinstein, 1995. Direct comparisons of nearly *laissez faire* Hong Kong with more interventionist Singapore, have come down on the side of Hong Kong (Young, 1993).

Nonetheless, the VFGEs all shared certain policies to promote productivity improvements in the economy. They have all invested in expanded public education, first to promote universal literacy, and then secondary and tertiary education. They all promoted the inflow of technology from abroad, either through foreign direct investments or through licensing of foreign technologies (the latter especially in the case of Korea, which tended to shun foreign direct investment until the mid-1980s). Third, almost all of the countries experimented with special economic zones to encourage new export-oriented industrial, as well as science parks for high-tech industries in some of the East Asian countries. These zones are supported by favorable tax treatment, and government provision of certain infrastructrual support (such as land, energy, communications, warehousing, expedited customs processing, and support for improved transport linkages to nearby airports and seaports).

4. Favorable Structural Conditions

The VFGEs also have some natural advantages that have enabled them to pursue rapid export-led growth. They are all coastal economies, with natural seaports that could be equipped with modern container port facilities. We shall see below that landlocked

countries tend to grow more slowly than coastal economies, after controlling for other policy and structural characteristics. Second, the VFGEs, on the whole, were abundant labor economies and relatively scarce in natural resources (Chile and Malaysia are the two exceptions in this regard). The abundance of labor meant low initial wages and the ability to compete internationally on the basis of labor-intensive manufactures. These labor-intensive manufactures, such as footwear, apparel, textiles, and electronics assembly operations, provided the starting point for export-led industrialization in all of the VFGEs except for Chile. By contrast, Chile's recent export-led growth has come mainly in agriculture and resource-based industries. We shall note below that resource-poor economies have tended to grow more rapidly than resource-rich economies in the past twenty-five years (see Sachs and Warner, 1995b, for details).

III. Economic Growth and Economic Convergence

In this section, we turn to a more formal econometric analysis of cross-country growth, to measure the contributions to growth of the various policy and structural variables that we have discussed up to this point. We follow the widely used specification of Barro (1991), which describes country i's growth rate during a particular interval as a function of the initial level of income of country i, and other policy and structural variables. Let G_i be the growth rate between year 0 and year t, measured as $(1/t)dln(Y_it/Y_i0)$, where Y_it is the level of per capita income in purchasing power parity terms in year t. Y_i0, therefore, is the per capita income in the initial year. We write $y_i\ 0 = ln(Y_i0)$. We then write:

$$(1) \quad G_i = \beta_0 + \beta_1' Zi + \beta_2\, y_i\, 0$$

According to this specification, the per capita income growth of country i depends on a vector of structural and policy characteristics of the country, Z_i, and on the country's initial log level of per capita income, $y_i\ 0$. As long as β_2 is negative, an initially poorer country will tend to grow faster than an initially richer country, all other things being equal. Therefore, a negative and statistically significant value of β_2 indicates *conditional convergence*, conditional in the sense that we hold constant the policy and structural characteristics in the Z vector.

We adopt a specification that makes growth depend on initial income and four structural variables: (1) the Index of Economic Freedom, modified to exclude the sub-index for trade policy (which is taken into account with SOPEN), to measure the overall extent of market distortions in the economy; (2) the degree of openness of the economy, using the measure SOPEN introduced in Sachs and Warner (1995a); (3) the dependence of the country on natural resource exports, SXP, as measured in Sachs and Warner (1995b); and (4) an Index of Market access, to measure the physical access of the country to sea-based international merchandise trade.

The definitions of the variables are as follows. The IEF has been introduced earlier, and is described in detail in Johnson and Sheehey (1996). There are two problems with using the IEF in the cross-country regression equations. First, the IEF is calculated as of

1995, and is not available for the period of the regression estimates. Some of the sub-indexes reflect long-term characteristics of the economies, or are averages for many years (e.g., inflation is measured for the interval 1985-93), but others reflect current characteristics that did not prevail during the 1970s and 1980s. Therefore, for this reason (and others) the IEF is measured with error, and if the error is random, contributions of market distortions to slower growth will be *understated* by the regression estimates. Second, some of the sub-indexes of the IEF measure public goods (e.g., rule of law) that economies with 20 years of rapid growth may be more likely to pursue. This means that there may be causality running from growth to the IEF index, and this will lead us to *overstate* the impact of changes in the IEF impact on growth. Since these two biases go in the opposite direction, it is unclear if the net effect is to overstate or understate the relation between the IEF and growth.

The SOPEN variable is from Sachs and Warner, 1995a, and measures the proportion of years between 1970 and 1989 that the country is open to trade (i.e., number of years of open trade divided by 20). Openness is measured by four dimensions of trade policy: tariffs, quotas and licensing, export taxes, and black market premia. A country is deemed to be open if it is sufficiently open on all four aspects of trade policy. Tariffs must be less than 40 per cent on average; quotas and licensing must cover 40 per cent or less of total imports; export taxes must be moderate (see Sachs and Warner, 1995, for more details); and the black market premium over the official exchange should average less than 20 per cent.

The natural resource dependence variable, SXP, is taken from Sachs and Warner, 1995b. It measures the share of primary exports in GDP in 1971. It is calculated from the World Tables 1993 data diskette. Both the numerator (primary exports) and the denominator (GDP) are measured in nominal dollars. The dollar GDP data in World Tables uses a smoothed exchange rate to convert local currency GDP to dollar GDP. Primary exports are the sum of the categories "non-fuel primary products" and "fuels." Non-fuel primary products cover SITC categories 0, 1, 2, 4, and 68. Fuels cover SITC category 3. These categories are from revision 1 of the SITC.

The fifth variable is an Index of Market Access (IMA). As international trade is one of the key engines of economic growth (through its effects on the diffusion of knowledge, the size of the market, domestic competition, and so forth), countries *physically* cut off from international trade are likely to suffer lower rates of economic growth, all other things equal. Since shipping by sea plays the overwhelming role in international merchandise trade, we focus on measuring each country's physical access to international shipping. Countries that are landlocked, or are for other reasons are without sea ports, have a much higher cost of integration in the world market economy than coastal economies with sea ports.

Our index of physical access gives countries a value of 1 if it is completely landlocked, and if it lacks river-access to sea ports in other countries. Countries with container ports are given a value of 0. Countries that are landlocked but have some river-access to sea ports in other countries (e.g. Switzerland, linked to the North Sea port at Rotterdam by the Rhine River port at Basel) are given a value greater than 0 and less than 1, depending upon the navigability of the riverway. Similarly, countries with coastlines but without container ports (which may occur, for example, because of poor natural conditions of the coastline), are given a value of 0.1, signifying *almost* full access, but not full access.

The IMA is expected to enter the regression estimates with a negative sign, signifying that landlocked countries grow less rapidly than coastal economies, all other things equal.

Finally, note that we measure per capita income (and growth of per capita income) as GDP per *economically active* population (aged 15-64), rather than as GDP per total population. This is based on the natural view that GDP is produced by those in the workforce. Some countries have economically active populations that are growing much faster than the overall population (because of a rising proportion of the population in the age group 15-64). We would expect these countries to grow faster in terms of GDP per total population as a result of the rise in the proportion of the population that is of working age. Preliminary tests of the cross-country growth equations using GDP per economically active population, and GDP per total population, favored our choice of variable.

Note that we do not *initially* include the national saving rate as one of the right-hand-side variables, though we do add the saving rate in later regressions. This is because the saving rate is neither a structural variable nor a policy variable, but is rather a reflection of underlying economic policies, such as government saving rates and pension systems. Unfortunately, we do not have the cross-country data for enough countries to enter measures of the pension system directly into the cross-country growth regressions.

We start by reporting two regression estimates: (1) for the period 1970-89; and (2) for the period 1986-90. The regressions are reported in Table 9. As we describe in the technical appendix, the regression coefficients are actually non-linear functions of the parameters in the growth equation. This means that the coefficients cannot be read directly as estimates of the parameters in the growth regression. Therefore, in the last two columns of Table 9, we report the estimates of the β's that correspond to regressions (1) and (3). Note that the estimated β's are close, but not identical, to the regression coefficients. The estimated β's are typically about 16 per cent larger than the corresponding coefficients in the regression equation.

In the regression estimated over the longer time period, regression (1), we see that all of coefficients are of the expected sign and statistical significance (t-statistics are reported in parentheses). Over the shorter period, all variables are of the expected sign, but the market access variable falls below statistical significance. Looking at regression 1, we see strong evidence for conditional convergence, since the regression coefficient is -1.49 (t = -5.38), and the estimate of β_2 is -1.77. According to this estimate, an economy half as rich per capita as another economy will tend to grow faster by 1.23 percentage points per year (= -1.77 x ln(0.5)). On this basis, for example, Poland would initially grow faster than the EU, holding all other variables the same, by 2.07 per cent per year, since Poland starts out at just 31 per cent of the EU average (2.07 = -1.77 x ln(.31)). Of course, this growth advantage would narrow over time, as Poland converges with the EU average.

Openness is also highly significant. The average difference in annual growth between an always-open economy (SOPEN = 1) and an always-closed economy (SOPEN = 0) was 1.94 percentage points per year, which would cumulate to a 44 per cent difference in real GDP over the 19 year period between 1970 and 1989, $(y(0)*1.0194^{19}=y(0)*1.44)$. The IEF is also significant, both economically and statistically. Consider the difference between the Index of Economic Freedom of the VFGEs (IEF = 1.96) and SGEs (IEF = 3.08). This

difference is estimated to account for 1.00 per cent per year, or 21 per cent over the 19-year interval. As noted above, this may be an underestimate, since it fails to measure the "true" value of the IEF on average for the regression period, and instead relies on an estimate as of 1995. By 1995, many of the extreme anti-market distortions of the developing countries that prevailed during the 1970s and 1980s had been reduced or eliminated.

Natural resource intensity and market access (to the sea) also are important determinants of growth, but they don't explain much of the difference between the VFGEs and the SGEs since both resource intensity and access to the sea are similar in the two groups of countries (none of the VFGEs or the SGEs is landlocked). For a landlocked country, however, the effect is large. The difference in growth between a coastal country with a container port facility, and a landlocked country without any river access to a seaport, is enormous. The regression estimate suggests that complete landlockedness reduces growth by 2.09 percentage points per year.

The regression estimate over the shorter recent period might be more informative regarding the role of market distortions, because of the more appropriate timing of the IEF. As in regression 1, there is strong evidence of convergence, as well as for the role of the key policy and structural variables. The main differences in magnitude of coefficients are as follows. The point estimate of openness is larger in the shorter period, rising to 2.07. Natural resource intensity is far larger, probably reflecting the sharp terms of trade losses suffered by the resource-based economies after the mid-1980s. The market access variable has a smaller, and statistically insignificant coefficient. The coefficient on IEF is markedly larger, which is consistent with the idea that measurement error in the longer-period regression served to understate this effect.

In regressions 3 - 4, we add the national saving rate (calculated as [GDP - C - G]/GDP, with C and G being private and public consumption spending). We do so with caution. Saving rates are important in affecting aggregate growth, but unlike the other variables in the regression equation, the saving rate cannot be considered either a policy variable or a structural variable. It is also likely that the saving rate is itself endogenous to growth. Many high-growth countries tend to experience rising saving rates over time, presumably because the factors which unleash the high growth also raise the real returns to saving. Regressions 3 and 4 simply add the saving rates over the two time intervals, and are estimated with least squares.

Somewhat remarkably, given the multicollinearity of the right-hand-side variables, the saving rate enters regression 3 with economic and statistical significance, and *without* affecting the statistical or economic significance of the other right-hand-side variables (the one exception is the market access variable). According to the estimate, an increase in the saving rate of 10 percentage points of GDP is estimated to raise the growth rate by 1.3 percentage points per year. The coefficient 0.13 is within the range of the usual estimates in other studies (which are typically between 0.1 and 0.2). In the regression estimate for the shorter period, all variables enter with the expected sign, but the IEF variable and the market access variable are not significant. The coefficient on saving and openness rise compared to the longer period regression.

We can use the regression estimates to calculate the growth rates that the Czech Republic, Hungary and Poland can expect to achieve under alternative policy choices. We analyze three policy choices. In the first, the CEEs maintain their current policies without change. Thus, the saving rate and the IEF are assumed to remain at their current levels in future years. In the second scenario, we assume that the CEEs harmonize with the EU, with the result that the saving rate and the IEF take on the value of the European Union average. In the third scenario, we assume that the CEEs harmonize with the VFGEs, with the implication that the saving rate and the IEF take on the average value of the VFGEs. Naturally, growth is highest in this third scenario. The results are presented in Table 10.[4]

We start by assuming that per capita growth in the European Union will be 2 per cent per annum. This assumption is shown in the first row of Table 10. In the next row, we add the World Bank forecast for the average growth in the economically active population in the CEEs, since overall economic growth is the sum of per capita economic growth plus the growth of the economically active population. Since these forecasts for population growth are low (less than 1 per cent per year in the Czech Republic and Poland, and actually negative in Hungary), we see that population growth does not add much to the predicted overall growth rate. In the third row, we add the extra growth that each country can expect to achieve purely from the fact that they start out with a lower per-capita income. We call this the *catch-up effect*. We might also have called it the convergence effect, since it measures the forces of convergence in per capita income levels. This effect is generally large, as we would expect given the currently low levels of real income in Central Europe. Based on our regression estimates, we estimate that the catch-up effect will add 1.9 percentage points to Polish growth, 1.6 points to Hungary's growth, and 1.2 points to the Czech Republic's growth. Of course, the catch-up effect is greatest in Poland since Poland starts out as the poorest economy.

In the fourth row we start to consider different policy scenarios, so that the numbers also vary across the columns. Again based on our regression estimates, we estimate that if Poland does not change its policies and thus maintains its current rating on the IEF, it would loose 0.5 percentage points in growth compared to the European Union's standards. Similarly, if it maintains its current saving rate of 18 per cent, which is also below the EU's average of 19.2 per cent, it would loose another 0.2 points. To summarize, we can see form the last number in column 1, that if Poland maintains its current policies, and the EU grows at 2 per cent per year, Poland's growth in total GDP is estimated to be 3.9 per cent per year. Similarly, under current policies, the Czech Republic's growth rate would be 4.1 per cent per year, and Hungary's growth rate would be 1.9 per cent per year. Hungary's very low growth rate reflects its very low saving rate, of just 11.6 per cent of GDP. By contrast, if the CEEs adopt the policies of the VFGEs, the growth rates are significantly higher: 6.1 per cent per year in Poland, and 6.6 and 4.3 per cent per year in the Czech Republic and Hungary, respectively. (The differences across the three countries under VFGE policies reflect long-term differences in population growth, and slight differences in physical market access, as the Czech Republic and Hungary are landlocked, which is assumed to result in a slight penalty in long-term growth).

There are three important conclusions from Table 10. First, even under current policies, we can expect the growth rates of the Czech Republic and Poland to be high by

European standards, mainly by virtue of the fact that they start out far below the EU average. Second, further harmonization with the European Union will only lead to a modest increase in these growth rates (and would actually *lower* growth of the Czech Republic since its saving rate and IEF are currently higher than the EU's). Finally, and most importantly, harmonization with the standards of the very fast growing economies will lead to a large increases in expected growth rates.

We can also use the regression estimates to calculate the time needed for a poorer economy to close a given amount of income gap with a richer counterpart. Consider two countries, i and j, with $y_i(t) < y_j(t)$. Let $D_{ij}(t) = \beta_1' [Z_i(t) - Z_j(t)]$, and let $\gamma(t)$ be the log difference in income levels, $\gamma(t) = y_i(t) - y_j(t)$. Since $d\gamma(t)/dt = G_i(t) - G_j(t)$, we can write:

(2) $$\dot{\gamma}(t) = D_{ij}(t) - \beta_2 \gamma(t)$$

Equation (2) is a first-order differential equation with the well-known solution given in (3):

(3) $$\gamma(T) = e^{-\beta_2 T}\gamma(0) + e^{-\beta_2 T}\int e^{\beta_2 \iota} D_{ij}(\iota) d\iota$$

Using (3), for a given initial gap in incomes $\gamma(0)$, and a given path of structural differences, $D_{ij}(t)$, we can readily calculate the time path of the log difference in per capita income. In particular, we can find the time needed for the gap to be closed to any particular target level. In the special case that $D_{ij}(t)$ is a constant value, (3) becomes:

(3') $$\gamma(T) = \frac{D_{ij}}{\beta_2} + e^{\beta_2 T}\left[\gamma(0) - \frac{D_{ij}}{\beta_2}\right]$$

and we can solve for T algebraically. Note that in the long run, γ reaches a steady state level equal to $\gamma(ss) = D_{ij}/\beta_2$. Therefore, at any time T, $\gamma(T)$ is a weighted-average of the initial value $\gamma(0)$ and the steady-state value $\gamma(ss)$: $\gamma(T) = a*\gamma(0) + (1-a)*\gamma(ss)$, where $a = \exp(-\beta_2 T)$.

In Table 11, we make calculations of the number of years that would be required for the CEEs to reach 50 per cent of the EU average, and 75 per cent of the EU average, under alternative assumptions about policy actions. We again construct **three** alternative scenarios with regard to $D_{ij}(t)$, where i is the particular CEE (i = Czech Republic, Hungary, or Poland), and j is the EU average. In the first scenario, we assume that all structural variables remain fixed at their most recent values. In particular, the IEF and the saving rate are taken as fixed at their current values. Let T50 signify the number of years until the CEE is at the 50 per cent level of the EU, and T75 signify the number of years until it reaches 75 per cent of the EU. For each country, we calculate three values for T50 and three values for T75, based on the three policy scenarios.

The first point to mention is that with current policies Hungary would not even reach 50 per cent of the EU average, and Poland would never reach 75 per cent of the EU average.

To understand this result, note that our estimated growth equations imply that all countries are in transition between their current per-capita income and their long-run income. Initially, Hungary and Poland will grow faster than the EU, because they start out poorer. However, this faster growth diminishes as the two countries approach their respective long-term income levels. Since they are both "inefficient" relative to the EU (with a lower IEF), and they save less than the EU, they are predicted to achieve a permanently lower level of per capita income. Our calculations imply that with its savings rate of 18 per cent and its IEF of 2.9, Poland's long-term income would be around 72 per cent of the EU's. This is why, with current policies, Poland is shown in Table 11 to reach 50 per cent of the EU average in 53 years, but *never* to reach 75 per cent of the EU average. Similarly, with its low savings rate of 11.6 per cent, Hungary's long-term income would be so low that it would never achieve even 50 per cent of the EU average!

The second important point from Table 11 is that it would take a very long time for the Central European Economies to reach 75 per cent of the EU average if they merely harmonize their policies with those of the EU, but do no better than EU policies. Our calculations suggest that it would take the Czech Republic 75 years, Hungary 94 years, and Poland 78 years to reach 75 per cent of the EU average if they harmonize immediately with the EU. Thus, even though the Central European countries may be expected to grow faster by virtue of their low initial income, this advantage alone is not sufficient to achieve very rapid convergence with the European Union.

With policies oriented toward *rapid* growth as in the VFGEs, however, the Table shows that the time until convergence can be dramatically reduced. Our calculations suggest that if the Central European countries adopt the policies of the very-fast-growing economies, the time until Hungary reaches 50 per cent of the EU can be cut from 25 years to 11 years, and the time until Poland reaches the same level can be cut from 30 years to 15 years. Similarly, the time to reach 75 per cent of the EU average can be cut from 75 to 21 years for the Czech republic, from 94 to 29 years for Hungary and from 78 to 32 years for Poland.

IV. Can the CEEs sustain very fast growth?

Can the CEEs achieve very fast growth rates, at magnitudes needed to reach half of the average income level of the European Union within the next quarter century? Can they apply the lessons of the VFGEs in the European context? A first sobering observation is that the *poorer EU economies* have mostly failed to achieve very high rates of growth. The PEUEs probably offer the best guess of future CEE performance, since the PEUEs show the performance of poorer peripheral European economies under the real political and institutional conditions of EU membership. Spain and Portugal grew rapidly in the mid-1980s, but then got bogged down in fiscal difficulties in the 1990s. While Portugal achieved a growth rate of 5.3 per cent during 1985-90, it managed just 0.7 per cent during 1990-94. Spain has just managed 0.9 per cent per annum during the 1990-94. Greece has essentially been mired in crisis since the mid-1980s. Only Ireland has seen an acceleration of growth,

to the point where it was the fastest growing economy in the OECD in 1994 (6.7 per cent per year).

If we point to the one critical area where the PEUEs fail to emulate the VFGEs, it is the area of fiscal policy. The PEUEs all have large governments; extensive social welfare systems; high rates of labor taxation; and heavy reliance on PAYG financing of social security. The large government leads to moderate-to-high values of market distortion (compare the IEF values of the PEUEs and the VFGEs, in Table 3), and to low or moderate saving rates (see Table 7). Three of the four (all but Ireland) saw steep increases in public spending and taxation as a per cent of GDP during the 1980s and first half of the 1990s. Notably, Ireland bucked the trend after 1986, reducing total government spending from 53 per cent of GDP in that year to around 43 per cent of GDP in 1994. The rise of government spending and taxation in the other three countries has been associated with a rising tax wedge; a high and rising rate of unemployment during the 1980s and early 1990s; and a falling rate of national saving.

The Central European economies are subject to the same fiscal pressures as the PEUEs, and are therefore susceptible to the same mediocre long-term growth performance. The fiscal pressures are common to the PEUEs and the CEEs for several reasons. First, these fiscal pressures reflect a common ideological commitment to a universal social welfare state -- a European-wide commitment that even transcended the differences in economic systems between East and West before the 1990s. Second, they reflect the pressures, both political and legal, of the *acquis communitaire*, that is the accumulated body of law of the European Union. As the CEEs want to join the EU, they will be pushed to harmonize social policy, fiscal policy, taxation policy, and other areas of economic management. With harmonization may well come a further push towards a large government role in the economy, including an expensive, PAYG social welfare system. Third, the CEEs, like the PEUEs, are subject to the political and economic ratchet effects of entitlement spending. Once generous social insurance systems are in place, they are extremely difficult to unwind. Interest groups, particularly of the elderly, have proven to be formidable opponents to any attempts to trim the prevailing social insurance system. Public trade unions, especially in France, Italy, Spain, and the CEEs, have also fought for the retention and even expansion of the prevailing entitlements.

While the outcome of modest economic growth and slow convergence is the most likely, it is not inevitable. The EU itself is going through deep soul-searching over the role of the state, as country after country reaches a point of fiscal stress. Perhaps the CEEs will be able to take a faster step towards a smaller, and growth-promoting state, since the economic institutions in the CEEs are probably still more malleable, and subject to reform, than in the EU itself. Let us therefore return to the three clusters of characteristics that promote the rapid growth of the VFGEs: allocative efficiency, inter-temporal efficiency, and technological efficiency. We can assess the prospects of the CEEs in each area, to see their prospects of emulating the high-growth performance of the VFGEs.

1. Allocative Efficiency

There is no doubt that the CEEs have achieved a stupendous breakthrough in allocative efficiency since the start of market reforms. The introduction of market forces, underpinned by administrative, political, and legal changes, has allowed these economies to become full-fledged market economies in a relative short period of time, approximately one-half decade. As the **1995 Transition Report of the European Bank for Reconstruction and Development** makes clear, the leading reformers (Czech Republic, Estonia, Hungary, Poland, Slovakia, and Slovenia) have completed the basic tasks of legal and institutional reform, and have even reached Western European best practices in several key areas, such as the openness of the economy to international trade. Within another few years, the CEEs should rival the Western European economies in other areas of legal and administrative reform.

There is also little doubt that the rise in allocative efficiency is already paying off, in export-led GDP growth. All of the leading reforms have restored positive growth in 1995, after several years in which the introduction of market reforms forced the downsizing or liquidation of the old, heavy industrial enterprises. Much of the new growth is coming in small, export-oriented enterprises, as well as in services. Foreign direct investment is also starting to increase, with foreign-owned enterprises in the CEEs increasingly helping to integrate the region into European-wide, or even global, production networks.

The cross-country evidence after five years of reform suggests that the strongest market reformers have experienced the mildest downturns in measured economic activity and the fastest recoveries. This evidence is shown in Figures 1(a) and (b), where we plot economic growth against the degree of market reforms. The Index of Market Reforms (IMR) is an index constructed on the basis of EBRD measures of reform progress in the post-communist economies. (In effect, is as an IEF measured for 25 countries in transition). The IMR is the simple sum of sub-indexes constructed by the EBRD to measure the progress of market reforms along nine dimensions, including: large-enterprise privatization, small-enterprise privatization, enterprise restructuring, price liberalization, trade and foreign exchange liberalization, competition policy, banking and interest rate reform, securities market reform, and legal institutions governing investment. We see the strong positive relationship between the Index of Market Reform and economic growth, both cumulative growth, 1989-95, and (projected) economic growth in 1995. Clearly, the faster reformers have experienced a smaller cumulative downturn, and a faster recovery as of 1995. Indeed, *all of the leading reformers are expected to show economic growth in 1995.*

By 1995, the CEEs had made considerable progress in all of the major areas of reform. In the crucial area of trade and exchange rate liberalization, the EBRD judges that six of the countries (Czech Republic, Hungary, Poland, Romania, Slovakia, and Slovenia) have reached the standards of the advanced industrial economies. Nonetheless, there is still considerable work to complete on the basic institutional re-ordering, even for the three leading CEEs (Czech Republic, Hungary, and Poland). As shown in Table 4, these countries still have a state-enterprise sector that is producing 30 per cent or more of GDP, according to the EBRD estimates. They also lag behind the advanced industrial countries in several areas of legal and administrative development, including: banking reform, securities market development, and competition policy.

The reforms to date are enough to generate gradual convergence with the EU, but not rapid convergence. In our view, CEE growth rates comparable to the VFGEs are in fact achievable, but only with a decisive medium-term reduction of the size of the state, particularly in budgetary spending and the provision of retirement pensions. As with the poorer EU countries, the CEEs carry a legacy of a very large public budget as a per cent of GDP. Interestingly, and regrettably, the size of the government spending and taxation as a proportion of GDP *has remained very high despite the market reforms that began in 1989.* What has happened, instead, is that the composition of the state spending has changed -- fewer subsidies matched by greater social expenditures -- without necessarily reducing the overall levels of government expenditure as a per cent of GDP. It appears that the Czech Republic did achieve a reduction in the expenditure-to-GDP ratio, from an astounding 60 per cent or so at the start of reforms, to a still very-high 50 per cent currently. In Tables 4, 6, and 7, we offered comparisons of various fiscal measures in the CEEs with the average levels in the other main groups of countries. The CEEs have a particularly high level of government consumption spending; total government expenditures; and government revenues as a per cent of GDP. As we saw in Table 6, the high overall levels of tax collection are reflected as well in high marginal tax rates, and a tax wedge on labor income that is vastly higher than in the VFGEs, the SGEs, and even the PEUEs. Oddly, while overall government spending is very high, budgetary *investment* spending is actually low in comparison with the VFGEs. It is difficult to make precise comparisons of the level of public investment, since a considerable amount of such spending will be off-budget, on the accounts of state enterprises. Nonetheless, it is likely that the Central European economies have squeezed infrastructure spending excessively to make room for large current expenditures, particularly transfer payments.

The main effects of extremely high public expenditure and taxation in the CEEs are likely to include: a substantial disincentive to labor supply; a rise in the long-term unemployment rate; an encouragement of black-market activities; a reduced inflow of foreign direct investment; large public deficits; and a reduction in national saving rates. We can see many of these effects already at play in a comparison of the CEEs with the VFGEs. Public sector saving is lower; deficits are higher; and overall national saving and investment rates are far lower.

2. Pension Reform in the CEEs

The current heavy pension spending in the CEEs can be justified as a **one-time inter-generational transfer** from the young and unborn workers to the current population over age 50. After all, it is the older middle aged workers and the retirees that have the most difficult time adjusting to the new market economy, and therefore stand to suffer the largest losses of income as a direct result of the market reforms (and the high inflation that preceded it). The evidence from Poland suggests that in this regard, the heavy pension spending has been successful: the real consumption of the older population has been maintained throughout the transition. Even more notably, life expectancy has continued to rise in the Czech Republic, Hungary, and Poland despite the tumult of the transition (and the sharp declines in life expectancy in the post-communist economies of the former Soviet Union).

Nonetheless, it would prove to be enormously costly if the current pay-as-you-go pension system becomes permanent, with today's younger workers viewing the current levels of pension payments as entitlement that they will also receive in the future. Pension reform in the CEEs should involve two major changes in the next decade: (1) a phase out of pay-as-you-go financing, with its replacement by an individualized savings account system as in Chile, Malaysia, and Singapore; and (2) a more realistic level of benefits and terms for qualification for future retirees within the state-funded pension system. The most ambitious reform would completely phase out the pay-as-you-go system, as Chile succeeded in doing in its 1978 reforms.

The basic mechanics of a shift from a PAYG to a funded, individual-savings system are as follows. Current pensioners continue to receive their benefits as if the system had remained unchanged (though the specific *level* of benefits might, of course, be adjusted). All workers who currently contribute to the system shift to an individual savings account, so that contributions in the future are deposited in the individual accounts. In addition, workers receive an initial "endowment" of equities and government bonds in their individual accounts, reflecting their previous "contributions" through payroll taxation. In Chile, this initial balance in the savings accounts was termed the "recognition bond," in recognition of past tax payments.

The recognition bonds immediately add to the stock of government debt, but this additional stock of debt is not really new debt. Rather, the government's commitment to future social security benefits already represents an *implicit* stock of government debt, which is now made explicit through the recognition bonds. The fact that current retirees must now be financed through general government revenues, rather than tax payments of the young, also adds a new *flow deficit* to the budget, but one that is matched by a reduced commitment to government retirement spending in the future (since retirement benefits will then come out of the assets in the individualized accounts, rather than from the budget). In a mechanical sense, the flow deficit can be readily financed: the pension-reform law can mandate that the individualized accounts be invested largely in government debt in the first few years, in order to ensure the financing of the flow deficit. Alternatively, the government might offset part or all of the flow deficit through expenditure cuts or tax increases. Chile, for example, managed to finance its transition in the early 1980s through government surpluses on non-pension spending, which were used to cover the pension payments to the existing retirees.

In the case of Central Europe, workers should **not** receive the full actuarial value of their past contributions, *since some of those contributions should be recognized as a* ***one-time, uncompensated transfer*** *of income from the young to the older generation.* As an illustrative example, workers 50-55 might receive enough to ensure them 90 per cent of the current benefits (taking into account their continuing contributions up to retirement age); workers 45-50 might receive enough to ensure 75 per cent of the current benefits; and so forth, with reduced recognition bonds for younger workers. Workers currently 25 and younger might receive nothing, despite previous payroll taxation. At the same time, the retirement age should also be raised gradually.

The CEEs might be able to use an additional mechanism to fund the transition. Rather than paying recognition obligations exclusively in the form of government bonds, the CEE

governments could also allocate some of the remaining state-owned equities to the funding of individualized savings accounts. In particular, the government would create diversified portfolios of state-enterprise shares which they would transfer to private investment trusts. The workers would then receive shares in the investment trusts as part of their initial balances.

There are, of course, many detailed issues that have to be resolved in the changeover from a PAYG system to an individualized system, including some of the following issues. First, who will manage the individualized accounts? Chile has relied on a regulated, private-sector, pension-fund industry, while Singapore and Malaysia have relied on centralized government funds that manage all of the savings. Second, what prudential standards will govern the management of the individualized accounts? There are many important choices here, involving the balance between government bonds and equities, and domestic versus foreign assets. Third, what will be the coverage of the new system? Will participation be mandatory? Is there a minimum mandatory contribution (as a proportion of income) that each participant must make? These questions can be resolved, but inherently they must be tailored to national conditions, and are in any event beyond the scope of this paper.

3. Other Remaining Tasks for Achieving High Growth in the CEEs

The CEEs have several important growth-promoting tasks in addition to the *completion of market reforms* (especially privatization and financial market deepening) and *fiscal reform* (especially pension reform) to lower tax distortions and raise national saving rates. Three addition areas of concern include: (1) membership in the European Union in the near future; (2) improvements in infrastructure and education; and (3) a medium-term government strategy to support very fast growth.

De Crombrugghe, Minton-Beddoes, and Sachs (1995) stress the importance of rapid accession of the CEEs to the European Union. A clear target date for membership is important to lock in the economic reforms in Central Europe, and to boost investor confidence with regard to the CEEs' market access to the EU. Without a clear timetable for accession, there is the possibility of a vicious circle of loss of confidence in market reforms and falling investment spending in the CEEs, thereby confirming the view of some in the EU that accession should be delayed for decades, not years. Most of the perceived difficulties of accession can be overcome if a few basis principles are recognized. First, the CEEs need market access, not financial aid from the EU. Therefore, the CEEs should unilaterally renounce their desire for a significant share of the EU structural funds, in return for rapid accession. Second, the CEEs should join the EU with a long transition period, presumably a decade from the time of membership, in which to harmonize agricultural policy and free labor mobility. Third, the CEEs should opt out of the Social Charter (in return for agreeing to a postponement of free mobility of labor), as the CEEs economies should not be further burdened with high social costs at a time when they must achieve very rapid economic growth.

Together with rapid accession, the CEEs need to pursue a coherent medium-term strategy for expanded infrastructure investment spending, especially infrastructure linked to

economic integration with Western Europe. Since the CEEs will aim for export-led growth, with a strong inflow of foreign direct investment, they should focus their infrastructure spending on transport and communications facilities, especially in those projects linked to the European Union grid. Education is the other area for a major public spending commitment, in order to increase the scope and quality of tertiary education.

For all of this, the government requires a clear medium-term strategy. We believe that such a strategy should rest on six pillars that we have discussed throughout this text: (1) completion of main institutional steps of market reform, including most importantly the completion of privatization and deepening of the rule of law; (2) deep fiscal reform, to reduce the share of government spending and taxation in GDP; (3) investing in infrastructure, especially in transport and communications, in order to speed and deepen the economic integration with the EU markets; (4) membership in EU, but without accession to the Social Charter and to other aspects of EU policy that would tend to exacerbate the size of the state; (5) science, technology, and education policies to spur productivity growth; and (6) setting appropriate (and ambitious) growth targets for the next ten years, with the aim of emulating the growth performance of the VFGEs.

V. Conclusion

We have noted that the CEEs are likely to experience economic convergence with the European Union, assuming that CEE economic policies are harmonized with those of the EU. On the other hand, the speed of convergence is likely to be relatively slow if policies do no more than achieve harmonization on EU standards. The CEEs should instead aim to achieve very high growth targets, by emulating the fiscal policies of the very-fast-growing middle-income countries. These fiscal policies include low rates of marginal taxation, low levels of current government expenditure as a per cent of GDP, relatively high levels of government investment expenditure, and pension policies based on individual savings accounts rather than pay-as-you-go transfers. Pension reform merits a prominent place in the reform agenda in the coming years, as a centerpiece of a high-growth strategy.

Technical Appendix:

As described in the text, our growth equation can be written as the following differential equation.

$$\dot{y}^i(t) = \beta_0 + \beta_1' Z^i + \beta_2 y^i(t)$$

Where y is the natural log of GDP per economically active population, and where β_1 is a vector of coefficients corresponding to the variables in the vector Z. When the parameters and the Z's do not vary over time, we can integrate this equation from time 0 to time T and rearrange to obtain.

$$\frac{y(T)-y(0)}{T} = -\frac{(1-e^{-\beta_2 T})}{T} y(0) + \frac{(1-e^{-\beta_2 T})}{T} \frac{\beta_0 + \beta_1' Z^i}{\beta_2}$$

This is the form of the equation that we actually estimate, so the regression coefficients are non-linear transformations of the β's. Noting that in our case T=20, we can recover consistent estimates of the β's with simple algebra. For example, an estimated regression coefficient on initial income of -1.38 implies an estimate of $(1-e^{-\beta T})/T$ of 0.0138, because the dependent variable in the regression is multiplied by 100, so all the regression coefficients are in effect multiplied by 100. The estimate for β_2 in the same units as the -1.38 coefficient is then -1.61 (=100*(ln(1-0.0138*20)/-20)). Note that the regression table (number 11) reports both the regression coefficients as well as the implied β's for two of the regressions.

Note also that we can again integrate the differential equation from 0 to T separately for two countries "i" and "j", and subtract the equation for "j" from "i" to obtain.

$$y^i(T) - y^j(T) = (y^i(0) - y^j(0))e^{-\beta_2 T} + (1-e^{-\beta_2 T})\frac{\beta_1'}{\beta_2}(Z^i - Z^j)$$

Writing the difference in log GDP at time T as γ(T) and the difference at time 0 as γ(0), and writing $D_{ij} = \beta_1'(Z^i - Z^j)$, this simplifies to equation (3') in the text.

$$\gamma(T) = \frac{D_{ij}}{\beta_2} + e^{-\beta_2 T}\left[\gamma(0) - \frac{D_{ij}}{\beta_2}\right]$$

With targets for γ(T), known values of γ(0) and the Z's, and estimates of the β's, we use this equation and solve for T. Alternative values for T, corresponding to different targets γ(T) and different D's are displayed in Table 11.

Table 1. Income Levels in Central and Western Europe

	Per-capita GDP [1]		
	In 1993 U.S. Dollars	In PPP-adjusted 1993 U.S. Dollars	Per cent of European Union Average [2]
Austria	23510	19430	
Belgium	21650	19640	
Denmark	26730	19560	
Finland	19300	15530	
France	22490	19000	
Germany	23560	16850	
Greece	7390	9000	
Ireland	13000	13490	
Italy	19840	17830	
Netherlands	20950	17330	
Portugal	9130	10710	
Spain	13590	13510	
Sweden	24740	17200	
United Kingdom	18060	17210	
EU Average[3]	18853	16164	
Czech Republic	2710	7550	46.7
Hungary	3350	6050	37.4
Poland	2260	5000	30.9

[1] Source is World Development Report, 1995, pages 162 and 220.

[2] Based on the PPP numbers. The income gap is calculated as $gap^i = 100*(Y^{EU}-Y^i)/Y^{EU}$.

[3] Excluding Luxembourg.

Table 2. Economic Growth in Selected Countries

	Growth of real GDP per person[1] 1985-92 (%)	Growth of real GDP per economically-active population[4] 1985-1992	Real GDP per person (PPP adjusted 1985) 1985[5]
Very Fast Growing Economies			
Chile	5.1	4.8	3467
Hong Kong	6.4	6.4	10599
South Korea	9.2	8.3	4217
Malaysia	5.1 [2]	4.8	4146
Mauritius	5.7	5.5	4226
Singapore	5.7	5.7	8616
Taiwan	7.7	7.3	5449
Thailand	7.4	5.9	2463
Slow Growing Economies			
Argentina	2.1	2.3	5324
Brazil	-0.5	-1.1	4017
Mexico	1.6	0.3	5621
Turkey	3.1	2.4	3077
Poor European Union Economies[7]			
Greece[6]	0.8	0.4	6224
Ireland[6]	3.7	3.7	7275
Portugal[6]	3.2	2.7	5070
Spain[6]	2.8	2.3	7526
Central European Economies			
Czech Republic (1994) [3]	2.8	2.5	7550
Poland (1994) [3]	4.8	4.4	6050
Hungary (1994) [3]	2.7	2.4	5000

Notes: [1] Average annual growth in real gross domestic product per person for the period 1985-1992, unless otherwise specified. The source is the real GDP data (adjusted for purchasing power) in version 5.6 of the Penn World Tables, which is an update of the data in Summers and Heston (1991). For the poor EU economies, the source is the OECD.

[2] Covers the period 1986-1994, using World Bank data for 1993 and 1994.

[3] For the Central European countries, the source is Transition Report 1995, European Bank for Reconstruction and Development, annex 1.1 and table 3.1, pages 185 and 68. Population growth is taken from the Penn World Tables, version 5.6 and World Bank.

[4] The economically-active population is defined as the population between ages 15 and 64. The growth rates in column 2 are the growth rates in column 1 minus the average annual growth in the ratio of the economically active population to total population, between the years 1985 and 1990. The demographic data is from World Tables, 1994, data diskette.

[5] 1992 for the three transition economies. From Penn World Tables, version 5.6, Poland is estimated as 50/77 of the Czech GDP, based on World Bank data.

[6] Sources: OECD Economic Outlook, June 1995. Annex Table 1, p. A4 for GDP.

[7] 1985-94.

Table 3. Data from the 1996 Index of Economic Freedom

	Overall	Trade	Taxation	Gov. Cons	Mon. Policy	Foreign Inv.	Banking	Wage/ Prices	Property Rights	Regulation	Black Market
Very Fast Growing Economies	2.0	2.2	2.8	1.4	1.6	2.3	2.4	2.3	1.1	2.0	1.7
Slow Growing Economies	3.1	3.3	3.9	2.0	5.0	2.3	2.8	3.0	2.5	3.0	3.5
Rest of the Developing Economies	3.3	4.2	3.7	2.7	2.9	2.8	3.2	2.9	3.1	3.6	3.9
Poor European Union Economies	2.6	2.0	4.5	2.5	2.0	2.0	3.0	2.5	1.8	2.8	2.8
Other European Union Economies	2.2	2.1	4.5	2.6	1.1	2.1	2.2	2.2	1.3	2.6	1.0
Central European Economies	2.7	3.0	3.8	2.7	3.7	2.0	2.0	2.3	2.0	2.3	2.7
of which:											
Czech Republic	2.0	1.0	4.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	3.1
Poland	3.05	4.0	3.5	3.0	5.0	2.0	3.0	3.0	2.0	3.0	2.0
Hungary	2.9	4.0	4.0	3.0	4.0	2.0	2.0	2.0	2.0	3.0	3.0

Source: Johnson and Sheehy (1996)
Trade: Based on average tariffs (ranges from 1 (<4%) to 5 (>20%)).
Taxation: Based on income and corporate taxes (from 1 (low) to 5).
Government Consumption: Based on ratio of government consumption to GDP (1 (<10%) 5 (>46 %)).
Monetary Policy: Based on average inflation rate (1 (<6% 5 (>30%)).
Foreign Investment: 1 (encourages foreign investment 5 (actively prevents foreign investment).
Banking: 1 (few restrictions) 4 (banks tightly controlled) 5 (financial institutions in chaos).
Wages/Prices: 1 (no wage/price controls) 5 (complete control).
Property Rights: Protection of property rights: 1 (very high) 5 (nonexistent).
Regulation: 1 (clear, uniformly applied, no corruption) 5 (unclear, randomly applied, bribes mandatory)
Black Market: 1 (black market is less than 10 % of GDP) 5 (>30%).

Table 4. Level of Government Spending, and its Distribution Between Consumption and Investment

	Government Spending (per cent of GDP, 1985-1991)[1]			Production of State-owned Enterprises[2] (per cent of GDP)
	Total	Current	Investment	
Very Fast Growing Economies				
Chile	27.5	24.0	3.5	12.9
Hong Kong	14.3	.	.	n.a.
Korea S.	16.6	14.2	2.4	10.3
Malaysia	31.9	27.6	4.3	17.0
Mauritius	23.8	20.0	3.8	1.8
Singapore	26.0	16.6	9.4	n.a.
Taiwan	32.1	.	.	6.2
Thailand	17.1	14.0	3.1	5.4
Slow Growing Economies				
Argentina	14.6	13.4	1.2	4.7
Brazil	30.9	29.6	1.3	8.6
Mexico	26.7	23.0	3.7	11.0
Turkey	23.3	19.3	4.0	9.1
Poor European Union Economies				
Greece	55.7	49.8	5.9	n.a.
Ireland	54.0	50.4	3.6	n.a.
Portugal	44.3	40.2	4.1	14.2
Spain	33.9	30.6	3.3	n.a.
Central European Economies				
Czech Republic (1994)	49.0			30.0 (1994)
Poland (1994)	50.2			40.0 (1994)
Hungary (1994)	60.5			40.0 (1994)

[1] For the Central European countries, source is Transition Report 1995, and numbers are for the latest available year. For other countries, the source is World Tables 1994, country pages, and the numbers are for 1990.

[2] For the Central European countries, source is Transition Report 1995, and numbers are for the latest available year. For other countries, the source is World Bank (1995) Bureaucrats in Business, Table A.1., the numbers are for 1985-91.

Table 5. Subsidies and Social Expenditure in 3 Transition Economies (as % of GDP)

	Subsidies		Social Spending	
	1989	1993	1989	1993
Czech Republic	16.6[1]	-	13.2[1]	14.6
Hungary	10.7	3.1	15.8	22.5
Poland	12.9	3.3	10.0	21.0

[1] For Czechoslovakia.

Source: European Bank for Reconstruction and Development, Transition Report 1994, and national data.

Table 6. Tax Policy as of 1994

	Income Tax Rate of the Average Person[a] (%)	Top Income Tax Rate	Social Security Tax Rate[b]	Value Added Tax Rate[c]	Tax Wedge[d]
Very Fast Growing Economies					
Chile	5.0	50.0	13.0	18.0	30.0
Hong Kong	9.0	25.0	0.0	0.0	9.0
South Korea	27.0	50.0	0.0	10.0	33.6
Malaysia	10.0	34.0	1.7[1]	10.0	19.6
Mauritius	n.a.	n.a.	9.0	n.a.	n.a.
Singapore	12.0	30.0	0.0	0.0[2]	12.0
Taiwan	6.0	40.0	7.0[3]	5.0	16.7
Thailand	5.0	37.0	3.0	7.0	13.9
Slow Growing Economies					
Argentina	18.0	30.0	49.0	18.0	64.6
Brazil	15.0	25.0	43.2	18.0	59.0
Mexico	17.0	35.0	20.6	0.0	34.1
Turkey	35.0	50.0	33.5	12.0	61.4
Poor European Union Economies					
Greece	15.0	40.0	44.5	n.a.	n.a.
Ireland	27.0	48.0	21.0	21.0	52.3
Portugal	25.0	40.0	35.5	16.0	41.7
Spain	27.0	56.0	37.7	15.0	60.5
All Developing Countries	21.4	33.7	16.7	12.7	41.9
Central European Economies					
Czech Republic	20.0	47.0	49.5	23.0[4]	67.1
Poland	20.0	40.0	48.0	22.0[5]	65.9
Hungary	35.0	44.0	62.5[6]	25.0	80.5

Notes:

[a] The marginal income tax rate of a person earning the average wage in manufacturing or, if that is not available, the average per-capita GNP.

[b] Sum of employer's and employee's contribution rates to fund social benefits such as unemployment, health care, occupational insurance, and pensions.

[c] The reported rate is the rate that covers most goods and services. Some countries have special rates for luxuries and imports. In countries without value added taxes, this is the sales tax rate.

[d] Take home pay of the average wage worker divided by the unit labor cost to the firm:
= 100*(1-sstax)(1-inctax)/(1+vatax)

[1] Approximate employer contribution rate for disability insurance for low-wage employees.

[2] Does not include 4% tax on food and beverages.

[3] Does not include additional occupational risk insurance required in special industries.

[4] VAT on food and energy is 5%.

[5] VAT on food, construction and some pharmaceuticals is 7%.

[6] Includes employer contributions to the social security fund (44%), unemployment fund (7%), and vocational fund (1.5%) and employee contribution to the social security fund (10%).

Source: 1994 International Tax Summaries, Coopers and Lybrand. For tax data, and Yearbook of Labour Statistics, ILO 1994, for wages and hourly employment in manufacturing.

Table 7. Savings Rates

	National Saving (% of GDP) 1985-91	Government Saving (% of GDP) 1985-91	Private Saving (% of GDP) 1985-91	Investment as a share of GDP[1] 1985-91
Very Fast Growing Economies				
Chile	25.9	2.6	23.3	24.9
Hong Kong	n.a.	n.a	n.a.	28.8
Korea S.	35.8	3.8	32.0	33.5
Malaysia	33.7	2.6	31.1	27.9
Mauritius	24.8	3.9	20.9	27.8
Singapore	42.3	15.7	26.6	33.1
Taiwan	32.1	6.8	25.3	22.6
Thailand	28.8	3.4	25.4	33.8
Slow Growing Economies				
Argentina	19.1	-0.1	19.2	16.6
Brazil	24.0	-6.4	30.4	21.0
Mexico	19.7	-4.9	24.6	21.1
Turkey	21.5	-0.5	22.0	23.2
Poor European Union Economies				
Greece	14.9	-12.5	27.4	19.2
Ireland	17.0	-3.1	20.1	17.6
Portugal	20.4	-2.7	23.1	28.5
Spain	21.6	-0.2	21.8	23.3
Central European Economies				
Czech Republic (1994)	21.1	8.1	13.0	20.0
Poland (1994)	18.0	0.2	17.8	19.0
Hungary (1994)	11.6	-1.3	12.9	21.0

Notes:

For eight of the first nine countries, the data on savings are taken from World Tables 1994, the World Bank, table 16, page 62. For Singapore and the Central European countries, savings is estimated as the sum of gross investment and the current account surplus, all measured in per cent of GDP ($S/Y=i/Y+CA^{s}/Y$). Investment as a per cent of GNP is from Transition Report 1995, EBRD, table 3.1 page 68, and the current account surplus as a per cent of GDP is constructed from data in annex 1.1. For Singapore, the data are from page 577 of World Tables, 1994, Government saving is the sum of current and capital revenue minus current expenditures. The data are from the country pages of World Tables, 1994, the Taiwan Statistical Data Book, and the MultiQuery database of the World Bank (for Central European countries).

[1] Average ratio of nominal gross investment to nominal gross domestic product for the period 1986-1992. The source is table 15, page 58, in World Tables, 1994, World Bank.

Table 8. Old-Age Benefits, the VFGEs and CEEs, as of 1993

	Coverage	Type of System	Source of Funds	Qualifying Conditions	Benefits
Chile	Mandatory for wage and salary workers, voluntary for self-employed	Mandatory saving, based on individual savings account	10 per cent of wages and salaries; government subsidies for means-tested pensions	Men, age 65, with 20 years of contributions Women, age 60	Insured's contributions plus accrued earnings, paid in lump sum or annuity
Hong Kong	Universal	Means tested for aged 65-70, universal aged 70 and above	Payroll taxes, 0%; government budget, full funding	Age 70 (other than means-tested)	Flat rate of $US 61 per month, or around 25% of average wage in manufactures
Korea	Workers in firms with 5 employees or more	Pay-as-you-go system being phased in mid-1990s; no state system up to 1990	Payroll taxes, 4% as of 1993, rising to 6% in 1998	Age 60, insured 20 years or more, with reduced pensions for lesser years or early retirement	2.4 times the average monthly earnings of contributor plus 2.4 times the average monthly earnings of all insured persons (approximately 4.8 months of earnings)
Malaysia	All employed workers	Mandatory saving, based on provident fund	22% of earnings, into individual account	Age 55, upon retirement	Insured's contribution plus accrued earnings, paid in lump sum
Mauritius	Universal pension	Pay-as-you-go, plus means-tested pension	Payroll taxes, 9%, plus government budgetary outlays for means-tested pension	Age 60	Universal pension of $US 31 per month (approx. 14% of average wages), plus 0.83% of earnings per year of contributions up to max of one-third of former earnings
Singapore	Employed persons	Mandatory saving, based on provident fund	40% of earnings, into individual account	Age 55	Insured's contribution plus accrued earnings, paid in lump sum

Table 8. Old-Age Benefits, the VFGEs and CEEs, as of 1993 (p.2)

	Coverage	Type of System	Source of Funds	Qualifying Conditions	Benefits
Taiwan	Employed persons in firms with 5 or more employees	Pay-as-you-go	7% of payroll	Men, age 60 Women, age 55	Lump sum equal to 1 month's earnings per year for 15 years, plus 2 months earnings per year for 15-30 years, up to a maximum of 45 months of earnings
Thailand	New system to begin in 1996	not applicable	not applicable	not applicable	not applicable
Czech Republic	Employees	Pay-as-you-go	Payroll tax, 27.2%; deficits covered by budget	Men, age 60 Women, age 53-57 Reductions for arduous or dangerous work	50% of covered earnings during highest 5 of last 10 years , plus 1% of earnings per year of employment between 26 and 42 years
Hungary	Universal	Pay-as-you-go	Payroll tax, 30.5%; deficits covered by budget	Men, age 60 with 20 years experience Women, age 55 Reductions for unhealthy work, and partial pensions for early retirement	53% of net earnings if 20-years of coverage, up to 75% of net earnings for 42 years of coverage
Poland	Universal	Pay-as-you-go	Payroll tax, 45%; deficits covered by budget	Men, age 65 Women, age 60 Reductions for arduous or dangerous work	24% of national average wage, plus 1.3% of base earnings times the years of contribution, with the base year based on best three consecutive years out of 12

Source: U.S. Department of Health and Human Services (1994), Social Security Programs Throughout the World -- 1993, Research Report #63, May

Table 9. Cross-Country Growth Regressions

Dependent variable is Growth in real GDP per economically active population

Explanatory Variables	1970-89 (1)	1986-90 (2)	1970-89 (3)	1986-90 (4)	Estimates of the β's regr. (1)	regr. (3)
Log of real GDP at the beginning of the period	-1.49	-0.88	-1.38	-1.15	-1.77	-1.61
(t-ratio)	(-5.38)	(-2.45)	(-5.95)	(-3.60)		
Openness	1.63	3.36	1.77	3.03	1.94	2.07
	(3.32)	(3.64)	(3.93)	(3.73)		
Natural Resource Intensity	-3.12	-8.86	-5.04	-7.06	-3.70	-5.90
	(-2.63)	(-4.48)	(-4.89)	(-3.99)		
Access to Sea	-1.76	-1.01	-1.03	-0.57	-2.09	-1.19
	(-2.26)	(-1.04)	(-1.72)	(-0.67)		
Economic Freedom Rating	-0.75	-1.35	-0.67	-0.67	-0.89	-0.78
	(-2.24)	(-2.39)	(-2.23)	(-1.30)		
Savings Rate	-	-	0.112	0.146	-	0.131
			(5.17)	(4.89)		
R^2	0.530	0.478	0.643	0.573		
N	79	85	77	83		
SE	1.37	2.36	1.18	2.07		

Table 10. Central European Growth Prospects Under Alternative Policies

	Baseline	EU Standards	VFGE Standards
Czech Republic:			
Baseline Growth Rate	2.00	2.00	2.00
Labor force	0.45	0.45	0.45
Catch-up	1.23	1.23	1.23
Economic Efficiency	0.15	0.00	0.27
Saving Rate	0.23	0.00	1.30
Total Growth Rate	4.06	3.68	6.55
Hungary:			
Baseline	2.00	2.00	2.00
Labor force	-0.38	-0.38	-0.38
Catch-up	1.61	1.61	1.61
Economic Efficiency	-0.38	0.00	0.27
Saving Rate	-1.00	0.00	1.30
Total	1.85	3.23	4.80
Poland:			
Baseline	2.00	2.00	2.00
Labor force	0.65	0.65	0.65
Catch-up	1.89	1.89	1.89
Economic Efficiency	-0.47	0.00	0.27
Saving Rate	-0.16	0.00	1.30
Total	3.91	4.54	6.11

Table 11. Years Required to Close the Gap with the European Union

	1993 GDP as per cent of EU average	Policy Action	Years to Raise GDP to 50 per cent of the EU average	Years to Raise GDP to 75 per cent of the EU average
Czech Republic	46.7	Keep Current Policies	5	46
		Harmonize with EU	7	75
		Harmonize with VFGE	3	21
Hungary	37.1	Keep Current Policies	not obtainable	not obtainable
		Harmonize with EU	25	94
		Harmonize with VFGE	11	29
Poland	31.0	Keep Current Policies	52	not obtainable
		Harmonize with EU	30	78
		Harmonize with VFGE	15	32

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Endnotes:

[1] In view of the Czech Republic's success with mass privatization, and its continued macroeconomic stability, we too would judge the Czech Republic as of 1995 to be less distorted than the Polish and Hungarian economies. On the other hand, the IEF understates the continuing budgetary problems in the Czech Republic. For example, the Czech Republic is given a score of 2 on Government Consumption, with the note that government consumption was about 21 per cent of GDP in 1994. Poland, on the other hand, is given a score of 3 (more distorted), with the note that government consumption was about 10.5 per cent of GDP. (The IEF also notes that in Poland, more than 50 per cent of industrial production is still produced by the state-owned sector). In fact, both countries spend around 50 per cent of GDP in general government spending, putting them at the very high end of the spectrum.

[2]. The data were purchased from Political Risk Services, a political-risk assessment firm.

[3]. There are, in fact, linkages between a worker's contribution and future retirement benefits, since the benefits are linked to years of contributions, as well as to the wage levels prior to retirement. The linkages, however, tend to be complex and not especially tight. Workers tend to view their retirement benefits are largely independent of their individual payroll tax payments (see Auerbach, 1995, for a further discussion of this issue).

[4] For the Czech Republic, current values are: IEF 2.11, Market Access 0.2, and saving rate 21.0 per cent (taken from Table 8). For Hungary, the IEF is 2.78, Market Access 0.2, and saving rate 11.6 per cent. For Poland, IEF 2.90, Market Access 0.0, and saving rate 18.0 per cent In the second scenario, we assume that IEF and the saving rates of the CEEs are harmonized with the level of the EU average, that is IEF=2.3, and saving rate 19.2. In the third scenario, we assume that IEFand saving rate of the CEEs are harmonized with the values of the VFGEs, with IEF 1.96, saving rate 29.2.